

Curriculum of MEP Baan Sankamphaeng School

B.E. 2025

According to the core curriculum of basic education B.E. 2008 (Revised B.E. 2017)

Maths

MEP (Mini English Program)

Baan Sankamphaeng School

Chiang Mai Primary Educational Service Area Office, Area 1

Preface

Ban Sankamphaeng School serves as a model school in implementing the Basic Education Core Curriculum B.E. 2008 (Revised Edition B.E. 2017). The school has developed its own curriculum for Mathematics Learning Area at the primary education level, B.E. 2568, based on the vision, principles, goals, core competencies, desirable characteristics, learning standards, indicators, and guidelines for measurement and evaluation outlined in the Basic Education Core Curriculum B.E. 2551 (Revised Edition B.E. 2560). These elements serve as the guiding framework for curriculum development and instructional management to enhance students' knowledge, skills/processes, and desirable characteristics necessary for living in a rapidly changing society and for pursuing lifelong self-development.

In B.E. 2568, the school revised its curriculum structure to ensure relevance and alignment with the Ministry of Education's policies, key focuses, as well as the context, vision, and instructional practices of modern international standard schools.

We would like to express our sincere gratitude to the Ban San Kamphaeng School Board, student guardians, and all stakeholders for their valuable advice and support in the development of the Mathematics Learning Area Curriculum for the primary level, B.E. 2568. Your contributions have been vital in helping us shape a curriculum that fulfills the intentions of the Basic Education Core Curriculum B.E. 2551 (Revised Edition B.E. 2560) and promotes the development of quality learners.

Producers

List of contents

Topic	Pages
Introduction	А
List of contents	В
Vision	1
Principle	1
Goal	1
Key Competencies and Desirable Characteristics	2
Learners' Key Competencies	2
Desirable Characteristics	3
Why study math?	4
What did you learn in Math course?	4
Learner Quality	5
Strands and Learning Standards	7
School Curriculum Structure	16
Course description	38
Course structure	50
Weigh points according to learning outcomes	60
Unit Design Framework	87
Measurement and evaluation of learning outcomes	325
Glossary	329
Producers	337

Vision

Our school lives up to international standards. Focuses on learning to generate creativity. Our students can communicate using the technology for virtue, art and culture.

Principles

The Ban San Kamphaeng School Curriculum B.E. 2568, developed in accordance with the Basic Education Core Curriculum B.E. 2551 (Revised Edition B.E. 2560), is designed to be inclusive of all target groups. It allows for the transfer and recognition of learning outcomes and experiences. The curriculum is founded upon the following key principles:

1. The ultimate aim is attainment of national unity; learning standards and goals are therefore set with a view to enabling the children and youths to acquire knowledge, skills, attitude and morality to serve as a foundation for Thai-ness and universal values.

2. The curriculum facilitates education for all, who have equal access to education of high quality.

3. The curriculum facilitates decentralisation of authority by allowing society to participate in educational provision, which suits prevailing situations and serves local needs.

4. Structure of the curriculum enjoys flexibility regarding learning contents, time allotment and learning management.

5. The learner-centred approach is strongly advocated.

6. The curriculum is intended for education of all types—formal, non-formal and informal, covering all target groups and facilitating transfer of learning outcomes and experiences.

Goals

Baan San Kamphaeng School 2009 (Updated 2017) According to Core Curriculum, Basic Education 2008 aims to develop learners into good people with wisdom, happiness and potential for further study, and occupation. It is a destination for students. The following goals have consequently been set for achievement upon completing basic education:

1. Morality, ethics, desirable values, self-esteem, self-discipline, observance of Buddhist teachings or those of one's faith, and guiding principles of Sufficiency Economy;

2. Knowledge and skills for communication, thinking, problem-solving, technological knowhow, and life skills;

3. Good physical and mental health, hygiene, and preference for physical exercise;

4. Patriotism, awareness of responsibilities and commitment as Thai citizens and members of the world community, and adherence to a democratic way of life and form of government under constitutional monarchy; and

5. Awareness of the need to preserve all aspects of Thai culture and Thai wisdom, protection and conservation of the environment, and public-mindedness with dedication to public service for peaceful and harmonious co-existence.

Key Competencies and Desirable Characteristics

In the development of learners according to the Baan San Kamphaeng School curriculum, 2009 (Update 2017), according to the core curriculum of Basic Education 2008, the students should focus on developing the learners to meet the quality standards. This will help learners to achieve key performance and desired attributes;

Learners' Key Competencies

Baan San Kamphaeng School 2009 (Updated 2017) According to Core Curriculum. The Basic Education Core Curriculum is aimed at inculcating among learners the following five key competencies:

1. Communication Capacity

Capacity to receive and transmit information; linguistic ability and skills in expressing one's thoughts, knowledge and understanding, feelings and opinions for exchanging information and experience, which will be beneficial to oneself and society; negotiation for solving or reducing problems and conflicts; ability to distinguish and choose whether to receive or avoid information through proper reasoning and sound judgement; and ability to choose efficient methods of communication, bearing in mind possible negative effects on oneself and society.

2. Thinking Capacity

Capacity for analytical, synthetic, constructive, critical and systematic thinking, leading to creation of bodies of knowledge or information for judicious decision-making regarding oneself and society.

3. Problem–Solving Capacity

Capacity to properly eliminate problems and obstacles, based on sound reasoning, moral principles and accurate information; appreciation of relationships and changes in various social situations; ability to seek and apply knowledge to prevent and solve problems; and ability for judicious decision-making, bearing in mind possible negative effects on oneself, society and the environment.

4. Capacity for Applying Life Skills

Capacity for applying various processes in daily life; self-learning; continuous learning; working; and social harmony through strengthening of happy interpersonal relationships; elimination of problems and conflicts through proper means; ability for self-adjustment to keep pace with social and environmental changes; and capacity for avoiding undesirable behaviour with adverse effects on oneself and others.

5. Capacity for Technological Application

Ability to choose and apply different technologies; skills in application of technological processes for development of oneself and society in regard to learning, communication, working, and problem-solving through constructive, proper, appropriate and ethical means.

Desirable Characteristics

The Basic Education Core Curriculum focuses on learners' development for attainment of the following desirable characteristics, enabling learners to enjoy a life of harmony among others as Thai citizens and global citizens:

- 1. Love of nation, religion and king
- 2. Honesty and integrity
- 3. Self-discipline
- 4. Avidity for learning
- 5. Observance of principles of Sufficiency Economy Philosophy in one's way of life
- 6. Dedication and commitment to work
- 7. Cherishing Thai-ness
- 8. Public-mindedness

Learning Area of Mathematics

Why it is necessary to learn mathematics

Mathematics is highly important to development of the human mind. It enables a person to acquire skills in creativity, logic and systematic and methodical thinking, and allows one to carefully and thoroughly analyse various problems or situations, anticipate, plan, make decisions, solve problems and accurately and appropriately apply mathematics in daily life. Mathematics serves as a tool for learning science, technology and other disciplines. It is therefore useful to one's life, enhances quality of life and enables a person to live in harmony with others.

What is learned in mathematics?

The learning area for mathematics is aimed at enabling all children and youths to continuously learn this subject in accord with their potentiality. The contents prescribed for all learners are as follow:

Numbers and Operations: numerical concepts and sense of perception; real number system; properties of real numbers; operation of numbers; ratio; percentage; problem-solving involving numbers; and application of numbers in real life

Measurement: length; distance; weight; area; volume and capacity; money and time; measuring units; estimation for measurement; trigonometric ratio; problem-solving regarding measurement; and application of measurement in various situations

Geometry: geometric figures and properties of one-dimensional geometric figures; visualization of geometric models; geometric theories; and geometric transformation through translation, reflection and rotation

Algebra: pattern; relationship; function; sets and their operations; reasoning; expression; equation; equation system; inequality; graph; arithmetic order; geometric order; arithmetic series; and geometric series

Data Aanalysis and Probability: determining an issue; writing questions; determining methods of study; study; data collection, systematization and presentation; central tendency and data distribution; data analysis and interpretation; opinion polling; probability; application of statistical knowledge and probability; application of probability in explaining various situations as well as for facilitating decision-making in real life

Mathematical Skills and Processes: problem-solving through diverse methods; reasoning; communication; communication and presentation of mathematical concepts; linking mathematics with other disciplines; and attaining ability for creative thinking

Learners' Quality

Grade 3 graduates

1. Have numerical knowledge, understanding and sense of cardinal numbers not more than 100,000, and zero as well as operation of numbers; can solve problems involving addition, subtraction, multiplication and division; and are aware of validity of the answers reached

2. Have knowledge and understanding of length, distance, weight, volume, capacity, time and money; can measure correctly and appropriately; and can apply knowledge of measurement for solving problems faced in various situations

3. Have knowledge and understanding of triangle, quadrilateral, circle, ellipse, cuboid, sphere and cylinder as well as point, line segment and angle

4. Have knowledge and understanding of pattern and can explain relationship

5. Can collect and analyse relevant data and information about themselves and their surroundings in their daily lives; can avail of pictograms and bar charts for discussing various issues

6. Can apply diverse methods for problem-solving; can avail of mathematical knowledge, skills and processes appropriately for solving problems faced in various situations; can suitably present reasoning for decision-making and appropriately present the conclusion reached; can use mathematical language and symbols for communication, as well as accurate and appropriate communication and presentation of mathematical concepts; can link various bodies of mathematical knowledge; can link mathematics with other disciplines; and have attained ability for creative thinking

Grade 6 graduates

1. Have numerical knowledge, understanding, and sense of cardinal numbers and zero, fractions, decimals of not more than three places, percentages, operation of numbers and properties of numbers; can solve problems involving addition, subtraction multiplication and division of cardinal numbers, fractions, decimals of not more than three places and percentages; are aware of validity of the answers reached; and can find estimates of cardinal numbers and decimals of not more than three places.

2. Have knowledge and understanding of length, distance, weight, area, volume, capacity, time, money, direction, diagrams and size of angles; can measure correctly and appropriately; and can apply knowledge of measurement for solving problems faced in various situations

3. Have knowledge and understanding of characteristics and properties of triangles, squares, circles, cuboids, cylinders, cones, prisms, pyramids angles and parallel lines

4. Have knowledge and understanding of patterns and can explain their relationships and solve problems involving patterns; can analyse situations or problems as well as write linear equations with an unknown that can be solved.

5. Can collect data and information and discuss various issues from pictograms, bar charts, comparative bar charts, pie charts, line graphs and tables that are availed of for presentation; and can apply knowledge of basic probability in projecting various possible situations.

6. Can apply diverse methods for problem-solving, availing of mathematical and technological knowledge, skills, and processes appropriately to solve problems faced in various situations; can suitably provide reasoning for decision-making and appropriately present the conclusions reached; can use mathematical language and symbols for communication as well as accurate and appropriate communication and presentation of mathematical concepts; can link various bodies of mathematical knowledge and can link mathematical knowledge with other disciplines; and have attained ability for creative thinking.

Strands and Learning Standards

Strand 1: Numbers and Algebra

- Standard M 1.1: Understand various representations of numbers, number systems, operations on numbers, the results and properties of operations, and apply them appropriately.
- Standard M 1.2: Understand and analyze patterns, relations, functions, sequences, and series, and apply them.
- Standard M 1.3: Use expressions, equations, inequalities, and matrices to describe relationships or solve given problems.
- Note: Standard M 1.3 applies to students in Grades 7–12 (Mathayom 1–6).
- Strand 2: Measurement and Geometry
- Standard M 2.1: Understand measurement fundamentals; measure and estimate the size of objects, and apply such knowledge.
- Standard M 2.2: Understand and analyze geometric figures, their properties, relationships among figures, geometric theorems, and apply them.
- Standard M 2.3: Understand analytic geometry and apply it.
- Standard M 2.4: Understand vectors, vector operations, and apply them.
- Note: Standards M 2.1 and M 2.2 apply to students in Grades 1–9 (Prathom 1–Mathayom 3).
 - Standards M 2.3 and M 2.4 apply to students in Grades 10–12 (Mathayom 4–6) in scienceoriented programs.

Strand 3: Statistics and Probability

Standard M 3.1: Understand statistical processes and use statistical knowledge to solve problems. Standard M 3.2: Understand basic counting principles and probability, and apply them.

Note: Standard M 3.2 applies to students in Grades 7–12 (Mathayom 1–6).

Student Competencies

Upon Completion of Grade 3 (Prathom 3)

- Able to read and write numerals and number words up to 100,000 and zero; demonstrate number sense, and perform addition, subtraction, multiplication, and division with the ability to apply these skills in various situations.
- Demonstrate number sense related to fractions not exceeding one; perform addition and subtraction of fractions with the same denominators and apply them in real-life contexts.
- Estimate and measure length, weight, volume, and capacity; select appropriate tools and units; tell time and count money; and apply these skills in various situations.
- Identify and describe the characteristics of polygons, circles, ovals, rectangular prisms, spheres, cylinders, and cones; draw polygons, circles, and ovals using given templates; identify symmetrical shapes and lines of symmetry; and apply this knowledge in real-life contexts.
- Read and write picture graphs and single-variable tables, and apply this information in different situations.

- Upon Completion of Grade 6 (Prathom 6)
- Able to read and write numerals and number words representing whole numbers, fractions, and decimals (up to three decimal places), ratios, and percentages; demonstrate number sense; perform the four arithmetic operations and estimation, and apply them in various real-life situations.
- Explain properties and characteristics of geometric figures; calculate perimeter and area of plane figures; construct triangles, quadrilaterals, and circles; calculate volume and capacity of rectangular prisms; and apply these skills in daily life.
- Present data using bar graphs; interpret data from bar graphs, pie charts, double-entry tables, and line graphs to explain events and make informed decisions.

	Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
1. Write and	1. Write and	1. Write and	1. Write and	1. Write and	1. Write and		
read Hindu-	read Hindu-	read Hindu-	read Hindu-	read fractions,	read decimals		
Arabic and	Arabic and Thai	Arabic and Thai	Arabic and Thai	mixed numbers	with not more		
Thai numerals	numerals and	numerals and	numerals and	and decimals	than 3 places.		
showing	written forms	written forms	written forms	with not more	2. Compare		
quantity of	showing	showing	showing cardinal	than 2 places.	and arrange		
objects or	quantity of	quantity of	numbers, 0,	2. Compare	sequence of		
cardinal	objects or	objects or	fractions, and	and arrange	fractions and		
numbers not	cardinal	cardinal	one-place	sequence of	decimals with		
exceeding	numbers not	numbers not	decimals.	fractions and	not more than		
100, and 0.	exceeding	exceeding	2. Compare and	decimals with	3 places.		
2. Compare	1,000, and 0.	100,000, and 0.	arrange	not more than	3. Write		
and arrange	2. Compare	2. Compare	sequence of	2 places.	decimals in the		
sequence of	and arrange	and arrange	cardinal	3. Write	form of		
cardinal	sequence of	sequence of	numbers and 0,	fractions in	fractions and		
numbers not	cardinal	cardinal	fractions, and	decimal form	write fraction in		
exceeding	numbers not	numbers not	one-place	and	form of		
100, and 0.	exceeding	exceeding	decimals.	percentages;	decimal.		
	1,000, and 0.	100,000, and 0.		write			

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application

in real life

	Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
				percentages in			
				the forms of			
				fractions and			
				decimals, and			
				write decimals			
				in the forms of			
				fractions and			
				percentages.			

Strand 1: Numbers and Operations

Standard M1.2	: Understanding	results of	^f operations	of numbers,	relationships of	of operations,	and
	application of	operations	s for problen	n-solving			

	Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
1. Add,	1. Add,	1. Add,	1. Add, subtract	1. Write and	1. Write and		
subtract and	subtract and	subtract and	and mix addition,	read fractions,	read decimals		
mix addition	mix addition	mix addition	subtraction,	mixed numbers	with not more		
and	and	and	multiplication	and decimals	than 3 places.		
subtraction of	subtraction of	subtraction of	and division of	with not more	2. Compare		
cardinal	cardinal	cardinal	cardinal numbers	than 2 places.	and arrange		
numbers not	numbers not	numbers not	and 0, as well as	2. Compare	sequence of		
exceeding	exceeding	exceeding	be aware of	and arrange	fractions and		
100, and 0, as	1,000, and 0,	100,000, and 0,	validity of the	sequence of	decimals with		
well as be	as well as be	as well as be	answers.	fractions and	not more than		
aware of	aware of	aware of	2. Analyse and	decimals with	3 places.		
validity of the	validity of the	validity of the	show method of	not more than	3. Write		
answers.	answers.	answers.	finding answers	2 places.	decimals in the		
2. Analyse	2. Analyse and	2. Analyse and	to problems and	3. Write	form of		
and find	find answers to	show method	mix-problems of	fractions in	fractions and		
answers to	problems and	of finding	cardinal numbers	decimal form	write fraction in		
problems and	mix-problems	answers to	and 0, as well as	and	form of		
mix-problems	of cardinal	problems and	be aware of	percentages;	decimal.		
of cardinal	numbers not	mix-problems of	validity of the	write			
numbers not	exceeding	cardinal	answers, and be	percentages in			
exceeding	1,000, and 0,	numbers not	able to construct	the forms of			
100, and 0,	as well as be	exceeding	problems.	fractions and			
as well as	aware of	100,000, and 0,	3. Add and	decimals, and			
aware of	validity of the	as well as be	subtract	write decimals			
validity of the	answers.	aware of	fractions with	in the forms of			
answers.		validity of the	same	fractions and			
		answers.	denominator.	percentages.			

Strand 1: Numbers and Operations

Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
-	-	_	_	1. Make approximate estimates of integers of 10, 100 and 1,000 of cardinal numbers, which can be applied.	1. Makeapproximateestimates ofvarious integersof cardinalnumbers, whichcan be applied.2. Makeestimates ofdecimals of notmore than 3places.	

Standard M1.3: Use of estimation in calculation and problem-solving

Strand 1: Numbers and Operations

Standard M1.4: Understanding of numerical system and application of numerical properties

	Grade level indicators							
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6			
					1. Use			
					communicative,			
					associative and			
					distributive properties			
					in calculation.			
					2. Find highest			
_	_	_	-	_	common factor			
					(H.C.F.) and lowest			
					common multiples			
					(L.C.M.) of cardinal			
					numbers.decimals of			
					not more than 3			
					places.			

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
1. Tell length,	1. Tell length in	1. Tell length in	1. Tell the	1. Tell the	1. Explain a	
weight,	metres and	metres,	relationship	relationship	route or indicate	
volume, and	centimetres, and	centimetres and	between	between	positions of	
capacity by	compare length	millimetres by	measuring units	measuring units	various objects	
using non-	by using the same	using appropriate	for length,	for length,	by specifying	
standard units	unit.	measuring tools,	weight, volume	weight and	direction and	
of measure.	2. Tell weight in	and compare	or capacity and	volume or	real distance	
	kilogrammes and	length.	time.	capacity.	from pictures,	
2. Tell period	grammes, and	2. Tell weight in	2. Find area of	2. Find the	maps and	
of time,	compare weight	kilogrammes and	rectangle.	perimeter of	diagrams.	
number and	by using the	grammes by	3. Tell the time	quadrilaterals	2. Find the	
names of days	same unit.	using appropriate	on a clock dial;	and triangles.	area of	
of the week.	3. Tell volume	weighing	read and write	3. Find the area	quadrilateral.	
	and capacity in	machine, and	the time by	of rectangles	3. Find the	
	litres, and	compare weights.	using numerals;	and triangles.	circumference	
	compare	3. Tell volume	and tell length	4. Measure the	and area of	
	volume and	and capacity in	of time.	size of angle.	circles.	
	capacity.	litres and	4. Estimate	5. Find volume		
	4. Tell total	millilitres by	length, weight	or capacity of		
	amount of money	using appropriate	and volume or	cuboids.		
	from coins and		capacity.			
	bank notes.	measuring toots,				
	5. Tell the time	and compare				
	on a clock dial	weight and				
	(period of 5	capacity by using				
	minutes).	the same units.				
	6. Tell the days,	4. Tell the time				
	months and year	on a clock dial				
	trom a calendar.	(period of 5				
		minutes); read,				
		write and tell the				

Grade level indicators								
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6			
		time by using						
		numerals.						
		5. Tell the						
		relationship						
		between						
		measuring units						
		for length, height						
		and time.						
		6. Read and write						
		amount of						
		money by using						
		numerals.						

Strand 2: Measurement

Standard M2.2: Solving measurement problems

		Grade	level indicators		
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
	1. Solve	1. Solve	1. Solve	1. Solve	1. Solve
	problems	problems	problems	problems	problems
	involving	involving	involving	involving area	involving area
	measurement	measurement	measurement	and perimeter	and perimeter of
	of longth	of length,	of length,	of	quadrilaterals
	or tength,	weight, volume,	weight,	OI	and circles.
	weight,	money and	volume,	quadrilaterals	2. Solve
	volume and	time.	money and	and triangles.	problems
	money.	2. Read and	time.		involving volume
		keep record of	2. Read and		and capacity of
-		income and	keep record of		cuboids.
		expenditure.	income and		3. Draw diagrams
		3. Read and	expenditure.		showing
		keep record of	3. Read and		positions of
		activities or	keep record of		various objects
		events,	activities or		and diagrams
		specifying the	events,		showing travel
		time.	specifying the		routes.
			time.		

Strand 3: Geometry

Standard M3.1: Ability to explain and analyse two-dimensional and three-dimensional

geometric figures.

	Grade level indicators						
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
1. Distinguish	1. Identify	1. Identify two-	1. Identify kind,	1. Identify	1. Identify		
triangles,	two-	dimensional	name and	characteristics	kinds of two-		
quadrilaterals,	dimensional	geometric	components of	and	dimensional		
circles and	geometric	figures that are	angles and	differentiate	geometric		
ellipses.	figures	components of	write symbols.	between	figures that are		
	whether in the	an object in the	2. Can identify	various kinds of	components of		
	form of	form of a three-	which pair of	three-	three-		
	triangles,	dimensional	straight lines or	dimensional	dimensional		
	quadrilaterals,	geometric	parts of straight	geometric	geometric		
	circles or	figure.	lines form a	figures.	figures.		
	ellipses.	2. Identify two-	parallel, as well	2. Identify	2. Identify		
	2. Identify	dimensional	as use symbols	characteristics,	characteristics		
	three-	geometric	to indicate kind	relationship and	of diagonals in		
	dimensional	figures with axis	of parallel.	differentiate	various kinds		
	figures	of symmetry	3. Identify	between	of		
	whether in the	from a given	components of	various kinds of	quadrilaterals.		
	form of	figure.	a circle.	quadrilaterals.	3. Identify		
	cuboids,	3. Write linear	4. Can identify	3. Identify	which pair of		
	spheres or	points, straight	which figure or	characteristics,	straight lines is		
	cylinders.	lines, rays, parts	which part of	components,	parallel.		
	3. Distinguish	of straight lines,	an object has	relationships and			
	between	angles and	the form of a	differentiate			
	rectangles and	symbols.	rectangle, and	between various			
	cuboids, and		can identify	kinds of triangles.			
	between		whether it is a				
	circles and		square or a				
	spheres.		rectangle.				
			5. Can identifv				
			which two-				

Grade level indicators							
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
			dimensional				
			geometric				
			figures have				
			axes of				
			symmetry, and				
			identify the				
			number of				
			axes.				

School Curriculum Structure

Structure and Time Rate of Learning Management (Regular Classroom, Academic Year 2025) Ban San Kamphaeng School Educational Institution Curriculum, 2025 According to the Basic Education Core Curriculum, B.E. 2551 (revised version B.E. 2560)

	class time					
Learning subjects/activities			element	ary school		
	P.1	P.2	P.3	P.4	P.5	P.6
Learning subject group		_	_	_	_	_
Thai language	200	200	200	160	160	160
Mathematics	200	200	200	160	160	160
science and technology	80	80	80	120	120	120
Social Studies, Religion and Culture	40	40	40	80	80	80
History	40	40	40	40	40	40
Health and Physical Education	80	80	80	80	80	80
Art	40	40	40	40	40	40
Career	40	40	40	40	40	40
foreign language	120	120	120	120	120	120
Total class time (basic)	840	840	840	840	840	840
Additional courses	120	120	120	80	80	80
Knowledge Inquiry (KI)	-	-	-	40	40	40
Chinese	40	40	40	40	40	40
English for Communication	80	80	80	-	-	-
Student development activities						
1. Guidance activities	120	120	120	120	120	120
2. Student activities Boy Scouts – Girl Scouts	30	30	30	30	30	30
3. Assembly activities	40	40	40	40	40	40
4. Social activities and public interest	10	10	10	10	10	10
Extra-curricular activities	120	120	120	160	160	160
Learning activities to create with wisdom	40	40	40	80	80	80
Aesthetic promotion activities	40	40	40	40	40	40
Activities to promote skills in the use	40	40	40	40	40	40
of technology media						
Total study time	1,200 hours/year					

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 11101 Thai language	200		
M 11101 Mathematics	200		
SC 11101 Science and Technology	80		
SO 11101 Social Studies, Religion and Culture	40		
SO 11102 History	40		
HP 11101 Health and Physical Education	80		
AR 11101 art	40		
OC 11101 Occupation	40		
EN 11101 English	120		
additional courses	120		
CH 11201 Chinese	40		
EN 11202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
total class time	1,200 hours/year		

School curriculum structure (regular classroom, academic year 2025) Grade 1

School curriculum structure (regular classroom, academic year 2025) Grade 2

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 12101 Thai language	200		
M 12101 Mathematics	200		
SC 12101 Science and Technology	80		
SO 12101 Social Studies, Religion and Culture	40		
SO 12102 History	40		
HP 12101 Health and Physical Education	80		
AR 12101 art	40		
OC 12101 Occupation	40		
EN 12101 English	120		
additional courses	120		
CH 12201 Chinese	40		
EN 12202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
total class time	1,200 hours/year		

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 13101 Thai language	200		
M 13101 Mathematics	200		
SC 13101 Science and Technology	80		
SO 13101 Social Studies, Religion and Culture	40		
SO 13102 History	40		
HP 13101 Health and Physical Education	80		
AR 13101 art	40		
OC 13101 Occupation	40		
EN 13101 English	120		
additional courses	120		
CH 13201 Chinese	40		
EN 13202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
total class time	1,200 hours/year		

school curriculum structure (regular classroom, academic year 2025)

Grade 3

school curriculum structure (regular classroom, academic year 2025) Grade 4

course/activity	Study time (hours/year)
basic course	840
TH 14101 Thai language	160
M 14101 Mathematics	160
SC 14101 Science and Technology	120
SO 14101 Social Studies, Religion and Culture	80
SO 14102 History	40
HP 14101 Health and Physical Education	80
AR 14101 art	40
OC 14101 Occupation	40
EN 14101 English	120
additional courses	80
I14201 Knowledge Inquiry	40
CH 14202 Chinese	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	160
Learning activities to create with wisdom	80
Aesthetic promotion activities	40
Activities to promote skills in the use of technology media	40
Total class time	1,200 hours /year

school curriculum structure (regular classroom, academic year 2025)

Grade 5

course/activity	Study time (hours/year)
basic course	840
TH 15101 Thai language	160
M 15101 Mathematics	160
SC 15101 Science and Technology	120
SO 15101 Social Studies, Religion and Culture	80
SO 15102 History	40
HP 15101 Health and Physical Education	80
AR 15101 art	40
OC 15101 Occupation	40
EN 15101 English	120
additional courses	80
I 14201 Knowledge Inquiry	40
CH 14202 Chinese	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	160
Learning activities to create with wisdom	80
Aesthetic promotion activities	40
Activities to promote skills in the use of technology media	40
Total class time	1,200 hours /year

school curriculum structure (regular classroom, academic year 2025)

Grade	6
-------	---

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 16101 Thai language	160		
M 16101 Mathematics	160		
SC 16101 Science and Technology	120		
SO 16101 Social Studies, Religion and Culture	80		
SO 16102 History	40		
HP 16101 Health and Physical Education	80		
AR 16101 art	40		
OC 16101 Occupation	40		
EN 16101 English	120		
additional courses	80		
I 16201 Knowledge Inquiry	40		
CH 16202 Chinese	40		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
Extra-curricular activities	160		
Learning activities to create with wisdom	80		
Aesthetic promotion activities	40		
Activities to promote skills in the use of technology media	40		
Total class time	1,200 hours /year		

Structure and Time Rate of Learning Management (MEP Program , Academic Year 2025) Ban San Kamphaeng School Educational Institution Curriculum, 2025

According to the Basic Education	Core Curriculum, B.E. 2551	(revised version B.E. 2560)
----------------------------------	----------------------------	-----------------------------

	class time					
Learning subjects/activities			element	ary scho	ol	
	P.1	P.2	P.3	P.4	P.5	P.6
Learning subject group						
Thai language	200	200	200	160	160	160
Mathematics	200	200	200	160	160	160
science and technology	80	80	80	120	120	120
Social Studies, Religion and Culture	40	40	40	80	80	80
History	40	40	40	40	40	40
Health and Physical Education	80	80	80	80	80	80
Art	40	40	40	40	40	40
Career	40	40	40	40	40	40
foreign language	120	120	120	120	120	120
Total class time (basic)	840	840	840	840	840	840
Additional courses	120	120	120	80	80	80
Knowledge Inquiry (KI) (Grade 4, 5, 6)	-	-	-	40	40	40
Chinese	40	40	40	40	40	40
English for Communication	80	80	80	-	-	-
Student development activities						
1. Guidance activities	120	120	120	120	120	120
2. Student activities Boy Scouts – Girl Scouts	30	30	30	30	30	30
3. Assembly activities	40	40	40	40	40	40
4. Social activities and public interest	10	10	10	10	10	10
Extra-curricular activities	120	120	120	160	160	160
Learning activities to create with wisdom	40	40	40	80	80	80
Aesthetic promotion activities	40	40	40	40	40	40
Activities to promote skills in the use of	40	40	40	40	40	40
technology media						
Total study time	1,200 hours/year					

course/activity	Study time (hours/year)		
basic course	840		
TH 11101 Thai language	200		
M 11101 Mathematics	200		
SC 11101 Science and Technology	80		
SO 11101 Social Studies, Religion and Culture	40		
SO 11102 History	40		
HP 11101 Health and Physical Education	80		
AR 11101 art	40		
OT 11101 Occupation	40		
FO 11101 English	120		
additional courses	120		
CH 11201 Chinese	40		
EN 11202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
total class time	1,200 hours/year		

course/activity	Study time
	(hours/year)
basic course	840
TH 12101 Thai language	200
M 12101 Mathematics	200
SC 12101 Science and Technology	80
SO 12101 Social Studies, Religion and Culture	40
SO 12102 History	40
HP 12101 Health and Physical Education	80
AR 12101 art	40
OT 12101 Occupation	40
FO 12101 English	120
additional courses	120
CH 12201 Chinese	40
EN 12202 English for Communication	80
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
total class time	1,200 hours/year

School curriculum structure (N	MEP Program, academi	c year 2025) Grade 2
--------------------------------	----------------------	----------------------

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 13101 Thai language	200		
M 13101 Mathematics	200		
SC 13101 Science and Technology	80		
SO 13101 Social Studies, Religion and Culture	40		
SO 13102 History	40		
HP 13101 Health and Physical Education	80		
AR 13101 art	40		
OT 13101 Occupation	40		
FO 13101 English	120		
additional courses	120		
CH 13201 Chinese	40		
EN 13202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
total class time	1,200 hours/year		

School	curriculum	structure	(MEP	Program,	academic	year	2025)	Grade	3

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 14101 Thai language	160		
M 14101 Mathematics	160		
SC 14101 Science and Technology	120		
SO 14101 Social Studies, Religion and Culture	80		
SO 14102 History	40		
HP 14101 Health and Physical Education	80		
AR 14101 art	40		
OT 14101 Occupation	40		
FO 14101 English	120		
additional courses	80		
I 14201 Knowledge Inquiry	40		
CH 14202 Chinese	40		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
Extra-curricular activities	160		
Learning activities to create with wisdom	80		
Aesthetic promotion activities	40		
Activities to promote skills in the use of technology media	40		
Total class time	1,200 hours /year		

School curriculum structure (MEP Program, academic year 2025) Grade 4

course/activity	Study time (hours/year)
basic course	840
TH 15101 Thai language	160
M 15101 Mathematics	160
SC 15101 Science and Technology	120
SO 15101 Social Studies, Religion and Culture	80
SO 15102 History	40
HP 15101 Health and Physical Education	80
AR 15101 art	40
OT 15101 Occupation	40
FO 15101 English	120
additional courses	80
l 14201 Knowledge Inquiry	40
CH 14202 Chinese	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	160
Learning activities to create with wisdom	80
Aesthetic promotion activities	40
Activities to promote skills in the use of technology	40
media	
Total class time	1,200 hours /year

School curriculum structure (MEP Program, academic year 2025) Grade 5

course/activity	Study time (hours/year)
basic course	840
TH 16101 Thai language	160
M 16101 Mathematics	160
SC 16101 Science and Technology	120
SO 16101 Social Studies, Religion and Culture	80
SO 16102 History	40
HP 16101 Health and Physical Education	80
AR 16101 art	40
OT 16101 Occupation	40
FO 16101 English	120
additional courses	80
I 16201 Knowledge Inquiry	40
CH 16202 Chinese	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	160
Learning activities to create with wisdom	80
Aesthetic promotion activities	40
Activities to promote skills in the use of technology	40
media	
Total class time	1,200 hours /year

School curriculum structure (MEP Program, academic year 2025) Grade 6

Structure and Time Rate of Learning Management (SMP Program, Academic Year 2025) Ban San Kamphaeng School Educational Institution Curriculum, 2025

		class time					
Learning subjects/activities	elementary school						
	P.1	P.2	P.3	P.4	P.5	P.6	
Learning subject group						-	
Thai language	200	200	200	160	160	160	
Mathematics	200	200	200	160	160	160	
science and technology	80	80	80	120	120	120	
Social Studies, Religion and Culture	40	40	40	80	80	80	
History	40	40	40	40	40	40	
Health and Physical Education	80	80	80	80	80	80	
Art	40	40	40	40	40	40	
Career	40	40	40	40	40	40	
foreign language	120	120	120	120	120	120	
Total class time (basic)	840	840	840	840	840	840	
Additional courses	120	120	120	120	120	120	
Knowledge Inquiry (KI)	-	-	-	40	40	40	
Chinese	40	40	40	40	40	40	
STEAM Education	80	80	80	40	40	40	
Student development activities	120	120	120	120	120	120	
1. Guidance activities	120	120	120	120	120	120	
2. Student activities Boy Scouts – Girl Scouts	30	30	30	30	30	30	
3. Assembly activities	40	40	40	40	40	40	
4. Social activities and public interest	10	10	10	10	10	10	
Extra-curricular activities	120	120	120	120	120	120	
Learning activities to create with wisdom	40	40	40	40	40	40	
Aesthetic promotion activities	40	40	40	40	40	40	
Activities to promote skills in the use of technology	40	40	40	40	40	40	
media							
technology media							
Total study time			1,200 hc	ours/year			

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 11101 Thai language	200		
M 11101 Mathematics	200		
SC 11101 Science and Technology	80		
SO 11101 Social Studies, Religion and Culture	40		
SO 11102 History	40		
HP 11101 Health and Physical Education	80		
AR 11101 art	40		
OC 11101 Occupation	40		
EN 11101 English	120		
additional courses	120		
CH 11201 Chinese	40		
EN 13202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
Extra-curricular activities	120		
Learning activities to create with wisdom	40		
Aesthetic promotion activities	40		
Activities to promote skills in the use of technology media	40		
total class time	1,200 hours/year		

School curriculum structure (SMP Program, academic year 2025) Grade 1

course/activity	Study time		
	(hours/year)		
basic course	840		
TH 12101 Thai language	200		
M 12101 Mathematics	200		
SC 12101 Science and Technology	80		
SO 12101 Social Studies, Religion and Culture	40		
SO 12102 History	40		
HP 12101 Health and Physical Education	80		
AR 12101 art	40		
OT 12101 Occupation	40		
FO 12101 English	120		
additional courses	120		
CH 11201 Chinese	40		
EN 13202 English for Communication	80		
Student development activities	120		
1. Guidance	40		
2. Scouts/ Scouts	30		
3. Assembly activities	40		
4. Social activities and public interest	10		
Extra-curricular activities	120		
Learning activities to create with wisdom	40		
Aesthetic promotion activities	40		
Activities to promote skills in the use of technology media	40		
total class time	1,200 hours/year		

School curriculum structure (SMP Program, academic year 2025) Grade 2
course/activity	Study time
	(hours/year)
basic course	840
TH 13101 Thai language	200
M 13101 Mathematics	200
SC 13101 Science and Technology	80
SO 13101 Social Studies, Religion and Culture	40
SO 13102 History	40
HP 13101 Health and Physical Education	80
AR 13101 art	40
OT 13101 Occupation	40
FO 13101 English	120
additional courses	120
CH 11201 Chinese	40
EN 13202 English for Communication	80
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	120
Learning activities to create with wisdom	40
Aesthetic promotion activities	40
Activities to promote skills in the use of technology media	40
total class time	1,200 hours/year

School curriculum structure (SMP Program, academic year 2025) Grade 3

course/activity	Study time (hours/vear)
basic course	840
TH 14101 Thai language	160
M 14101 Mathematics	160
SC 14101 Science and Technology	120
SO 14101 Social Studies, Religion and Culture	80
SO 14102 History	40
HP 14101 Health and Physical Education	80
AR 14101 art	40
OT 14101 Occupation	40
FO 14101 English	120
additional courses	120
I 14201 Knowledge Inquiry	40
l 14201 Chinese	40
S 14203 STEAM Education	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	120
Learning activities to create with wisdom	40
Aesthetic promotion activities	40
Activities to promote skills in the use of technology media	40
total class time	1,200 hours/year

School curriculum structure (SMP Program, a	academic year 2025) Grade 4
---	--------------------	-----------

course/activity	Study time (hours/year)
basic course	840
TH 15101 Thai language	160
M 15101 Mathematics	160
SC 15101 Science and Technology	120
SO 15101 Social Studies, Religion and Culture	80
SO 15102 History	40
HP 15101 Health and Physical Education	80
AR 15101 art	40
OT 15101 Occupation	40
FO 15101 English	120
additional courses	120
I 15201 Knowledge Inquiry	40
l 15201 Chinese	40
S 15203 STEAM Education	40
Student development activities	120
1. Guidance	40
2. Scouts/ Scouts	30
3. Assembly activities	40
4. Social activities and public interest	10
Extra-curricular activities	120
Learning activities to create with wisdom	40
Aesthetic promotion activities	40
Activities to promote skills in the use of technology media	40
total class time	1200 hours/year

School curriculum structure (SMP Program, academic year 2025) Grade 5

course/activity	Study time	
	(hours/year)	
basic course	840	
TH 16101 Thai language	160	
M 16101 Mathematics	160	
SC 16101 Science and Technology	120	
SO 16101 Social Studies, Religion and Culture	80	
SO 16102 History	40	
HP 16101 Health and Physical Education	80	
AR 16101 art	40	
OT 16101 Occupation	40	
FO 16101 English	120	
additional courses	120	
I 16201 Knowledge Inquiry	40	
l 16201 Chinese	40	
S 16203 STEAM Education	40	
Student development activities	120	
1. Guidance	40	
2. Scouts/ Scouts	30	
3. Assembly activities	40	
4. Social activities and public interest	10	
Extra-curricular activities	120	
Learning activities to create with wisdom	40	
Aesthetic promotion activities	40	
Activities to promote skills in the use of technology media	40	
total class time	1200 hours/year	

School curriculum structure (SMP Program, academic year 2025) Grade 6

Basic Mathematics Course Grade 1

Course Code: M11101 Time: 200 hours/Year

Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0. Compare of cardinal numbers not exceeding 100, and 0. Using the $= \neq > <$. Arrange Number sequence not exceeding 100 and $_{\odot}$ from 3 to 5 number. Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0. Show you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0. Specifies the number that is missing in the form of a number increases or decreases by 1 and 10 and identify the missing image in a repeating pattern of the geometry and other images where each of the repeating series members has two images.

Measure and compare lengths in centimeters to meters. Measure and compare the weight in kilograms to gram. Distinguish triangles, squares, circles, sphere, cylinder, and cones.

Understand statistical processes and use statistical knowledge to solve the problem. Use the data from the picture chart to find out the problem. When 1 image is defined, replace 1 unit.

Providing students with experiences or creating real-life situations that are relatable, enabling them to engage in hands-on exploration, experimentation, summarization, and reporting, in order to develop skills in mathematical reasoning, problem-solving, communication, and interpretation. This approach fosters the ability to apply acquired experiences, knowledge, ideas, skills, and processes to various learning contexts and to everyday life in a creative manner. It also cultivates a sense of value and a positive attitude toward mathematics, encouraging students to work systematically, carefully, and responsibly, with sound judgment and self-confidence.

Assessment and evaluation are conducted using a variety of methods appropriate to the content and skills being measured, reflecting real-world contexts.

Indicator code Total 10 Indicators

Formative Indicators 3 indicator

M 1.1 Gr1/1 , Gr1/2, Gr1/4

Terminal Indicators 7 indicator

M 1.1 Gr1/3 , Gr1/5 M 1.2 Gr1/1 M 2.1 Gr1/1 , Gr1/2 M 2.2 Gr1/1 M 3.1 Gr1/1

Basic Mathematics Course Grade 2

Code : M12101 Time : 200 hours/Year

Study, practice, calculate, and solve problems in the following subjects. Reading and writing Hindu Arabic numerals, Thai numerals and alphabets. Count increments by 5, by 10 and by 100 at a time. Count down by 2, by 10 and 100 by number. Number of odd and even pairs. Numbers in each digit and the use of 0. To seize the position of the main Numerical representation of numbers in distributed form Comparison of the number and use of the sign =, \neq , >, < numbering order no more than five.

Addition, subtraction, multiplication, integer multiplication, up to two digits. Divide the divisor and the divisor into one digit. Add, subtract, multiply, divide, solve and solve problems.

Length measurement (centimeters), Weighing (kilograms), Measuring (liter), comparison of length, weight, volume and capacity (Same unit). Type and value of coins and banknotes. Comparison of Coins and Banknotes to tell the total amount (Baht and Satang). Telling time clock with minutes (5 minutes). Reading Calendar Month and evaluate Month. Solve positive and negative problems with the measurement of the length of the weighing scale. Problem, plus, minus, divide and measure.

Triangle, square, oval-shaped, rectangular, circular, cylindrical shape. Classification of twodimensional geometry with three-dimensional geometry Triangulation Circular, elliptical, and elliptical shapes using a pattern.

Forms of numbers are incremented by 5 at a time, 10 at a time, and 100 at a time. The figure of the number decreases by 2 by 2 by 10 and by 100 by 2. A picture of a shape, size, or color that relate to one another.

To organize the experience or create a close-up situation, the students have to study the truth by practicing, experimenting, summarizing, reporting to improve their skills and processes. Calculation of Problem Solving. Communicating mathematical knowledge and applying knowledge, ideas, and process skills to learn things and use it in everyday life to create. Include good value and good attitude. Mathematics, able to work in a systematic, thoughtful, responsible, critical and self-confident manner.

Use a variety of measurement and evaluation methods based on actual content and skills to measure.

Indicator code Total 16 Indicators

Formative Indicators 8 indicator

M 1.1 Gr2/1, Gr2/2 , Gr2/4, Gr2/5, Gr2/6, Gr2/7 M 2.1 Gr2/2, Gr2/4, **Terminal Indicators** 8 indicator M 1.1 Gr2/3, G2/8 M 2.1 Gr2/1, G2/3, G2/5, Gr2/6

M 2.2 Gr2/1

M 3.1 Gr2/1

Basic Mathematics Course Grade 3

Course Code: M13101 Time: 200 hours/Year

Students study, analyze, compare, and practice skills in reading, writing, numeracy, and problem-solving through the use of numbers to represent quantities obtained from counting. They learn to read and write Hindu-Arabic numerals, Thai numerals, and number words up to 100,000; understand place value; and express numbers in expanded form. They compare and order numbers, perform addition, subtraction, multiplication, and mixed operations, and solve word problems. Students also learn to use fractions (with numerators less than or equal to denominators) to represent quantities, including reading and writing fractions, comparing and ordering fractions, adding and subtracting fractions, and solving related problems.

Students explore number patterns with consistent increases or decreases, understand monetary concepts such as expressing, comparing, and converting money, writing amounts using decimal points, and recording income and expenses. They also solve word problems related to time, including telling time to the hour and minute, reading and writing time using dot (.) or colon (:), calculating and comparing time intervals, recording time-based activities, and solving time-related problems.

In measurement, students measure length using appropriate tools, estimate lengths in meters and centimeters, compare lengths, and solve related problems. They also measure weight, select appropriate scales, estimate weight in kilograms and hectograms, compare weights, and solve weightrelated problems. For volume and capacity, students select appropriate measuring tools, estimate volume and capacity in liters, compare values, and solve related problems.

Students classify shapes based on the presence or absence of lines of symmetry, identify two-dimensional shapes with symmetry, and determine the number of lines of symmetry. They collect and classify data, read and write pictographs and one-way tables, and use these representations to find solutions to problems.

Throughout these learning experiences, students apply mathematical processes and problemsolving skills, choose appropriate strategies, and use reasoning to make logical decisions. They communicate ideas effectively using mathematical language and symbols, and they connect their knowledge and thinking to real-life situations. Hands-on exploration and the creative use of technology are emphasized to enhance learning and communication.

Students are encouraged to value mathematics and develop positive attitudes toward the subject. They learn to work systematically and carefully, act responsibly, exercise sound judgment, and build self-confidence. Assessment and evaluation are conducted through various methods that reflect the real-world context of the content and the skills being assessed, ensuring that learners meet the required academic standards.

Indicator code total 28 Indicators

Formative Indicators 15 indicator

M 1.1 Gr3/1, Gr3/3, Gr3/5 , Gr3/6, Gr3/7, Gr3/8, Gr3/10 M 2.1 Gr3/3, Gr3/4, Gr3/7, Gr3/8 , Gr3/9 , Gr3/11, Gr3/12 **Terminal Indicators** 13 indicator M 1.1 Gr3/2, Gr3/4, Gr3/9 , Gr3/11 M 1.2 Gr3/1, M 2.1 Gr3/1, Gr3/2, Gr3/6, Gr3/10, Gr3/13 M 2.2 Gr3/1 M 3.1 Gr3/1, Gr3/2

Basic Mathematics Course Grade 4

Course Code: M14101 Time: 160 hours/Year

Study, practice, calculate, and solve problems in the following subjects.

Reading and writing Hindu Arabic numerals, Thai numbers and letters showing counts. The digits and values of the numerals in each digit of the count and the use of 0 to hold the position of the digit. Numerical representation of numbers in distributed form Comparisons and Sorting, Count, Meaning, Writing, and Reading. Comparison and sequencing of fractions with equal parts, meaning, writing, and one decimal place. Comparison and collocation of one decimal place.

Addition, subtraction, multiplication, multiplication, and multiplication of more than four digits. Multiply more than one digit with more than two digits. Divide the divisor by no more than three digits. Add, subtract, multiply, divide, and average the probability of the number of counts. Addition and subtraction of fractions with equal parts.

Relationship of unit length, weighing units, measuring unit, time unit. Finding the area of the rectangle. Timing is a clock with minutes. Time writing using point and read Timeline. Prediction Weight and volume or the capacity of the problem with measuring the length of the scale. Volume, capacity and writing time. Revenue receipt Reading and writing activity logs or events that indicate time. Reading schedules

Corner component Composition of names and symbols representing angles, angles, parallelograms, and parallels. Components of a circle, rectangle, square, rectangular, rectangular, and geometric shapes.

The figure of the number increases or decreases by the same amount. Geometric shapes and other shapes.

Data Collection and Identification Reading charts, pictures, bar charts and graphing charts, charts and bar charts.

To organize the experience or create a close-up situation for the students to study the truth by practicing, experimenting, summarizing and reporting. To develop the skills / processes in the calculation. Problem solving, reasoning, mathematical expressions and bring the experience of knowledge and ideas. Process skills are used to learn things and use them in everyday life, to create, to see, to value and to have a good attitude. Mathematics can work in a systematic, thoughtful, responsible, critical and self-confident manner.

There are various methods of measurement and evaluation. Based on the actual state of the content and the skills to measure.

44

Indicator code total 22 Indicators

Formative Indicators 12 indicator

M 1.1 Gr4/1, Gr4/3, Gr4/5, Gr4/7, Gr4/8, Gr4/9, Gr4/10, Gr4/12, Gr4/13, Gr4/15 M 2.1 Gr4/2 M 2.2 Gr4/1

Terminal Indicators 10 indicator

M 1.1 Gr4/2 Gr4/4, Gr4/6, Gr4/11, Gr4/14, Gr4/16 M 2.1 Gr4/1 Gr4/3 M 3.1 Gr4/1

Basic Mathematics Course Grade 5

Course Code: M15101 Time: 160 hours/Year

Study, practice, calculate, and solve problems in the following subjects.

Meaning, reading and writing of fractional fraction, number of decimals and decimals does not exceed two places, fractions equal to the number of writers. Count in fractional fraction. Writing in mixed and mixed form, in fractional form, fractional fraction, low fraction, principal value, and the number of digits in each digit of the count and the decimal not to exceed two positions. Decimal writing in distributed form comparison and collocation of decimal not more than two locations. Comparison and sequencing of parts One person is a multiple of the other. Meaning, reading and writing percentages. Fragmentation of part fractions is a factor of 10 and 100 in decimal and percentage. Writing Percentage and Decimals Decomposition not more than two places in fractional form and percentage. Approximate total of ten Full and full of thousands

The relationship of the volume or capacity unit, the circumference of the rectangle and the triangle.

Finding the area of the rectangle and the triangle. Measure the size of the corners using the printer. Find the size of the angle Finding the volume or capacity of a right-angled triangle. Problem with respect to the area and the circumference of the rectangles and triangles

Circular cylinders, conical prisms, rectangular pyramids, and triangles of various types. Elements of the triangle, the type of angle. Angle Creation with Protractor. Create rectangles, triangles, and circles. Create parallel lines using tree trunks. Form of number.

Data Collection and Identification to write a bar graph with a reduced line length. Reading bar charts. Predictions about the occurrence of events. Organizing experiences or creating close-up situations allows learners to study, practice, experiment, summarize, and report on skills and processes. Calculation of problem solving, reasoning, mathematical interpretation, and knowledge-based thinking. Process skills are used to learn something. And use it in everyday life to create. Include good value and good attitude towards math. Can work in a systematic, responsible, critical and self-confident manner.

There are various methods of measurement and evaluation. Based on the actual state of the content and the skills to measure.

Indicator code total 19 Indicators

Formative Indicators 9 indicator

M 1.1 Gr5/1 ,Gr5/3, Gr5/4, Gr5/6, Gr5/7 M 2.1 Gr5/1, Gr5/2 M 2.2 Gr5/1, Gr5/2

Termina indicators 10 indicator

M 1.1, Gr5/2, Gr5/5, Gr5/8, Gr5/9 M 2.1 Gr5/3, Gr5/4 M 2.2 Gr5/3, Gr5/4 M 3.1 Gr5/1, Gr5/2

Basic Mathematics Course Grade 6

Course Code: M16101 Time: 160 hours/Year

Study, practice, calculate, and solve problems in the following subjects.

Meaning, reading and writing three decimal places. Principal values and values of digits in each digit of three decimal places. Decimal writing in distributed form Comparison and collocation of up to three decimal places. Comparison and Sorting Decomposition not more than three places in fractional form, and fractional fractionation is a factor of 10, 100, 1,000 in decimal.

Addition, Subtraction, Multiplication, and Division Fraction. Addition, subtraction,

multiplication,

and division are mix number. Addition, subtraction, multiplication of fractions, and miscellaneous mix number. Addition, subtraction, multiplication, and division decimal. Addition, subtraction, multiplication, division of decimal Solve problems of counts. Decimals and Percentage.

Approximate value is tens of thousands. Full and Full Estimates are close to one decimal place and two positions.

Positive and multiplication properties Divisibility and multiplication

Direction, scale, map reading, rectangular area finding, circle length and circular area. Estimate the area of the rectangle. Solve the problem of the length, the circumference, and the area of the quadrilateral and the circle. Solve the problem of volume or rectangular capacity. Write Mapping

The components of the three-dimensional geometry are the properties of the diagonals of the

quadrilateral. Considering the invisible parallel lines of three-dimensional geometry. 3D geometry invention. Creating a rectangle.

Problem with model. Equation of linear equation with an unknown value. Equations of Equality of Addition, Subtraction, Multiplication, or Division. Solving problems with equations. Reading of line graphs and pie charts. Drawing bar charts and graphs. Predictions about the occurrence of events. Organizing experiences or creating close-up situations allows learners to study, practice, experiment, summarize, and report on skills and processes. Calculation of problem solving, reasoning, mathematical interpretation, and knowledge-based thinking. Process skills are used to learn something. And use it in everyday life to create. Include good value and good attitude towards math. Can work in a systematic, responsible, critical and self-confident manner.

There are various methods of measurement and evaluation. Based on the actual state of the content and the skills to measure.

48

Indicator code Total 21 Indicators

Formative Indicators 8 indicator

M 1.1 Gr6/2, Gr6/3, Gr6/4, Gr6/5, Gr6/7, Gr6/9, M 2.2 Gr6/1, Gr6/4

Terminal Ind, indicators 13 indicator

M 1.1 Gr6/1, Gr6/6, Gr6/8, Gr6/10, Gr6/11, Gr6/12 M 1.2 Gr6/1 M 2.1 Gr6/1, Gr6/2, Gr6/3 M 2.2 Gr6/2, Gr6/3 M 3.1 Gr6/1

Course structure

Grade 1: - Continuous assessment score 70 points

Chapter	Content	Standard of Mathematics	Time (hours) 200	C.A.S Score 70	Final Examination 30	
1	Cardinal number 1-10 and 0	M1.1: Gr1/1 M1.1: Gr1/2 M1.1: Gr1/3	18	6	2	
2	Addition the vertically are not exceeding to 10.	M1.1:Gr1/4 M1.1:Gr1/5	15	6	3	
3	Subtracting the vertically are not exceeding to 10.	M1.1:Gr1/4 M1.1:Gr1/5	16	6	3	
4	Cardinal number 11-20.	M1.1: Gr1/1 M1.1: Gr1/2 M1.1: Gr1/3	12	6	2	
5	Addition and subtraction number of the count not exceed 20.	M1.1:Gr1/4 M1.1:Gr1/5	19	6	3	
6	The picture chart	M3.1:Gr1/1	7	2	1	
7	The weight	M2.1:Gr1/2	13	3	1	
Mathema	Mathematics through STEM: The Joyful Learning Field Trip					
	Total Seme	35	15			

- Final examination

Time: 200 hours score 30 points

	Content Standard of	Time	C.A.S	Final	
Chapter		Mathematics	(hours)	Score	Examination
		Mathematics	200	70	30
8	The position and rank	-	8	0	1
9	Geometry	M1.2: Gr1/1	4.5	4	0
		M2.2: Gr1/1	15	4	2
10	Cardinal number 21-	M1.1: Gr1/1			
	100 M1.1: Gr1/2	17	6	2	
		M1.1: Gr1/3			
11	Length	M2 1. C+1/1	1.1	Г	1
	measurement	M2.1: GF1/1	14	Э	Ţ
12	Additions are not	M1.1: Gr1/4	10	12 7	3
	exceeding to 100.		12		
13	Subtraction two				
	numbers are not	M1.1: Gr1/4	16	16 7	3
	exceeding to 10.				
14	Word problem of	M1 1. C+1/4			
	Addition and	N11.1: Gr1/4	18	18 6	3
	subtraction.				
Total Semester: 2 nd			35	15	
Total score all year				70	30

Grade 2: - Continuous assessment score 70 points

Time: 200 hours

- Final examination				30 p	oints
			Time	C.A.S	Final
Chapter	Content	Standard of Mathematics	(hours)	Score	Examination
			200	70	30
1	Numbers up to 1,000	M1.1: Gr2/1, Gr2/2, Gr2/3	20	8	3
2	Addition and Subtraction within 100	M1.1: Gr2/4, Gr2/8	24	8	4
3	Measurement	M2.1: Gr2/1 ,Gr2/2,Gr2/3	15	5	2
4	weight measurement	M2.1: Gr2/4, Gr2/5	16	5	2
5	Multiplication	M1.1: Gr2/5, Gr2/8	25	9	4
	Total Se	mester: 1 st		35	15

			Time	C.A.S	Final
Chapter	Content	Standard of Mathematics	(hours)	Score	Examination
			200	70	30
6	Division	M1.1: Gr2/6, Gr2/8	25	9	3
7	Time	M2.1: Gr2/1	20	7	3
8	Volume measurement	M2.1: Gr2/6	15	4	2
9	Geometric figure	M2.2: Gr2/1	8	4	2
10	Addition, subtraction,	M1.1: Gr2/7, Gr2/8	24	7	3
10	multiplication, division		27	I	5
11	Geometry	M3.1: Gr2/1	8	4	2
Total Semester: 2 nd					15
Total score all year					30

Grade 3: - Continuous assessment score 70 points Time: 2			00 hours		
- Fina	l examination		30 poin	ts	
			Time	Sco	res (100)
Chapter	Content	Standard of	(hours)	C.A.S	Final
		Mathematics	200	70	30
1	cardinal numbers not	M 1.1 P.3/1	14	5	2
	exceeding 100,000	M 1.1 P.3/2			
2	Fun with addition and	M 1.1 P.3/5	20	6	3
	subtraction cardinal				
	numbers not				
	exceeding 100,000				
3	Time is interesting	M 2.1 P.3/2	15	4	2
4	Geometric shapes	M 2.2 P.3/1	10	3	1
5	Picture charts and one	M 3.1 P.3/1	12	3	1
	way table	M 3.1 P.3/2			
6	Fraction	M 1.1 P.3/3	13	7	3
		M 1.1 P. 3/4			
		M 1.1 P.3/11			
7	Practice about	M 1.1 P. 3/6	16	7	3
	multiplication				
	Total Semester: 1 st				15

Chapter	Content	Cton double f	Time	Scores (100)	
		Standard of	(hours)	C.A.S	Final
		Mathematics	100	70	30
8	Practice about division	M 1.1 P.3/7	17	7	3
9	Let's measure of length	M 2.1 P.3/3	18	6	2
		M 2.1 P.3/4			
		M 2.1 P.3/5			
		M 2.1 P.3/6			
10	Let's measure of	M 2.1 P.3/7,	16	6	2
	weight	M 2.1 P.3/8			
		M 2.1 P.3/9			
		M 2.1 P. 3/11			
11	Measuring Volume	M 2.1 P.3/11, P.3/12	18	5	2
		M 2.1 P. 3/13			
12	Learning about money	M 2.1 P.3/1	15	4	2
13	Mathematical skill and	M 1.1 P. 3/8	16	6	3
	process	M 1.1 P. 3/9			
Total Semester: 2 nd			35	15	
Total score all year				70	30

Grade 4: Continuous assessment score 70 points

Time: 160 hours

Fir	Final examination 3				
Chapter	Content	Standard of Mathematics	Time (hours)	C.A.S Score	Final Examination
1	Numbers greater than 100,000	M1.1: Gr4/1, Gr4/2	12	6	2
2	Addition and Subtraction greater than 100,000	M1.1: Gr4/7, Gr4/8	13	8	4
3	Multiplied and division	M1.1: Gr4/7, Gr4/9	24	8	4
4	Addition, subtract, multiplied and division cardinal numbers.	M1.1: Gr4/10, Gr4/11, Gr4/12	19	7	4
5	time	M2.1: Gr4/1	12	6	1
	Total Semester: 1 st				15

Chapter	Content	Standard of Mathematics	Time (hours) 160	C.A.S Score 70	Final Examination 30
6	Fraction	M1.1: Gr4/3, Gr4/4, Gr4/13 ,Gr4/14	23	8	4
7	Decimals	M1.1: Gr4/5, Gr4/6, Gr4/15, Gr4/16	20	8	4
8	Angles	M2.1: Gr4/2 M2.1: Gr4/1	11	8	4
9	rectangular	M2.1: Gr4/3 M2.2: Gr4/2	19	8	2
10	Presentation of Information	M3.1: Gr4/1	7	3	1
	Total Seme	ster: 2 nd	35	15	
	Total score	all year		70	30

Grade 5 : Continuous assessment score 70 points Final examination Time: 160 hours 30 points

			Time	Points	Year End
No	Name of Learning Linit	Learning standards /	(hours)	During	Points
NO.	Name of Learning Onic	indicators	160	Study	30
				70	
		M. 1.1 P. 5/3			
1	fraction	M. 1.1 P. 5/4	34	15	6
		M. 1.1 P. 5/5			
		M.1.1 P. 5/1			
		M.1.1 P. 5/6			
2	decimal places	M.1.1 P. 5/7	34	15	6
Z	decimal places	M.1.1 P. 5/8	54	15	0
		M.2.1 P. 5/1			
		M.2.1 P. 5/2			
2	Presentation of	M.3.1 P. 5/1	10	Б	2
ر ر	information	M.3.1 P. 5/2	12	5)
	Tota	al Semester: 1 st		35	15

No.	Name of Learning Unit	Learning standards / indicators	Time (hours)	Points During Study	Year End Points
4	Prohibited Truth	M. 1.1 P. 5/2	9	5	3
5	percent	M.1.1 P. 5/9	17	5	3
6	Parallel lines	M.2.2 P. 5/1	13	5	3
7	Quadrilateral	M.2.1 P. 5/4 M.2.2 P. 5/2 M.2.2 P. 5/3	24	10	3
8	The volume and capacity of the rectangle	M.2.1 P. 5/3 M.2.2 P. 5/4	17	10	3
	Total S	Semester: 2 nd		35	15
	Total s		70	30	

Grade 6: Continuous assessment score 70 points

3

4

5

Decimals

Percentage

Pattern

Time: 160 hours

3

3

2

15

7

8

3

35

15

20

9

	Final examination		30 points				
Chapter	Content	Standard of Mathematics	Time (hours)	C.A.S Score	Final Examination		
			160	70	30		
	G.C.D.	M1.1: Gr6/4					
1	(Greatest common divisor)	M1.1: Gr6/5	10	0	3		
	And L.C.M.	M1.1: Gr6/6	19	9	5		
	(Least common multiple)						
		M1.1: Gr6/1					
	Fractions	M1.1: Gr6/7	17	8	4		
	FIACTIONS	M1.1: Gr6/8					

M1.1: Gr6/9

M1.1: Gr6/10

M1.1: Gr6/2 M1.1: Gr6/3

M1.1: Gr6/11 M1.1: Gr6/12 M1.2: Gr6/1

Total Semester: 1st

		Standard of	Time	C.A.S	Final
Chapter	Content	Mathematics	(hours)	Score	Examination
			160	70	30
6	Triangle	M2.2: Gr6/1	20	7	3
0	mangle	M2.2: Gr6/2	20	I	5
7	Polygon	M2.1: Gr6/2	17	6	3
8	Circle	M2.1: Gr6/3	20	7	3
9	Tree-Dimensional Geometric Shape	M2.1: Gr6/1 M2.2: Gr6/3 M2.2: Gr6/4	13	10	4
10	Data Presentation	M3.1: Gr6/1	10	5	2
	Total Seme	ester: 2 nd	35	15	
	Total score	e all year		70	30

Weigh points according to learning outcomes

Table analysis indicators standard of Mathematics with the chapter

	Course Code: M111	W11101 Grade 1														
		Chapter Chapter 1 2 3 4 5 6 7 8 9 10 11 12 13 14														
No.	Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	total
1	M 1.1 Gr1/1 Write and read Hindu- Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0. M 1.1 Gr1/2 Compare of cardinal numbers not exceeding 100.	2			2						2					6
	and 0. Using the = $\neq > <$.															
3	M 1.1 Gr1/3 Arrange Number sequence not exceeding 100 and o from 3 to 5 numbers.	2			2						2					6
4	M 1.1 Gr1/4 Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.		3	3		3							7	7	3	26
5	M 1.1 Gr1/5 Show you how to find the answers to the problem of addition and find the answers to the problem of		3	3		3									3	12

		Chapter s 1 2 3 4 5 6 7 8 9 10 11 12 13 14 total														
No.	Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	total
	subtraction of the															
	count not exceed															
	100 and 0.															
6	M 1.2 Gr1/1 Specifies									2						2
	the number that is															
	missing in the form															
	of a number															
	increases or															
	decreases by 1 and															
	10 and identify the															
	missing image in a															
	repeating pattern of															
	the geometry and															
	other images where															
	each of the															
	repeating series															
	members has two															
	images.															
7	M 2.1 Gr1/1 Measure											5				5
	and compare															
	lengths in															
	centimetres to															
	meters.															
8	M 2.1 Gr1/2Measure							3								3
	and compare the															
	weight in kilograms															
	to gram.															
9	M 2.2 Gr1/1									2						2
	Distinguish triangles,															
	squares, circles,															
	sphere, cylinder, and															
	cones.															
10	M 3.1 Gr1/1 Use the						2									2
	data from the															
	picture chart to find															
	out the problem.															

		Chapter														
No.	Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	total
	When 1 image is defined, replace 1 unit.															
	Total Score	6	6	6	6	6	2	3	-	4	6	5	7	7	6	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course Code: M11101

Grade 1

							Ur	nit Pla	ans						_				
Indicators			First	seme	ester					Secon	id ser	neste	r		Total				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14					
M 1.1 GR. 1/1	1			1						1					3				
M 1.1 Gr. 1/2	0.5			0.5						0.5					1.5				
M 1.1 Gr. 1/3	0.5			0.5						0.5					1.5				
M 1.1 Gr. 1/4		1	1		2							3	3		10				
M 1.1 Gr. 1/5		2	2		1									3	8				
M 1.2 Gr. 1/1									1						1				
M 2.1 Gr. 1/1											1				1				
M 2.1 Gr. 1/2							1								1				
M 2.2 Gr. 1/1									1						1				
M 3.1 Gr. 1/1						1									1				
No indicators								1							1				
Tatal	2	3	3	2	3	1	1	1	2	2	1	3	3	3	20				
Iotal				15							15				30				

Table analysis indicators standard of Mathematics with the chapter

Course Code: Sc12101 Grade 2													
No	Indicators	Chapters 1 2 3 4 5 6 7 8 9 10 11 total											
NO.	Indicators	1	2	3	4	5	6	7	8	9	10	11	total
1	M1.1 Gr2/1 Write and												
	read Hindu-Arabic and												
	Thai numerals and												
	written forms showing	3											3
	quantity of objects or												
	cardinal numbers not												
	exceeding 1,000, and 0.												
2	M1.1 Gr2/2 Compare and												
	arrange sequence of	2											2
	cardinal numbers not	5											J
	exceeding 1,000, and 0.												
3	M1.1 Gr2/3 Sort numbers												
	up to 1,000 and 0 from 3	2											2
	to 5 numbers from	2											2
	various situations.												
4	M1.1 Gr2/4 Find the												
	value of the unknown in												
	the addition and		1										1
	subtraction statements of		4										4
	numbers up to 1000 and												
	0.												
5.	M1.1 Gr2/5 Find the												
	value of the unknown in												
	the multiplication symbol					5							5
	sentence of a number of					5							5
	1 digit by a number of up												
	to 2 digits.												
6.	M1.1 Gr2/6 Find the												
	value of the unknown in												
	the division symbol												
	sentence with no more						6						6
	than 2-digit divisor and 1-												
	digit divisor where the												
	quotient												

		Srs Chapters											
NO.	Indicators	1	2	3	4	5	6	7	8	9	10	11	total
7.	M1.1 Gr2/7 Find the										4		4
	results of adding,												
	subtracting, multiplying,												
	and dividing a number of												
	numbers up to 1,000 and												
	0.												
8.	M1.1 Gr2/8 Shows how to		4			4	3				3		14
	find the answer to the 2-												
	step problem of numbers												
	up to 1000 and 0.												_
9.	M2.1 Gr2/1 Tell length in							7					7
	metres and centimetres,												
	and compare length by												
10	using the same unit.												
10.	M2.1 Gr2/2 Tell weight in			3									3
	kilogrammes and grammes,												
	and compare weight by												
	using the same unit.												
11.	M2.1 Gr2/3 Tell volume			2									2
	and capacity in litres,and												
	compare volume and												
10													
12.	M2.1 Gr2/4 Tell total				3								3
	amount of money from												
10					0								
13.	M2.1 Gr2/5 Tell the time				2								2
	on a clock dial (period of												
1.1	M2 1 Gr2/6 Tall the days								1				4
14.	manths and year from a								4				4
	calendar												
15	M2 2 Gr2/1 Solve									4			1
1.J.	problems involving									-+			+
	measurement of length												
	weight, volume and												
	money.												

No.	Indicators	Chapters											
INO.	indicators	1	2	3	4	5	6	7	8	9	10	11	total
16.	M3.1 Gr2/1 Identify two-											4	4
	dimensional geometric												
	figures whether in the												
	form of triangles,												
	quadrilaterals, circles or												
	ellipses												
	Total score	8	8	5	5	9	9	7	4	4	7	4	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course Code: M12101

Grade 2

Indicators		First	seme	ester		Second semester						Total
	1	2	3	4	5	6	7	8	9	10	11	
M 1.1 Gr. 2/1	1											1
M 1.1 Gr. 2/2	1											1
M 1.1 Gr. 2/3	1											1
M 1.1 Gr. 2/4		2										2
M 1.1 Gr. 2/5					2							2
M 1.1 Gr. 2/6						2						2
M 1.1 Gr. 2/7										2		2
M 1.1 Gr. 2/8		2			2	1				1		6
M 2.1 Gr. 2/1							3					3
M 2.1 Gr. 2/2			1									1
M 2.1 Gr. 2/3			1									1
M 2.1 Gr. 2/4				1								1
M 2.1 Gr. 2/5				1								1
M 2.1 Gr. 2/6								2				2
M 2.2 Gr. 2/1									2			2
M 3.1 Gr. 2/1											2	2
Total	3	4	2	2	4	3	3	2	2	3	2	20
			15			15						30

Table analysis indicators standard of Mathematics with the chapter

Course Code: M13101

Grade 3 (Semester: 1st)

Indicators	Chapters													
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
1.M1.1 Gr3/1 Write	2													2
and read Hindu-Arabic														
and Thai numerals and														
written forms showing														
quantity of objects or														
cardinal numbers not														
exceeding 100,000,														
and 0.														
2.M1.1 Gr3/2														2
Compare and	2													
arrange sequence of														
cardinal numbers														
not exceeding														
100,000, and 0.														
3.M1.1Gr3/3Telling,R														1
eading and Writing						1								
fraction as a number														
on the number line;														
represent fractions														
on a number line														
diagram.														
4.M1.1Gr3/4Compare														
two fractions with						1								1
the same numerator														
or the same														
denominator by														
reasoning about their														
size. Recognize that														
comparisons are														
valid only when the														
two fractions refer to														
the same whole.														
5. Solve for the		6												6
unknown in														
multiplication														
Indicators							Cha	apters	5					
-----------------------	---	---	---	---	---	---	-----	--------	---	----	----	----	----	-------
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
equations involving a														
one-digit number														
and a number up to														
four digits, or two-														
digit by two-digit														
numbers.														
6. solve for the							7							7
unknown in division														
equations with														
dividends up to four														
digits and one-digit														
divisors.														
7. M1.1 Gr3/7 Find								7						7
the value of the														
unknown in the														
division symbol														
sentence where the														
divisor is not more														
than 4 digits and the														
divisor is 1 digit.														
8. M1.1Gr3/8 finding													3	3
answer of addition,														
subtraction,														
multiplication and														
division of cardinal														
numbers not														
exceeding 100,000,														
and 0														
9. M1.1Gr3/9 Write													3	3
the solution to solve														
word problems in 2														
steps of cardinal														
numbers not exceeding														
100,000, and 0.														
10. M1.1Gr 3/10 Find						2								2
the answers of the														
addition and														

Indicators							Cha	apters	5					
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
subtraction of fractions														
as equivalent (equal)														
if they are the same														
size, or the same														
point on a number														
line.														
11. M1.1 Gr3/11						3								3
Write the solution to														
solve word problems														
of the addition and														
subtraction of														
fractions as														
equivalent (equal) if														
they are the same														
size, or the same														
point on a number														
line.														
12. M1.2Gr3/1 Tell	1													1
the numbers and														
relations in patterns														
of numbers that														
increases by 3s, 4s,														
25s and 50s, and														
decreases by 3s, 4s,														
5s, 25s and 50s and														
in repeated patterns.														
13. M2.1Gr3/1 Shows												4		4
how to find answers														
to money-related														
problems.														
14. M2.1Gr3/2 Write			4											4
the solution to solve														
word problems														
about the time														
15. M2.1Gr3/3									1					1
Choose the right														

Indicators	Chapters													
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
length meter,														
measure and tell.														
length of things in														
centimeters and														
millimeters meters														
and centimeters														
16. M2.1Gr3/4									1					1
Estimate length in														
meters and														
centimeters.														
17. M2.1Gr3/5									2					2
Compare the length														
between centimeters														
and millimeters.														
meter to centimeter														
kilometers to meters														
from various														
situations														
18. M2.1Gr3/6 Shows									3					3
how to find answers														
to length problems.														
with units of														
centimeters and														
millimeters Meters														
and Centimeters														
Kilometers and														
Meters														
19. M2.1Gr3/7										1				1
Choose the right														
balance Measure														
and tell the weight														
in kilograms and														
marks, kilograms and														
marks.														
20. M2.1Gr3/8										1				1
Estimated weight in														

Indicators							Cha	apter	5					
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
kilograms and in														
dashes.														
21. M2.1Gr3/9										2				2
Compare weight														
between kilograms														
and grams. Metric														
Tons to Kilograms														
from various														
situations														
22. M2.1Gr3/10										2				2
Shows how to find														
answers to weight														
problems. with units														
of kilograms and														
grams Metric Tons to														
Kilograms														
23. M2.1Gr3/11											1			1
Choose the right														
measuring device.														
measure and														
compare volumes														
Capacity in liters and														
milliliters														
24.M2.1Gr3/12											1			1
Estimate volume and														
capacity in liters.														
25. M2.1Gr3/13											3			3
Shows how to find														
solutions to volume														
and capacity														
problems in liters														
and milliliters.														
26. M2.2Gr3/1				3										3
Classify two-														
dimensional figures														
based on the														

Indicators							Cha	apters	5					
	1	2	3	4	5	6	7	8	9	10	11	12	13	total
presence or absence														
of Symmetrical axis														
27. M3.1Gr 3/1 Draw					2									2
and write a scaled														
picture graph and a														
scaled bar graph to														
represent a data set														
with several														
categories. Solve														
one- and two-step														
28. M3.1 Gr3/2 Write					1									1
the one way table														
from the number														
data and using one														
way table data to														
find the answer														
รวมคะแนนทั้งหมด	5	6	4	3	3	7	7	7	7	6	5	4	6	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course Code: M13101

Grade 3

							Uni	it Pla	ns					
Indicators			First	sem	ester				sec	ond :	seme	ster		Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
M 1.1 Gr. 3/1	1													1
M 1.1 Gr. 3/2	0.5													0.5
M 1.1 Gr. 3/3						0.5								0.5
M 1.1 Gr. 3/4						0.5								0.5
M 1.1 Gr. 3/5		1												1
M 1.1 Gr. 3/6							1							1
M 1.1 Gr. 3/7								1						1
M 1.1 Gr. 3/8		1					1	1					1.5	4.5
M 1.1 Gr. 3/9		1					1	1					1.5	4.5
M 1.1 Gr. 3/10						1								1
M 1.1 Gr. 3/11						1								1
M 1.2 Gr. 3/1	0.5													0.5
M 2.1 Gr. 3/1												2		2
M 2.1 Gr. 3/2			2											2
M 2.1 Gr. 3/3									1					1
M 2.1 Gr. 3/4														-
M 2.1 Gr. 3/5									1					1
M 2.1 Gr. 3/6									1					1
M 2.1 Gr. 3/7										0.5				0.5
M 2.1 Gr. 3/8														-
M 2.1 Gr. 3/9										0.5				0.5
M 2.1 Gr. 3/10										1				1
M 2.1 Gr. 3/11											1			1
M 2.1 Gr. 3/12														-
M 2.1 Gr. 3/13											1			1
M 2.2 Gr. 3/1				1										1
M 3.1 Gr. 3/1					0.5									0.5
M 3.1 Gr. 3/2					0.5									0.5
Tatal	2	3	2	1	1	3	3	3	3	2	2	2	3	20
rotal	15 15				50									

Table analysis indicators standard of Mathematics with the chapter

	Course Code: M14101									Grade	4	
							Chapt	er				
No.	Indicators	1	2	3	4	5	6	7	8	9	10	total
1.	M1.1 Gr4/1 Write and read	3										3
	Hindu-Arabic, Thai numerals											
	and the letters are showing											
	cardinal numbers greater											
	than 100,000.											
2.	M1.1Gr4/2 Compare and	3										3
	arrange sequence of cardinal											
	numbers greater than											
	100,000 from various											
	situations.											
3.	M1.1 Gr4/3 Describe, read						1					1
	and write fractions, mixed											
	numbers, showing quantity											
	and showing things according											
	fractions, mixed numbers											
	assigned.											
4.	M1.1 Gr4/4 Compare, arrange						2					2
	fractions and mixed numbers,											
	one denominator is multiple											
	of another.											
5.	M1.1 Gr4/5 read and writes							2				2
	decimal less than 3 positions											
	Showing quantity of things											
	and showing things according											
	decimal to assign.											
	M1.1 Gr4/6 Compare and							1				1
6.	arrange decimal less than 3											
	positions from various											
	situations.											
7.	M1.1 Gr4/7 estimated results		4	4								8
	of addition subtract,											
	multiplied, division from											
	various situations											

reasonably.

							Chapt	er				
No.	Indicators	1	2	3	4	5	6	7	8	9	10	total
8.	M1.1 Gr4/8 Find the value of		4									4
	the unknown in mathematical											
	statement showing addition											
	and mathematical											
	statement showing subtract											
	of cardinal numbers more											
	than 100,000 and 0											
9.	M1.1 Gr4/9 Find the value of			4								4
	the unknown in the											
	mathematical statement											
	showing multiplied multiples											
	digit 💩 Number with product											
	not exceeding 6 value and											
	mathematical statement											
	showing dividend not											
	exceeding 6											
10.	M1.1 Gr4/10 find result				2							2
	addition, subtract, multiplied,											
	mix addition of cardinal											
	numbers and 0	<u> </u>										
11.	M1.1 Gr4/11 showing how to				3							3
	find answers of word problems											
	2 steps of cardinal numbers											
	greater than 100,000 and 0	ļ										
12.	M1.1 Gr4/12 creating word				2							2
	problems 2 steps of cardinal											
	numbers and 0 with find											
	answers											
13.	M1.1 Gr4/13 Find sum,						2					2
	quotient of fraction and											
	mixed numbers that a											
	denominator is multiple of											
	each another.	ļ										
14.	M1.1 Gr4/14 Showing how to						3					3
	find answers of word											
	problems addition subtracts											

							Chapt	er				
No.	Indicators	1	2	3	4	5	6	7	8	9	10	total
	fraction and mixed numbers											
	that a denominator is											
	multiple of each another.											
15.	M1.1 Gr4/15 Find sum,							2				2
	subtract of fraction not											
	exceeding 3 positions.											
16.	M1.1 Gr4/16 Showing how to							3				3
	find Answers of word											
	problems addition, subtract 2											
	steps of word problems not											
	exceeding 3 positions.											
17.	M2.1 Gr4/2 Showing how to					6						6
	fine the answers of word											
	problems about time.											
18.	M2.1 Gr4/3 Measuring and											
	making angles by using											
	diagraph.											
19.	M2.2 Gr4/1 Showing how to									5		5
	find the answers of word											
	problems about perimeter											
	and area of rectangular.											
20.	M2.2 Gr4/1 Classify type of								3			3
	angles. Tell the name of angle,											
	component of angle											
	and write symbol showing angle.											
21.	M2.2 Gr4/2 Making rectangular									3		3
	when assigned length of side.											
22.	M3.1 Gr4/1 Using information										3	3
	from bar graph, two-way											
	table to find the answers											
	of word problems.											
	รวมคะแนนทั้งหมด	6	8	8	7	6	8	8	8	8	3	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course	Code	M14101
Course	Coue.	10114101

Grade 4

						Ur	nit Pla	ns			
Indicators		First	seme	ester		9	secon	d ser	neste	r	Total
	1	2	3	4	5	6	7	8	9	10	
M 1.1 Gr. 4/1	1										1
M 1.1 Gr. 4/2	1										1
M 1.1 Gr. 4/3						1					1
M 1.1 Gr. 4/4						1					1
M 1.1 Gr. 4/5							1				1
M 1.1 Gr. 4/6							1				1
M 1.1 Gr. 4/7		2	2								4
M 1.1 Gr. 4/8		2									2
M 1.1 Gr. 4/9			2								2
M 1.1 Gr. 4/10				2							2
M 1.1 Gr. 4/11				1							1
M 1.1 Gr. 4/12				1							1
M 1.1 Gr. 4/13						1					1
M 1.1 Gr. 4/14						1					1
M 1.1 Gr. 4/15							1				1
M 1.1 Gr. 4/16							1				1
M 2.1 Gr. 4/1					1						1
M 2.1 Gr. 4/2								2			2
M 2.1 Gr. 4/3									1		1
M 2.2 Gr. 4/1								2			2
M 2.2 Gr. 4/2									1		1
M 3.1 Gr. 4/1										1	1
Tatal	2	4	4	4	1	4	4	4	2	1	20
Total			15					15			30

Table analysis indicators standard of Mathematics with the chapterCourse Code: M15101Grade 5 Semester 1

No.	Indicators				(Chapte	er			
	indicators	1	2	3	4	5	6	7	8	total
1	M 1.1 Gr5/1 Write a fractional		2							2
	whose denominator is factors of									
	10 or 100 or 1,000 in decimal.									
2	M 1.1 Gr5/2 Show me how to				5					5
	find the answer to the problem									
	by using trilogy.									
3	M 1.1 Gr5/3 Find sums of the	5								5
	fractions and mixed numbers.									
4	M 1.1 Gr5/4 Find the product of	5								5
	the fractions and mixed									
	numbers.									
5	M 1.1 Gr5/5 Two steps to find	5								5
	the answer to the problem of									
	addition, subtraction,									
	multiplication, and division of									
	fractions.									
6	M 1.1 Gr5/6 Find the products		2							2
	of the decimal number whose									
	product is not more than 3									
	decimal places.									
7	M 1.1 Gr5/7 Find the quotient in		2							2
	which the numerator is a									
	number or decimal not more									
	than 3 positions and the divisor									
	is a number. The quotient is not									
	more than 3 decimal places.									
8	M 1.1 Gr5/8 Two steps on how		3							3
	to find solutions to problems of									
	addition, subtraction,									
	multiplication and division.									
9	M 1.1 Gr5/9 Show the methods in					5				5
	finding the answer of the problem									
	in percentages									

No.	Indicators	Chapter								
	Indicators	1	2	3	4	5	6	7	8	total
10	M 2.1 Gr5/1 Show how to find an answer to the problem of changing length and to decimal form.		3							3
11	M 2.1 Gr5/2		3							3
	Show how to find an answer to a problem by changing weight units into decimal form.									
12	M 2.1 Gr5/3 Types and properties of quadrilaterals.								5	5
13	M 2.1 Gr5/4 Diagonals of Quadrilaterals.							4		4
14	M 2.2 Gr5/1 Constructing Quadrilaterals.						5			5
15	M 2.2 Gr5/2 Types and properties of Quadrilaterals.							3		3
16	M 2.2 Gr5/3 Create different types of rectangles when determining the length of the side and the size of the corner or when determining the length of the diagonal.							3		3
17	M 2.2 Gr5/4 Tell the characteristics of prism.								5	5
18	M 3.1 Gr5/1 Use the information from the graph to find the answer to the problem.			2						2
19	M 3.1 Gr5/2 Write a bar chart from a given data.			3						3
	รวมคะแนนทั้งหมด	15	15	5	5	5	5	10	10	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course Code: M15101

Grade 5	5
---------	---

	Unit Plans										
Indicators	Firs	t seme	ster		Total						
	1	2	3	4	5	6	7	8	Totat		
M 1.1 Gr. 5/1		1							1		
M 1.1 Gr. 5/2				3					3		
M 1.1 Gr. 5/3	2								2		
M 1.1 Gr. 5/4	2								2		
M 1.1 Gr. 5/5	2								2		
M 1.1 Gr. 5/6		1							1		
M 1.1 Gr. 5/7		1							1		
M 1.1 Gr. 5/8		1							1		
M 1.1 Gr. 5/9					3				3		
M 2.1 Gr. 5/1		1							1		
M 2.1 Gr. 5/2		1							1		
M 2.1 Gr. 5/3								2	2		
M 2.1 Gr. 5/4							1		1		
M 2.2 Gr. 5/1						3			3		
M 2.2 Gr. 5/2							1		1		
M 2.2 Gr. 5/3							1		1		
M 2.2 Gr. 5/4								1	1		
M 3.1 Gr. 5/1			3						3		
M 3.1 Gr. 5/2									-		
Total -	6	6	3	3	3	3	3	3	20		
		15				15			30		

Table analysis indicators standard of Mathematics with the chapter Course Code: M16101

Grade 6

No		Chapter										
110.	indicators	1	2	3	4	5	6	7	8	9	10	total
1.	M1.1 Gr6/1 Compare and arrange sequence of fractions.		2									2
2.	M1.1 Gr6/2 Write decimals in the form of fractions and write fraction in form of decimal.				1							1
3.	M1.1 Gr6/3 Write decimals in the form of fractions and write fraction in form of decimal.				1							1
4.	M1.1 Gr6/4 Write and read Hindu Arabic and Thai numerals and written forms showing cardinal numbers, 0, fractions, and one- place decimals.	3										3
5.	M1.1 Gr6/5 Write and read fractions, mixed numbers and decimals with not more than 2 places.	3										3
6.	M1.1 Gr6/6 Analyse and show method of finding answers to problems G.C.D. And L.C.M	3										3
7.	M1.1 Gr6/7 Specify or give examples and compare added integral numbers, subtracted integral numbers, 0, fractions and decimals.		3									3
8.	M1.1 Gr6/8 Write fractions in the form of decimals and write circulating decimals in form of fractions.		3									3

No						(Chap	ter				
	indicators	1	2	3	4	5	6	7	8	9	10	total
9.	M1.1 Gr6/9 Explain and specify square roots and cube roots of real numbers.			3								3
10.	M1.1 Gr6/10 Show relationships of various numbers in the real number system.			4								4
11.	M1.1 Gr6/11 Have concepts of absolute values of real numbers.				3							3
12.	M1.1 Gr6/12 Have concepts of real numbers expressed in exponential notation with rational indices, and real numbers expressed in radicals.				3							3
13.	M1.2 Gr6/1 Add, subtract and mix addition, subtraction, multiplication and division of fractions, mixed numbers and decimals, as well as be aware of validity of the answers.					3						3
14	M 2.1 Gr6/1 Demonstrate methods for solving word problems involving the volume of three- dimensional shapes composed of rectangular prisms.									4		4
15	M 2.1 Gr6/2 Demonstrate methods for solving word problems involving the perimeter and area of polygons							6				6
16	M 2.1 Gr6/3 Demonstrate methods for solving word problems involving the circumference and area of circles.								7			7
17	M 2.2 Gr6/1 Classify triangles based on their properties.						3					3

No	la disatara	Chapter										
INO.	b. Indicators		2	3	4	5	6	7	8	9	10	total
18	M 2.2 Gr6/2 Construct triangles						4					4
	given the lengths of sides and											
	measures of angles.											
19	M 2.2 Gr6/3 Describe characteristics									3		3
	of various three-dimensional											
	geometric shapes.											
20	M 2.2 Gr6/4 Identify three-									3		3
	dimensional shapes from nets and											
	identify nets corresponding to											
	three-dimensional shapes.											
21	M 1.2 Gr6/1 Interpret data from pie										5	5
	charts to solve word problems.											
	รวมคะแนนทั้งหมด	9	8	7	8	3	7	6	7	10	5	70

Table analysis indicators standard of Mathematics with the unit plan (end the academic year)

Course Code: M16101

Grade 6

	Unit Plans												
Indicators		First	seme	ester		0,	Secon	nd Ser	neste	er	Total		
	1	2	3	4	5	6	7	8	9	10			
M 1.1 Gr. 6/1		1									1		
M 1.1 Gr. 6/2				0.5							0.5		
M 1.1 Gr. 6/3				0.5							0.5		
M 1.1 Gr. 6/4	1										1		
M 1.1 Gr. 6/5	1										1		
M 1.1 Gr. 6/6	1										1		
M 1.1 Gr. 6/7		1									1		
M 1.1 Gr. 6/8		2									2		
M 1.1 Gr. 6/9			1								1		
M 1.1 Gr. 6/10			2								2		
M 1.1 Gr. 6/11				1							1		
M 1.1 Gr. 6/12				1							1		
M 1.2 Gr. 6/1					2						2		
M 2.1 Gr. 6/1									1		1		
M 2.1 Gr. 6/2							3				3		
M 2.1 Gr. 6/3								3			3		
M 2.2 Gr. 6/1						1.5					1.5		
M 2.2 Gr. 6/2						1.5					1.5		
M 2.2 Gr. 6/3									1		1		
M 2.2 Gr. 6/4									2		2		
M 3.1 Gr. 6/1										2	2		
Tatal	3	4	3	3	2	3	3	3	4	2	20		
Ιοται			15					15			30		

Grade 1 Unit Design Framework

Content: Cardinal number 1-10 and 0	Time: 18 hours
Mathematics (M11101)	

Standard 1: Number and Algebra

Standard M1.1:Understand the variety of display numbers systems Operation of the number the result of the operation Treasures of action and to apply.

Grade level indicators

M 1.1 Gr1/1 Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

M 1.1 Gr1/2 Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > < .

M 1.1 Gr1/3 Arrange Number sequence not exceeding 100 and o from 3 to 5 number.

Learning Objective

Students will be taught to:

1.Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

2. Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > < .

3. Arrange Number sequence not exceeding 100 and $_{\rm o}$ from 3 to 5 number.

Learning Outcomes

Students will be able to:

- 1. The number of things that represent things by a certain amount.
- 2. Write and read Hindu-Arabic and Thai numerals not exceeding 100, and 0.
- 3. Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > < .
- 4. Arrange Number sequence not exceeding 100 and o from 3 to 5 number.

Learning Areas

- Count numbers 1 count each and 10 count each
- Write and read Hindu-Arabic and Thai numerals showing quantity quantity the number of cardinal.
- Showing number sequence not exceeding 20 Display Count not exceeding 20 The relationship of a number of small parts (part whole relationship)
- Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > <
- Arrange Number sequence

Teaching and Learning Activities

Students will be able to:

1. Students view the picture and tell the number of things that represent things by a certain amount. Write and read Hindu-Arabic and Thai numerals showing the quantity of objects or cardinal numbers not exceeding 100, and 0.

2. Students compare of cardinal numbers not exceeding 100, and 0. Using = \neq > <.

3. Students do a worksheet about arranging Number sequence not exceeding 100 and o from 3 to 5 number.

4. Students do about test unit number sequence 1 to 10 and 0.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. 1. Worksheet on Stating	- Able to identify and state the	- Observing pictures and stating
Quantities of Objects	number of objects according to	the quantity of objects shown.
	the given quantity.	- Practicing reading and writing
	- Able to read and write Hindu-	Hindu-Arabic and Thai numerals
	Arabic and Thai numerals to	to represent numbers not
	represent counting numbers not	exceeding 100 and 0.
	exceeding 100 and 0.	
2. Worksheet on Comparing	- Able to compare counting	- Practicing comparison of
Counting Numbers Not	numbers not exceeding 100 and 0	numbers using = \neq > <.
Exceeding 100 and 0 Using	using the symbols = \neq > <.	- Completing a worksheet on
Symbols (= ≠ > <)		ordering 3 to 5 counting numbers
		not exceeding 100 and 0.

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities			
3. Worksheet on Ordering	- Able to correctly order 3 to 5	- Completing a unit test on			
Counting Numbers Not	counting numbers not exceeding	the topic: "Counting Numbers			
Exceeding 100 and 0 (from	100 and 0.	from 1 to 10 and 0."			
3 to 5 numbers)					

Assessment Includes:

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria								
Assessment				Needs					
ltem	excellent (4)	Good (3)	Fair (2)	Improvement					
				(1)					
1. Stating	Student can	Student can	Student can	Student can					
Quantities of	state the	state the	state the	state the					
Objects	quantities and	quantities and	quantities and	quantities and					
Students are	read/write Hindu-	read/write Hindu-	read/write Hindu-	read/write Hindu-					
able to can	Arabic and Thai	Arabic and Thai	Arabic and Thai	Arabic and Thai					
identify and state	numerals from 1	numerals from 1	numerals from 1	numerals from 1					
the quantity of	to 10 and 0 with	to 10 and 0 with	to 10 and 0 with	to 10 and 0 with					
objects as	80% accuracy or	70%–79%	60%–69%	less than 60%					
specified, and	higher.	accuracy.	accuracy.	accuracy.					
read/write Hindu-									
Arabic and Thai									
numerals from 1									
to 10 and 0.									
2. Comparing	Student can	Student can	Student can	Student can					
Numbers	compare	compare	compare	compare					
Students	numbers from 1	numbers from 1	numbers from 1	numbers from 1					
compare	to 10 and 0 using	to 10 and 0 using	to 10 and 0 using	to 10 and 0 using					
counting	= ≠ > < with 80%	$= \neq > <$ with	$= \neq > <$ with	$= \neq > <$ with less					
numbers from 1	accuracy or	70%–79%	60%–69%	than 60%					
to 10 and 0 using	higher.	accuracy.	accuracy.	accuracy.					
symbols = ≠ > <.									

		Assessment Criteria									
Assessment				Needs							
ltem	excellent (4)	Good (3)	Fair (2)	Improvement							
				(1)							
3. Ordering	Student can	Student can	Student can	Student can							
Numbers	correctly order 3	correctly order 3	correctly order 3	correctly order 3							
Students order	to 5 numbers	to 5 numbers	to 5 numbers	to 5 numbers							
counting	from 1 to 10 and	from 1 to 10 and	from 1 to 10 and	from 1 to 10 and							
numbers from 1	0 with 80%	0 with 70%–79%	0 with 60%–69%	0 with less than							
to 10 and 0	accuracy or	accuracy.	accuracy.	60% accuracy.							
(from 3 to 5	higher.										
numbers).											

Chapter 2	2
-----------	---

Mathematics (M11101)	
Content: Addition of the verticals does not exceed to 10	Time: 15 hours

Standard 1: Number and Algebra

Standard M1.1:Understand the variety of display numbers systems, the operation of the numbers, the result of the operation, the treasures of action and to apply.

Grade level indicators

M1.1 Gr1/4 Look for the value of the unknown variable in the sentence. The addition indicator and the symbol of the subtraction number of the count should not exceed 100 and 0.

M1.1 Gr1/5 Shows you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count should not exceed 100 and 0.

Learning Objective

Students will be taught to :

1. Look for the value of the unknown variable in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Show you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count should not exceed 100 and 0.

Learning Outcomes

Students will be able to:

1. Look for the value of the unknown value in the sentence.

2. The addition indicator and the symbol of the subtraction number of the count should not exceed 100 and 0.

3. Show you how to find the answers to the problem of addition

4. find the answers to the problem of subtraction of the count not exceed 100 and 0.

Learning Areas

- The meaning of the addition and subtraction, the result of the addition and subtraction and the relation of addition and subtraction.
- Solving problems of addition and subtraction. And create solutions together to come up with an answer.

Teaching and Learning Activities

1. Students should practice looking for the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count should not exceed 100 and 0.

2. Students should practice showing how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceeding 100 and 0.

3. Students do the test unit. Addition of the two numbers are not exceeding to 10.

Emphasized Skills:

1. Thinking skill

2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria / Indicators	Learning Activities
Responsibility		
1. Worksheet on Finding the	– Able to find the value of	– Practice finding the value of
Value of Unknowns in	unknowns in symbolic addition	unknowns in addition and
Addition and Subtraction	and subtraction equations	subtraction equations with
Equations (with numbers	involving numbers not exceeding	numbers not exceeding 100
not exceeding 100 and 0)	100 and 0.	and 0.
2. Worksheet on Showing	– Able to show the process of	– Practice showing the steps
the Solution Process for	solving addition and subtraction	in solving addition and
Addition and Subtraction	word problems involving numbers	subtraction word problems
Word Problems (within 100	not exceeding 100 and 0.	involving numbers not
and 0)		exceeding 100 and 0.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

		Assessment Criteria		
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement
				(1)
1. Finding the	Student can find	Student can	Student can	Student can
Value of Unknowns	the value of	solve such	solve such	solve such
in Addition	unknowns in	equations with	equations with	equations with
Equations with a	addition	70%–79%	60%–69%	less than 60%
	equations with	accuracy.	accuracy.	accuracy.

	Assessment Criteria			
Assassment Itom				Needs
Assessment item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
Sum Not Exceeding	sums not			
10	exceeding 10			
	with 80%			
	accuracy or			
	higher.			
2. Showing the	Student can	Student can	Student can	Student shows
Process of Solving	clearly show the	show the process	show the process	the process with
Addition Word	process of	with 70%–79%	with 60%–69%	less than 60%
Problems (Sum Not	solving word	accuracy.	accuracy.	accuracy.
Exceeding 10)	problems with			
	sums not			
	exceeding 10			
	with 80%			
	accuracy or			
	higher.			

Mathematics (M11101)	
Content: Subtraction of the verticals does not exceed to 10	Time: 16 hours

Standard 1: Number and Algebra

Standard M1.1:Understand the variety of display numbers number systems, the operation of the numbers, the result of the operation, the treasures of action and to apply.

Grade level indicators

M1.1 Gr1/4 Look for the value of the unknown variable in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceeding 100 and 0.

M1.1 Gr1/5 Shows you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceeding 100 and 0.

Learning Objective

Students will be taught to :

1. Understanding the Meaning of Addition and Subtraction, Calculating Sums and Differences, and Recognizing the Relationship Between Addition and Subtraction.

2. Solving Addition and Subtraction Word Problems, Creating Word Problems, and Determining the Correct Answers.

Learning Outcomes

Students will be able to:

1. Find the value of the unknown in a number sentence.

2. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

3. Show you how to find the answers to the problem of addition

4. Find the answers to the problem of subtraction of the count not exceed 100 and 0.

Learning Areas

- The meaning of the addition and subtraction, the result of the addition and subtraction and the relation of addition and subtraction.
- Solving problems of addition and subtraction. And create solutions together to come up with an answer.

Teaching and Learning Activities

1. Students to practice look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Students do worksheet; show how to find the answers of word problems addition and word problems subtraction of the count not exceed 100 and 0.

3. Students do about test unit subtracting the vertically numbers are not exceeding to 10.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Finding the	– Able to find the value of	– Practice finding the value of
Value of an Unknown in	unknowns in symbolic addition	unknowns in addition and
Addition and Subtraction	and subtraction equations	subtraction equations with
Number Sentences	involving numbers not exceeding	numbers not exceeding 100
Involving Whole Numbers	100 and 0.	and 0.
up to 100 and 0.		
2. Worksheet on Showing	– Able to show the process of	– Practice Completing
Methods for Solving	solving addition and subtraction	Worksheets Demonstrating
Addition and Subtraction	word problems involving numbers	Methods to Solve Addition
Word Problems Involving	not exceeding 100 and 0.	and Subtraction Word
Numbers up to 100 and 0.		Problems Involving Numbers
		up to 100 and Zero
		- Taking Unit Tests on
		Subtraction in Minuends Not
		Exceeding 10

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Finding the	Student can find	Student can	Student can	Student can
Value of Unknowns	the value of	solve such	solve such	solve such
in Addition	unknowns in	equations with	equations with	equations with
Equations with a	addition	70%–79%	60%–69%	less than 60%
Sum Not Exceeding	equations sums	accuracy.	accuracy.	accuracy.
10	not exceeding			
	10 with 80%			
	accuracy or			
	higher.			

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
2. Showing the	Student can	Student can	Student can	Student shows
Process of Solving	clearly show the	show the process	show the process	the process with
Addition Word	process of	with 70%–79%	with 60%–69%	less than 60%
Problems (Sum Not	solving word	accuracy.	accuracy.	accuracy.
Exceeding 10)	problems with			
	sums not			
	exceeding 10			
	with 80%			
	accuracy or			
	higher.			

Strand 1: Number and Algebra

Standard M1.1:Understand the variety of display numbers number systems, the operation of the number, the result of the operation, the treasures of action and to apply.

Grade level indicators

M 1.1 Gr1/1 Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

M 1.1 Gr1/2 Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > <.

M 1.1 Gr1/3 Arrange Number sequence not exceeding 100 and $_{\circ}$ from 3 to 5 number.

Learning Objective

Students will be taught to:

1. Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

2. Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > <.

3. Arrange Number sequence not exceeding 100 and $_{\circ}$ from 3 to 5 number.

Learning Outcomes

Students will be able to:

1. Write and read Hindu-Arabic and Thai numerals showing the quantity of objects or cardinal numbers not exceeding 100, and 0.

2. Compare cardinal numbers not exceeding 100, and 0. Using the = \neq > <.

3. Arrange Number sequence not exceeding 100 and $_{\circ}$ from 3 to 5 number.

Learning Areas

- 1. Counting by 1s and by 10s
- 2. Reading and writing Hindu-Arabic numerals and Thai numerals to represent quantities
- 3. Representing quantities using Thai numerals
- 4. Representing counting numbers up to 20 using part-whole relationships
- 5. Identifying ordinal positions
- 6. Place the value of digits in each position and writing numbers in expanded form
- 7. Comparing numbers using the symbols =, \neq , >, <
- 8. Arranging numbers

Teaching and Learning Activities

1. Students to practice write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

- 2. Students to practice compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > <.
 - 3. Students to practice arrange Number sequence not exceeding 100 and o from 3 to 5 number.
 - 4. Students do about test unit cardinal number 11-20.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Counting	– Able to count objects	- Practice counting objects
Objects to Represent	representing given quantities, and	representing given quantities;
Quantities, Reading and	read and write Hindu-Arabic and	reading and writing Hindu-
Writing Hindu-Arabic and	Thai numerals for whole numbers	Arabic and Thai numerals for
Thai Numerals for Whole	up to 100 and 0.	whole numbers up to 100 and
Numbers up to 100 and 0.		0.
2. Worksheet on Comparing	– Able to compare whole	- Practice comparing whole
Whole Numbers up to 100	numbers up to 100 and zero	numbers up to 100 and zero
and Zero Using the Symbols	using the symbols =, \neq , >, <.	using the symbols =, \neq , >, <.
=, ≠, >, <		
3. Worksheet on Ordering	- Able to order whole numbers	- Practice ordering whole
Whole Numbers up to 100	up to 100 and zero, arranging	numbers up to 100 and zero,
and Zero, Arranging from 3	from 3 to 5 numbers.	arranging from 3 to 5
to 5 Numbers.		numbers.
		- Conducting a unit test on
		whole numbers from 11 to
		20.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Item	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Count objects representing given quantities; read and write Hindu- Arabic and Thai numerals for whole numbers from 11 to 20.	Students will be able to count objects representing given quantities, and read and write Hindu- Arabic and Thai numerals for whole numbers from 11 to 20 with 80% accuracy or bigber	Students will be able to count objects representing given quantities, and read and write Hindu- Arabic and Thai numerals for whole numbers from 11 to 20 with 70%–79% accuracy.	Students will be able to count objects representing given quantities, and read and write Hindu- Arabic and Thai numerals for whole numbers from 11 to 20 with 60%–69% accuracy.	Students will be able to count objects representing given quantities, and read and write Hindu- Arabic and Thai numerals for whole numbers from 11 to 20 with less than 60% accuracy.
2. Compare whole numbers from 11 to 20 using the symbols =, ≠, >, <.	Students will be able to compare whole numbers from 11 to 20 using the symbols =, ≠, >, and < with 80% accuracy or higher.	Students will be able to compare whole numbers from 11 to 20 using the symbols =, \neq , >, and < with 70%– 79% accuracy.	Students will be able to compare whole numbers from 11 to 20 using the symbols =, \neq , >, and < with 60%– 69% accuracy.	Students will be able to compare whole numbers from 11 to 20 using the symbols =, \neq , >, and < with less than 60% accuracy.
3. Arrange whole numbers from 11 to 20, arranging from 3 to 5 numbers.	Students will be able to order whole numbers from 11 to 20, arranging between 3 to 5 numbers with 80% accuracy or higher.	Students will be able to order whole numbers from 11 to 20, arranging between 3 to 5 numbers with 70%–79% accuracy	Students will be able to order whole numbers from 11 to 20, arranging between 3 to 5 numbers with 60%–69% accuracy.	Students will be able to order whole numbers from 11 to 20, arranging between 3 to 5 numbers with less than 60% accuracy.

Mathematics (M11101) Content: Addition and subtraction of the count not exceed 20. Time: 19 hours

Strand 1: Number and Algebra

Standard M1.1: Understand the variety of display numbers number systems, the operation of the number, the result of the operation, the treasures of action and To apply.

Grade level indicators

M1.1 Gr1/4 Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

M1.1 Gr1/5 Arrange Number sequence not exceeding 100 and o from 3 to 5 number.

Learning Objective

Students will be taught to :

1. The meaning of addition, the meaning of subtraction, finding sums, finding differences, and the relationship between addition and subtraction.

2. Solving addition and subtraction word problems, as well as creating word problems.

Learning Outcomes

Students will be able to:

1.Understand the meaning of addition, the meaning of subtraction, finding sums, finding differences, and the relationship between addition and subtraction.

2. Solve addition and subtraction word problems, as well as create word problems.

Learning Areas

1. Understand the meaning of addition and subtraction, find sums and differences, and recognize the relationship between addition and subtraction.

2. Solving addition and subtraction word problems, as well as creating word problems.

Teaching and Learning Activities

1. Students to practice the meaning of the addition and subtraction the result of the addition and subtraction and relation of addition and subtraction.

2. Students to practice solving problems of addition and subtraction. And create solving problems together with to come up with an answer.

3. Students do about test unit addition and subtraction number of the count not exceed 20.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Besponsibility	Assessment Criteria / Indicators	Learning Activities
1 Workshoot on Finding the	Able to find the value of an	Practico finding the value of
		- Flactice finding the value of
Value of an Unknown in	unknown in addition and	an unknown in addition and
Addition and Subtraction	subtraction number sentences	subtraction number sentences
Number Sentences	involving whole numbers up to	involving whole numbers up
Involving Whole Numbers	100 and 0.	to 100 and 0.
up to 100 and 0.		
2. Worksheet on Showing	– Able to demonstrate methods	- Practice demonstrating
Methods for Solving	for solving addition and	methods for solving addition
Addition and Subtraction	subtraction word problems	and subtraction word
Word Problems Involving	involving numbers up to 100 and	problems involving numbers
Numbers up to 100 and 0.	0.	up to 100 and 0.
		- Conducting a unit test on
		addition and subtraction of
		whole numbers not
		exceeding 20.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Finding the	Students will be	Students will be	Students will be	Students will be
value of an	able to find the	able to find the	able to find the	able to find the
unknown in	value of an	value of an	value of an	value of an
addition and	unknown in	unknown in	unknown in	unknown in
subtraction	addition and	addition and	addition and	addition and
number sentences	subtraction	subtraction	subtraction	subtraction
	number	number	number	number

	Assessment Criteria			
				Needs
Assessment Item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
involving numbers	sentences	sentences	sentences	sentences
not exceeding 20.	involving	involving	involving	involving
	numbers not	numbers not	numbers not	numbers not
	exceeding 20	exceeding 20	exceeding 20	exceeding 20
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
2. Demonstrate	Students will be	Students will be	Students will be	Students will be
methods for	able to	able to	able to	able to
solving addition	demonstrate	demonstrate	demonstrate	demonstrate
and subtraction	methods for	methods for	methods for	methods for
word problems	solving addition	solving addition	solving addition	solving addition
involving numbers	and subtraction	and subtraction	and subtraction	and subtraction
not exceeding 20.	word problems	word problems	word problems	word problems
	involving	involving	involving	involving
	numbers not	numbers not	numbers not	numbers not
	exceeding 20	exceeding 20	exceeding 20	exceeding 20
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			

Standard 3: Statistics and Probability

Standard M3.1: Understand statistical processes and use statistical knowledge to solve the problem.

Grade level indicators

M3.1 Gr1/1: Use the data from the picture chart to find out the problem. When 1 image is defined, replace 1 unit.

Learning Objective

Students will be taught to :

1. Use the data from the picture chart to find out the problem. When 1 image is defined, replace 1 unit.

Learning Outcomes

Students will be able to:

- 1. Use the data from the picture chart to find out the word problem.
- 2. 1 image is defined, replace 1 unit.

Learning Areas

• Read pictograms.

Teaching and Learning Activities

1. Students practice to use the data from the picture chart to find out the problem. When 1 image is defined, replace 1 unit.

2. Students do about test unit The picture chart.

Emphasized Skills:

- 1. Communication skills
- 2. Thinking skill
- 3. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Besponsibility	Assessment Criteria / Indicators	Learning Activities	
Responsibility			
1. Worksheet on Using Data	– Use data from pictogram charts	- Practice using data from	
from Pictogram Charts to	to solve word problems where	pictogram charts to find	
Solve Word Problems When	one picture represents one unit.	answers to word problems	
One Picture Represents One		with one picture representing	
Unit		one unit.	
		- Conduct a unit test on	
		pictogram charts.	

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Item			F : (0)	Needs
	excellent (4)	GOOD (3)	Fair (2)	Improvement
				(1)
1. Use data from	Students will be	Students will be	Students will be	Students will be
pictogram charts to	able to use data	able to use data	able to use data	able to use data
	from pictogram	from pictogram	from pictogram	from pictogram
solve word	charts to find	charts to find the	charts to find the	charts to find the
problems when	the answers to	answers to word	answers to word	answers to word
one picture	word problems	problems when	problems when	problems when
represents one	when one	one picture	one picture	one picture
	picture	represents one	represents one	represents one
unit.	represents one	unit with 70%–	unit with 60%–	unit with less
	unit with 80%	79% accuracy.	69% accuracy.	than 60%
	accuracy or			accuracy.
	higher.			
Content: The weight

Strand 2: Measurement And Geometry

Standard M2.1: Basic understanding of measurement Measuring and estimating the size of the measure and apply.

Grade level indicators

M2.1 Gr1/2 Measure and compare the weight in kilograms to gram.

Learning Objective

Students will be taught to :

1. Measure and compare the weight in kilograms to gram.

Learning Outcomes

Students will be able to:

- 1. Measure the weight in kilograms to gram.
- 2. Compare the weight in kilograms to gram.

Learning Areas

- Weight measurement units using non-standard units.
- Measuring weight in kilograms and grams.
- Weight comparison in kilograms to grams.
- Problem solving addition and subtraction about weight in kilograms to grams.

Teaching and Learning Activities

- 1. Students practice to measure and compare the weight in kilograms to grams.
- 2. Students do about test unit The weight.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Measuring	– Able to measure and compare	- Practice measuring and
and Comparing Weights in	weights in kilograms and grams.	comparing weights in
Kilograms and Grams.		kilograms and grams.
		- Conduct a unit test on
		weight measurement.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

		Assessme	ent Criteria	
Assassment Itom				Needs
Assessment item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Measuring and	Students will be	Students will be	Students will be	Students will be
Comparing Weights	able to measure	able to measure	able to measure	able to measure
in Kilograms and	and compare	and compare	and compare	and compare
Grams.	weights in	weights in	weights in	weights in
	kilograms and	kilograms and	kilograms and	kilograms and
	grams with 80%	grams with 70%–	grams with 60%–	grams with less
	accuracy or	79% accuracy.	69% accuracy.	than 60%
	higher.			accuracy.

Strand 2: Measurement And Geometry

Standard M2.2: Solving measurement problems

Grade level indicators

Describe the positions of objects using positional words, indicate the location of objects

according to their given order, and apply the knowledge of ordinal numbers.

Learning Objective

Students will be taught to :

1. Describe the positions of objects using positional words, indicate the location of objects

according to their given order, and apply the knowledge of ordinal numbers.

Learning Outcomes

Students will be able to:

1. Describe the positions of objects using positional words, indicate the location of objects

according to their given order, and apply the knowledge of ordinal numbers.

Learning Areas

Identifying ordinal numbers

Teaching and Learning Activities

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on describing	– Able to identify the position of	- Practice telling the position
the Position of Objects.	objects.	of objects using positional
		words.
2. Worksheet on Identifying	– Able to identify the order of	- Practice telling the ordinal
the Order of Objects	objects.	numbers of objects
3.Worksheet on telling	– Able to show objects according	- Practice showing objects
Ordinal Numbers of Objects	to their position and order.	according to their position
		and ordinal number
		- Unit test on the topic of
		position and order

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

		Assessment Criteria		
A second and litera				Needs
Assessment item	Excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Identify the	Students will	Students will be	Students will be	Students will be
position of	be able to	able to identify	able to identify	able to identify
objects.	identify the	the position of	the position of	the position of
	position of	objects with	objects with	objects with less
	objects with	70%–79%	60%–69%	than 60%
	80% accuracy	accuracy.	accuracy.	accuracy.
	or higher.			
2. Identify the	Students will	Students will be	Students will be	Students will be
order of objects.	be able to	able to identify	able to identify	able to identify
	identify the	the order of	the order of	the order of
	order of	objects with	objects with	objects with less
	objects with	70%–79%	60%-69%	than 60%
	80% accuracy	accuracy.	accuracy.	accuracy.
	or higher.			

	Assessment Criteria			
Assessment Item	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
3. Show objects	Students will	Students will be	Students will be	Students will be
according to their	be able to	able to show	able to show	able to show
position and	show objects	objects	objects	objects
order.	according to	according to	according to	according to
	their position	their position	their position	their position
	and order with	and order with	and order with	and order with
	80% accuracy	70%–79%	60%–69%	less than 60%
	or higher.	accuracy.	accuracy.	accuracy.

Mathematics (M11101)

Strand 1: Numbers and Operations

Standard M1.2: Understanding results of operations of numbers, relationships of operations, and application of operations for problem-solving.

Strand 2: Measurement And Geometry

Standard M2.2: Understanding and analyzing geometric patterns The Treasure of geometry is the relationship between geometric shapes and geometric theorem and applied.

Grade level indicators

M1.2 Gr1/1 Specifies the number that is missing in the form of a number increases or decreases by 1 and 10 and identify the missing image in a repeating pattern of the geometry and other images where each of the repeating series members has 2 images.

M2.2 Gr1/1 Distinguish triangles, squares, circles, sphere, cylinder, and cones.

Learning Objective

Students will be taught to :

- 1. Distinguish triangles, Rectangle, sphere, cylinder, and cones.
- 2. Distinguish squares, circles and oval.
- 3. Other images where each of the repeating series.
- 4. Creating a pattern of geometric figures.

Learning Outcomes

Students will be able to:

- 1. Distinguish triangles, Rectangle, sphere, cylinder, and cones.
- 2. Distinguish squares, circles and oval.
- 3. Other images where each of the repeating series.
- 4. Creating a pattern of geometric figures.

Learning Areas

- Distinguish triangles, Rectangle, sphere, cylinder, and cones.
- Distinguish squares, circles and oval.
- Other images where each of the repeating series.

Teaching and Learning Activities

- 1. Students practice to distinguish triangles, Rectangle, sphere, cylinder, and cones.
- 2. Students tell the things that surround the components of a rectangular shape, a cylindrical sphere, or a cone.
 - 3. Students tell the distinguish squares, circles and oval.
 - 4. Students practice to creating a pattern of geometric figures.
 - 5. Students do about test unit geometry

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Classifying	– Able to classify rectangular	- Practice classifying
Rectangular Prisms, Spheres,	prisms, spheres, cylinders, and	rectangular prisms, spheres,
Cylinders, and Cones	cones.	cylinders, and cones.
2. Worksheet on Classifying	– Able to classify triangles,	- Practice classifying triangles,
Triangles, Quadrilaterals,	quadrilaterals, circles, and ovals.	quadrilaterals, circles, and
Circles, and Ovals		ovals.
3. Worksheet on Repeating	– Able to complete repeating	- Practice completing
Patterns of Geometric	patterns of geometric shapes and	repeating patterns of
Shapes and Other Figures	other figures.	geometric shapes and other
		figures.
4.Worksheet on Creating	– Able to create repeating	- Practice creating repeating
Repeating Patterns of	patterns of geometric shapes and	patterns of geometric shapes
Geometric Shapes and	other figures.	and other figures.
Other Figures		- Conduct a unit test on
		geometric shapes.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

		Assessme	ent Criteria	
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
 Classify rectangular prisms, spheres, cylinders, and cones. Classify triangles, guadrilatorals 	Students will be able to classify rectangular prisms, spheres, cylinders, and cones with 80% accuracy or higher. Students will be	Students will be able to classify rectangular prisms, spheres, cylinders, and cones with 70%– 79% accuracy. Students will be	Students will be able to classify rectangular prisms, spheres, cylinders, and cones with 60%– 69% accuracy. Students will be	Students will be able to classify rectangular prisms, spheres, cylinders, and cones with less than 60% accuracy. Students will be
quadrilaterals, circles, and ovals.	able to classify triangles, quadrilaterals, circles, and ovals with 80% accuracy or higher.	able to classify triangles, quadrilaterals, circles, and ovals with 70%–79% accuracy.	able to classify triangles, quadrilaterals, circles, and ovals with 60%–69% accuracy.	able to classify triangles, quadrilaterals, circles, and ovals with less than 60% accuracy.
3. Complete repeating patterns of geometric shapes and other figures.	Students will be able to complete repeating patterns of geometric shapes and other figures from given tasks with 80% accuracy or higher.	Students will be able to complete repeating patterns of geometric shapes and other figures from given tasks with 70%–79% accuracy.	Students will be able to complete repeating patterns of geometric shapes and other figures from given tasks with 60%–69% accuracy.	Students will be able to complete repeating patterns of geometric shapes and other figures from given tasks with less than 60% accuracy.
4. Create repeating patterns of geometric shapes and other figures.	Students will be able to create repeating patterns of geometric shapes and	Students will be able to create repeating patterns of geometric shapes and other figures	Students will be able to create repeating patterns of geometric shapes and other figures	Students will be able to create repeating patterns of geometric shapes and other figures

Assessment Criteria				
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement
				(1)
	other figures	with 70%–79%	with 60%–69%	with less than
	with 80%	accuracy.	accuracy.	60% accuracy.
	accuracy or			
	higher.			

Mathematics (M11101)	
Content: Cardinal number 21-100	Time: 17 hours

Strand 1: Number and Algebra

Standard M1.1:Understand the variety of display numbers number systems Operation of the number The result of the operation Treasures of action and to apply.

Grade level indicators

M1.1 Gr1/1 Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers not exceeding 100, and 0.

M1.1 Gr1/2 Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > < .

M1.1 Gr1/3 Arrange Number sequence not exceeding 100 and \circ from 3 to 5 number. by 1 and 10

Learning Objective

Students will be taught to :

1. A number of things and shows things in a given number 21 to 100.

2. Write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers 21-100.

3. Compare and Arrange Number 21-100.

Learning Outcomes

Students will be able to:

1. Number of things and shows things in a given number 21 to 100.

2. Write Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers 21-100.

3. Read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers 21-100.

4. Compare Number 21-100.

5. Arrange Number 21-100.

Learning Areas

- Counts each 1 and each 10
- Read Hindu-Arabic and Thai numerals showing quantity of objects.
- Display Count not exceeding 20 The relationship of a number of small parts (part whole relationship)
- giving information counting number.

- The digit value of the numbered digits in each digit and the writing number represents the number in the scatter figure.
- Compare of cardinal numbers not exceeding 100, and 0. Using the = \neq > <
- Arrange Number sequence.

Teaching and Learning Activities

1. Students practice to number of things and shows things in a given number 21 to 100.

2. Students practice to write and read Hindu-Arabic and Thai numerals showing quantity of objects or cardinal numbers 21-100.

- 3. Students practice to compare and Arrange Number 21-100.
- 4. Students practice to the pattern of increases or decreases by 1 and 10.
- 5. Students practice to said the number of missing in a given pattern.
- 6. Students do about test unit Cardinal number 21-100

Emphasized Skills:

- 1. Thinking skill
- 2. Communication skills

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria /	Learning Activities
Responsibility	Indicators	Learning Activities
1. Worksheet on Counting	– Able to count objects and	- Practice counting objects and
Objects and Representing	represent them according to	representing them according to
Them According to Given	given quantities from 21 to	given quantities from 1 to 100.
Quantities from 21 to 100.	100.	
2. Worksheet on Reading	– Able to read and write	– Practice reading and writing
and Writing Hindu-Arabic.	Hindu-Arabic numerals, Thai	Hindu-Arabic numerals, Thai
Numerals, Thai Numerals,	numerals, and number words	numerals, and number words from
and Number Words from	from 21 to 100.	21 to 100.
21 to 100.		
3. Worksheet on	– Able to compare and order	- Practice comparing and ordering
Comparing and Ordering	whole numbers from 21 to	whole numbers from 21 to 100.
Whole Numbers from 21	100.	- Practice describing patterns that
to 100.		increase or decrease
4. Patterns of Numbers.	Number patterns increasing	- Practice identifying missing
	or decreasing by 1 and by 10.	numbers in given patterns.
		- Conduct a unit test on whole
		numbers from 21 to 100.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
				Needs
Assessment item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Count objects	Students will be	Students will be	Students will be	Students will be
and represent	able to count	able to count	able to count	able to count
them according to	objects and	objects and	objects and	objects and
given quantities	represent them	represent them	represent them	represent them
from 21 to 100.	according to	according to	according to	according to
	given quantities	given quantities	given quantities	given quantities
	from 21 to 100	from 21 to 100	from 21 to 100	from 21 to 100
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
2. Read and write	Students will be	Students will be	Students will be	Students will be
Hindu-Arabic	able to read	able to read and	able to read and	able to read and
numerals, Thai	and write Hindu-	write Hindu-	write Hindu-	write Hindu-
numerals, and	Arabic numerals,	Arabic numerals,	Arabic numerals,	Arabic numerals,
number words	Thai numerals,	Thai numerals,	Thai numerals,	Thai numerals,
from 21 to 100.	and number	and number	and number	and number
	words from 21	words from 21 to	words from 21 to	words from 21 to
	to 100 with 80%	100 with 70%–	100 with 60%–	100 with less
	accuracy or	79% accuracy.	69% accuracy.	than 60%
	higher.			accuracy.
3. Compare and	Students will be	Students will be	Students will be	Students will be
order whole	able to	able to compare	able to compare	able to compare
numbers from 21	compare and	and order whole	and order whole	and order whole
to 100.	order whole	numbers from 21	numbers from 21	numbers from 21
	numbers from	to 100 with 70%–	to 100 with 60%–	to 100 with less
	21 to 100 with	79% accuracy.	69% accuracy.	than 60%
	80% accuracy or			accuracy.
	higher.			

Strand 2: Measurement And Geometry

Standard M2.1:Basic understanding of measurement Measuring and estimating the size of the measure and apply.

Grade level indicators

M2.1 Gr1/1 Measure and compare lengths in centimeters to meters.

Learning Objective

Students will be taught to :

1. Compare the lengths that are longer than shorter than the shortest length shorter than equal highest shortest.

2. Measure and compare lengths in centimeters to meters.

Learning Outcomes

Students will be able to:

1. Compare the lengths that are longer than shorter than the shortest length shorter than equal highest shortest

2. Measure and compare lengths in centimeters to meters.

Learning Areas

- Measuring the length using non-standard units.
- Measuring length in centimeters to meters.

Teaching and Learning Activities

- 1. Students practice comparing the lengths of things directly using the corresponding items.
- 2. Students practice measuring the lengths of things using non-standard.
- 3. Students practice measure and compare lengths in centimeters to meters.
- 4. Students do about test unit length measurement

Emphasized Skills:

- 1. Communication skills
- 2. Thinking skills
- 3. Problem-solving skills
- 4. Life skills

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Comparing	– Able to compare lengths using	– Practice comparing the
Lengths.	terms such as longer than, shorter	lengths of objects by directly
	than, taller than, shorter than,	comparing them.
	equal to, longest, shortest, tallest,	
	and shortest.	
2. Worksheet on Measuring	– Able to Measure and compare	– Practice measuring the
and Comparing Lengths in	lengths using units of centimeters	lengths of objects using non-
Centimeters and Meters.	and meters.	standard units.
		- Practice measuring and
		comparing lengths using
		centimeters and meters.
		- Conduct a unit test on
		length measurement.

Workpiece and Task Responsibilities

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Item	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Compare lengths	Students will be	Students will be	Students will be	Students will be
using terms such as	able to	able to compare	able to compare	able to compare
longer than,	compare	lengths using	lengths using	lengths using
shorter than, taller	lengths using	terms such as	terms such as	terms such as
than, shorter than,	terms such as	longer than,	longer than,	longer than,
equal to, longest,	longer than,	shorter than,	shorter than,	shorter than,
shortest, tallest,	shorter than,	taller than,	taller than,	taller than,
and shortest.	taller than,	shorter than,	shorter than,	shorter than,
	shorter than,	equal to, longest,	equal to, longest,	equal to, longest,
	equal to,	shortest, tallest,	shortest, tallest,	shortest, tallest,
	longest,	and shortest with	and shortest with	and shortest with

		Assessment Criteria		
Assessment Item	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
	shortest, tallest,	70%–79%	60%–69%	less than 60%
	and shortest	accuracy.	accuracy.	accuracy.
	with 80%			
	accuracy or			
	higher.			
2. Measure and	Students will be	Students will be	Students will be	Students will be
compare lengths	able to measure	able to measure	able to measure	able to measure
using centimeters	and compare	and compare	and compare	and compare
and meters.	lengths using	lengths using	lengths using	lengths using
	centimeters and	centimeters and	centimeters and	centimeters and
	meters with	meters with	meters with	meters with less
	80% accuracy or	70%–79%	60%–69%	than 60%
	higher.	accuracy.	accuracy.	accuracy.

Content: Subtraction two numbers are not exceeding to 100.	Time: 12 hours
Mathematics (M11101)	

Strand 1: Number and Algebra

Standard M1.1: Understand the diversity of number representations, number systems, operations on numbers, the results of operations, properties of operations, and their applications.

Grade level indicators

M1.1 Gr1/4 Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Objective

Students will be taught to :

1. Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Outcomes

Students will be able to:

1. Look for the value of the unknown value in the sentence.

2. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Areas

- The meaning of the addition and subtraction the result of the addition and subtraction and relation of addition and subtraction.
- Solving problems of addition and subtraction. And create solving problems together with to come up with an answer.

Teaching and Learning Activities

1. Students practice look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Students practice shows you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

3. Students do about test unit subtraction two numbers are not exceeding to 100.

Emphasized Skills:

- 1. Life skills
- 2. Thinking skill
- 3. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria (Indiantera		
Responsibility	Assessment Criteria / Indicators	Learning Activities	
1. Worksheet on finding the	– Able to find the value of	– Practice finding the value of	
value of unknowns in	unknowns in addition and	unknowns in addition and	
addition and subtraction	subtraction symbolic sentences	subtraction symbolic	
symbolic sentences	involving whole numbers up to	sentences involving whole	
involving whole numbers	100 and 0.	numbers up to 100 and 0.	
up to 100 and 0.			
2. Worksheet on showing	– Able to find the value of	- Practice demonstrating	
methods to find solutions	unknowns in addition and	methods to find solutions for	
for addition and subtraction	subtraction symbolic sentences	addition and subtraction	
word problems involving	involving whole numbers up to	word problems involving	
whole numbers up to 100	100 and 0.	whole numbers up to 100	
and 0.		and 0.	
		- Take a unit test on addition	
		with sums not exceeding 10.	

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Associate and Itam				Needs
Assessment item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Find the value of	Students will be	Students will be	Students will be	Students will be
the unknown in	able to find the	able to find the	able to find the	able to find the
addition symbolic	value of the	value of the	value of the	value of the
sentences involving	unknown in	unknown in	unknown in	unknown in
whole numbers up	addition	addition	addition	addition
to 100.	symbolic	symbolic	symbolic	symbolic
	sentences	sentences	sentences	sentences
	involving whole	involving whole	involving whole	involving whole
	numbers up to	numbers up to	numbers up to	numbers up to
	100 with 80%	100 with 70%–	100 with 60%–	100 with less
	accuracy or	79% accuracy.	69% accuracy.	than 60%
	higher.			accuracy.

Mathematics (M11101)

Content: Subtraction two numbers are not exceeding to 100.

Time: 16 hours

Strand 1: Number and Algebra

Standard M1.1:Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M1.1 Gr1/4 Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Objective

Students will be taught to :

1. Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Outcomes

Students will be able to:

1. Look for the value of the unknown value in the sentence.

2. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

Learning Areas

- The meaning of the addition and subtraction the result of the addition and subtraction and relation of addition and subtraction.
- Solving problems of addition and subtraction. And create solving problems together with to come up with an answer.

Teaching and Learning Activities

1. Students practice look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Students practice shows you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

3. Students do about test unit subtraction two numbers are not exceeding to 100.

Emphasized Skills:

- 1. Life skills
- 2. Thinking skill
- 3. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Finding the	– Able to find the value of the	- Practice finding the value of
Value of Unknowns in	unknown in addition and	unknowns in addition and
Addition and Subtraction	subtraction symbolic sentences	subtraction symbolic
Sentences Involving Whole	involving whole numbers up to	sentences involving whole
Numbers up to 100 and 0.	100 and 0.	numbers up to 100 and 0.
2. Worksheet on Showing	– Able to show methods for	- Practice demonstrating
Methods for Solving	solving addition and subtraction	methods for solving addition
Addition and Subtraction	word problems involving whole	and subtraction word
Word Problems Involving	numbers up to 100 and 0.	problems involving whole
Whole Numbers up to 100		numbers up to 100 and 0.
and 0.		- Take a unit test on
		subtraction involving whole
		numbers up to 100.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1 Finding the	Student can find	Student can find	Student can find	Student can find
1. Finding the	the value of the	the value of the	the value of the	the value of the
	unknown in	unknown in	unknown in	unknown in
	subtraction	subtraction	subtraction	subtraction
soptopsos whore	sentences	sentences where	sentences where	sentences where
sentences where	where the	the minuend	the minuend	the minuend

		Assessment Criteria		
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
the minuend does	minuend does	does not exceed	does not exceed	does not exceed
not exceed 100.	not exceed 100	100 with 70%–	100 with 60%–	100 with less
	with 80%	79% accuracy.	69% accuracy.	than 60%
	accuracy or			accuracy.
	higher.			

Mathematics (M11101) Content: Word problem of Addition and subtraction Time: 18 hours

Strand 1: Number and Algebra

Standard M1.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M1.1 Gr1/4 Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

M1.1 Gr1/5 Show you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

Learning Objective

Students will be taught to :

1. Look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Show you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

Learning Outcomes

Students will be able to:

1. Look for the value of the unknown value in the sentence.

2. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

3. Show you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

Learning Areas

- The meaning of the addition and subtraction the result of the addition and subtraction and relation of addition and subtraction.
- Solving problems of addition and subtraction. And create solving problems together with to come up with an answer.

Teaching and Learning Activities

1. Students practice look for the value of the unknown value in the sentence. The addition indicator and the symbol of the subtraction number of the count not exceed 100 and 0.

2. Students practice shows you how to find the answers to the problem of addition and find the answers to the problem of subtraction of the count not exceed 100 and 0.

3. Students do about test unit word problem of Addition and subtraction.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria / Indicators	Learning Activities	
Responsibility		5	
1. Worksheet on Finding the	– Able to find the value of	– Practice finding the value of	
Value of Unknowns in	unknowns in addition and	unknowns in addition and	
Addition and Subtraction	subtraction sentences involving	subtraction sentences	
Sentences Involving Whole	whole numbers up to 100 and 0.	involving whole numbers up	
Numbers up to 100 and 0.		to 100 and 0.	
2Worksheet on	– Able to demonstrate methods	- Practice demonstrating	
Demonstrating Methods for	for solving addition and	methods for solving addition	
Solving Addition and	subtraction word problems	and subtraction word	
Subtraction Word Problems	involving whole numbers up to	problems involving whole	
Involving Whole Numbers	100 and 0.	numbers up to 100 and 0.	
up to 100 and 0.		- Take a unit test on addition	
		and subtraction word	
		problems.	

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
				Needs
Assessment item	excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Finding the	Students will be	Students will be	Students will be	Students will be
value of the	able to find the	able to find the	able to find the	able to find the
unknown in	value of the	value of the	value of the	value of the
addition and	unknown in	unknown in	unknown in	unknown in
subtraction	addition and	addition and	addition and	addition and
sentences involving	subtraction	subtraction	subtraction	subtraction
whole numbers up	sentences	sentences	sentences	sentences
to 100.	involving whole	involving whole	involving whole	involving whole
	numbers up to	numbers up to	numbers up to	numbers up to
	100 with 80%	100 with 70%–	100 with 60%–	100 with less
	accuracy or	79% accuracy.	69% accuracy.	than 60%
	higher.			accuracy.
2. Demonstrate	Students will be	Students will be	Students will be	Students will be
methods for	able to	able to	able to	able to
solving addition	demonstrate	demonstrate	demonstrate	demonstrate
and subtraction	methods for	methods for	methods for	methods for
word problems	solving addition	solving addition	solving addition	solving addition
involving whole	and subtraction	and subtraction	and subtraction	and subtraction
numbers up to	word problems	word problems	word problems	word problems
100.	involving whole	involving whole	involving whole	involving whole
	numbers up to	numbers up to	numbers up to	numbers up to
	100 with 80%	100 with 70%–	100 with 60%–	100 with less
	accuracy or	79% accuracy.	69% accuracy.	than 60%
	higher.			accuracy.

Grade 2 Unit Design Framework

Mathematics (M12101)

Content: Numbers up to 1,000

Strand 1: Numbers and Operations

Standard M1.1:Understanding of diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr2/1 Write and read Hindu-Arabic and Thai numerals and written forms showing quantity of objects or cardinal numbers not exceeding 1,000, and 0.

M1.1 Gr2/2 Compare and arrange sequence of cardinal numbers not exceeding 1,000, and 0.

M1.1 Gr2/3 Sort numbers up to 1,000 and 0 from 3 to 5 numbers from various situations.

Learning Objective

Students will be taught to :

1.Counting by 2s, 5s, 10s, and 100s

2.Reading and writing Hindu-Arabic numerals, Thai numerals, and number words

3.Even and odd numbers

4.Place value, the value of each digit, and expanded form of numbers

5.Comparing and ordering numbers

6.Number patterns that increase or decrease by 2s, 5s, or 100s

Learning Outcomes

Students will be able to:

- 1. Count, read and write numbers up to 1,000 in Arabic numerals.
- 2. Identify place value and value of each digit in a number.
- 3. Write numbers in expanded form.
- 4. Compare and order numbers up to 1,000.
- 5. Count forward and count backward by 1s, 2s, 5s and 100s.
- 6. Extend number sequence.
- 7. Complete missing terms in given number sequences.
- 8. Use ordinal numbers to name position.

Learning Areas

- Counting up to 1,000
- Reading and writing numbers
- Place values of digits
- Writing numbers in expended form
- Comparing and ordering numbers
- Number patterns when counting forward and backward
- Using numbers to name positions

Teaching and Learning Activities

- 1. Get a lot of marbles or sticks for students to count.
- 2. Guide them on how to count up to 1,000, in hundreds, tens and ones.
- 3. Test students' memory on spelling numbers from 0 to 20. They need to memorize them and this

includes the word 'hundred' and 'thousand'.

4. Write a three-digit number on the board and explain the place values of each digit and its value.

Emphasize that even a zero in a number has a place value.

5. For this section, students need to be good at place value. It is better for them to present a number

with a place value table first before writing it in expanded form. Try a few numbers with them and remember to have numbers with zero.

6. Remind students of the signs of comparison and the terms used in comparison such as 'greater

than', 'more than', 'less than', 'smaller than', 'equal' and 'not equal to'.

7. Emphasize to students to first compare the number of digits when comparing two numbers before

comparing the values of the leftmost digits. Use an abacus to ease your explanation.

8. Remind students the meanings of ascending and descending.

9. Guide students to count forward and backward by ones, fives, tens and hundreds.

10. Guide them on how to analyze a number pattern by comparing every two consecutive numbers.

11. Explain how we use ordinal numbers.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill

Workpiece / Task Responsibility

Workpiece / Task	Assessment Criteria / Indicators	Learning Activities
1. Worksneet on counting	- Accurately count objects by 2s	- Learn now to count and
by 2s, 5s, 10s, and 100s	(e.g., 2, 4, 6, 8, 10, 12) or by 5s	determine quantities by
	(e.g., 5, 10, 15, 20, 25) as	grouping in 2s or 5s. Practice
	specified by the given criteria.	with number sequences such as
		2, 4, 6 and 5, 10, 15
2. Worksheet on reading	- Accurately read and write	- Learn to read and write
and writing Hindu-Arabic	numbers in Hindu-Arabic	numbers in different formats:
numerals, Thai numerals,	numerals, Thai numerals, and	Hindu-Arabic, Thai numerals,
and number words	number words as specified by the	and number words.
	criteria.	
3. Worksheet on even and	- Correctly identify even and odd	- Learn to distinguish between
odd numbers	numbers according to the given	even and odd numbers.
	criteria.	
4. Worksheet on place	- Identify the place and value of	- Learn about place value and
value, value of digits, and	each digit and correctly express	the value of digits in each
expanded form	numbers in expanded form by	place. Practice writing numbers
	adding the values of each digit	in expanded form using the
	according to the specified criteria.	sum of values of each digit.
5. Worksheet on	- Correctly compare two numbers	- Learn how to compare two
comparing and ordering	using the terms "equal to,"	numbers using terms and
numbers	"greater than," or "less than," and	symbols (=, >, <).
	the symbols =, >, < according to	- Learn how to order numbers
	the criteria.	by first identifying the greatest
	- Accurately order numbers by	and smallest numbers, then
	identifying the greatest and	arranging them from least to
	smallest values, then arranging	greatest or greatest to least.
	them in ascending or descending	
	order.	
6. Worksheet on number	- Correctly identify number	- Learn about number patterns
patterns increasing or	patterns increasing by 2, 5, or 100	that increase by 2, 5, or 100,
decreasing by 2s, 5s, or	where numbers follow a	and identify sequences with
100s	consistent and continuous	consistent progression.
	pattern.	- Learn about number patterns
	- Correctly identify number	that decrease by 2, 5, or 100,
	patterns decreasing by 2, 5, or 100	and identify sequences with
	where numbers follow a	consistent regression.

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
	consistent and continuous pattern.	

Assessment Components

- 1. Achieve a score of at least 60%.
- 2. Achieve a minimum performance level of 2 or above.
- 3. Achieve a minimum performance level of 2 or above.

Assessment	Excellent (4)	Good (3)	Fair (2)	Needs
Criteria				Improvement (1)
1. Counting	Student can count	Student can count	Student can	Student can count
by 2s, 5s, 10s,	objects by 2s (2, 4,	objects by 2s (2, 4,	count objects	objects by 2s (2,
and 100s	6, 8, 10, 12) or 5s	6, 8, 10, 12) or 5s	by 2s (2, 4, 6, 8,	4, 6, 8, 10, 12) or
	(5, 10, 15, 20, 25)	(5, 10, 15, 20, 25)	10, 12) or 5s	5s (5, 10, 15, 20,
	with 80% accuracy	with 70–79%	(5, 10, 15, 20,	25) with less
	or more.	accuracy.	25) with 60–	than 60%
			69% accuracy.	accuracy.
2. Reading	Student can	Student can	Student can	Student can
and Writing	accurately read and	accurately read	accurately read	accurately read
Hindu-Arabic	write numbers in	and write numbers	and write	and write
numerals,	Hindu-Arabic	in Hindu-Arabic	numbers in	numbers in Hindu-
Thai	numerals, Thai	numerals, Thai	Hindu-Arabic	Arabic numerals,
numerals,	numerals, or	numerals, or	numerals, Thai	Thai numerals, or
and number	number words with	number words with	numerals, or	number words
words	80% or more.	70–79% accuracy.	number words	with less than
			with 60–69%	60% accuracy.
			accuracy.	
3. Identifying	Student can	Student can	Student can	Student can
Even and	correctly identify	correctly identify	correctly	correctly identify
Odd	even and odd	even and odd	identify even	even and odd
Numbers	numbers with 80%	numbers with 70–	and odd	numbers with less
	or more.	79% accuracy.	numbers with	than 60%
			60–69%	accuracy.
			accuracy.	

Assessment	Excellent (4)	Good (3)	Fair (2)	Needs
Criteria				Improvement (1)
4. Place	Student can	Student can	Student can	Student can
Value, Value	identify the place	identify the place	identify the	identify the place
of Digits, and	and value of digits,	and value of digits,	place and value	and value of
Expanded	and express	and express	of digits, and	digits, and express
Form	numbers in	numbers in	express	numbers in
	expanded form	expanded form	numbers in	expanded form
	(sum of digit values)	(sum of digit	expanded form	(sum of digit
	with 80% or more.	values) with 70–	(sum of digit	values) with less
		79% accuracy.	values) with 60–	than 60%
			69% accuracy.	accuracy.
5. Comparing	Student can	Student can	Student can	Student can
and Ordering	compare two	compare two	compare two	compare two
Numbers	numbers using	numbers using	numbers using	numbers using
	"equal to",	"equal to",	"equal to",	"equal to",
	"greater than",	"greater than",	"greater than",	"greater than",
	"less than" and	"less than" and	"less than" and	"less than" and
	symbols (=, <, >),	symbols (=, <, >),	symbols (=, <,	symbols (=, <, >),
	and correctly order	and correctly order	>), and correctly	and correctly
	numbers from	numbers from	order numbers	order numbers
	greatest to least or	greatest to least or	from greatest to	from greatest to
	least to greatest	least to greatest	least or least to	least or least to
	with 80% or more.	with 70–79%	greatest with	greatest with less
		accuracy.	60–69%	than 60%
			accuracy.	accuracy.
6. Number	Student can	Student can	Student can	Student can
Patterns	identify number	identify number	identify number	identify number
(Increasing or	patterns that	patterns that	patterns that	patterns that
Decreasing by	increase or	increase or	increase or	increase or
2s, 5s, 100s)	decrease by 2, 5, or	decrease by 2, 5, or	decrease by 2,	decrease by 2, 5,
	100 in a consistent	100 in a consistent	5, or 100 in a	or 100 in a
	sequence with 80%	sequence with 70–	consistent	consistent
	or more.	79% accuracy.	sequence with	sequence with
			60–69%	less than 60%
			accuracy.	accuracy.

Mathematics (M12101)

Content: Addition and Subtraction within 1,000

Strand 1: Numbers and Operations

Standard M1.1:Understanding of diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr2/4 Find the value of the unknown in the addition and subtraction statements of numbers up to 1000 and 0.

M1.1 Gr2/8 Shows how to find the answer to the 2-step problem of numbers up to 1000 and 0.

Learning Objective

Students will be taught to :

- 1. Perform addition of numbers within 1000.
- 2. Perform subtraction of numbers within 1000.
- 3. Perform computations involving addition and subtraction to solve word problems.

Learning Outcomes

Students will be able to:

- 1. Add up two numbers without regrouping and with regrouping.
- 2. Add up three numbers.
- 3. Subtract without regrouping and with regrouping.
- 4. Relate the relationship between addition and subtraction.
- 5. Solve problems involving addition and subtraction within 100

Learning Areas

- 1. Addition within 1,000
- 2. Subtraction within 1,000
- 3. Using subtraction to solve word problems

Time: 24 hours

Teaching and Learning Activities

1. Remind students what addition means.

2. Guide students to add without grouping using the standard written method. Emphasize that they should add up digits of the same place values.

3. Write a few additions without regrouping questions on the board for students to solve. Discuss with them.

4. Guide students to add with regrouping using the standard written method.

5. Write a few addition questions on the board and get a few students to answer them. Guide them on how to verify of the answers.

6. Remind students of the meaning of subtraction.

7. Write a few subtraction questions on the board and get a few students to answers them. Discuss the answers with them. Guide them to verify the answers.

8. Explain the relationship between addition and subtraction and how we use this relationship to check for accuracy.

9. Explain how to solve word problems.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria / Indicators	Learning Activities	
Responsibility	Assessment entena / indicators		
1.Worksheet on	- Find the sum in addition	- Learn how to add two numbers	
Addition of Numbers	sentences involving numbers up	using number lines, hundred charts,	
up to 1,000	to 1,000.	tens charts, and unit charts.	
	- Accurately find the value of	- Practice column addition.	
	unknowns in addition sentences	- Understand the commutative	
	with numbers up to 1,000,	property of addition (changing the	
	according to the specified criteria.	order does not change the sum).	
		- Practice addition of three	
		numbers.	
2. Worksheet on	- Find the difference in subtraction	- Learn how to subtract two	
Subtraction of	sentences involving numbers up to	numbers using number lines,	
Numbers up to 1,000 1,000.		hundred charts, tens charts, and	
	- Accurately find the value of	unit charts.	
	unknowns in subtraction sentences	- Understand that the difference	

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities	
	with numbers up to 1,000, according to the specified criteria.	plus the subtrahend equals the minuend.	
		- Practice column subtraction with two and three numbers.	
3. Worksheet on	- Accurately find the value of	- Learn the relationship between	
Solving and Creating	unknowns in both addition and	addition and subtraction.	
Word Problems	subtraction sentences involving	- Find unknown values in addition	
	numbers up to 1,000, according to	and subtraction sentences.	
	the criteria.	- Solve word problems and practice	
	- Show appropriate methods to	creating addition and subtraction	
	solve both addition and	word problems.	
	subtraction word problems.		
	- Correctly create word problems		
	involving addition and subtraction,		
	according to the criteria.		

Assessment Components

- 1. Students must score at least 60%.
- 2. Students must achieve a performance level of 2 or higher.
- 3. Students must achieve a performance level of 2 or higher.

Assessment Criteria and Performance Levels

Assessment	Excellent (4)	Good (3)	Fair (2)	Needs
Criteria				Improvement
				(1)
1. Finding the	The student can	The student can	The student can	The student
unknown value in	find the unknown	find the	find the	can find the
addition sentences	value in addition	unknown value	unknown value	unknown value
(within 1,000 and 0)	sentences involving	in addition	in addition	in addition
	whole numbers up	sentences	sentences	sentences
	to 1,000 and 0 with	involving whole	involving whole	involving whole
	80% accuracy or	numbers up to	numbers up to	numbers up to
	more.	1,000 and 0 with	1,000 and 0 with	1,000 and 0
		70–79%	60–69%	with less than
		accuracy.	accuracy.	60% accuracy.

Assessment	Excellent (4)	Good (3)	Fair (2)	Needs
Criteria				Improvement
				(1)
2. Finding the	The student can	The student can	The student can	The student
unknown value in	find the unknown	find the	find the	can find the
subtraction	value in	unknown value	unknown value	unknown value
sentences (within	subtraction	in subtraction	in subtraction	in subtraction
1,000 and 0)	sentences involving	sentences	sentences	sentences
	whole numbers up	involving whole	involving whole	involving whole
	to 1,000 and 0 with	numbers up to	numbers up to	numbers up to
	80% accuracy or	1,000 and 0 with	1,000 and 0 with	1,000 and 0
	more.	70–79%	60–69%	with less than
		accuracy.	accuracy.	60% accuracy.
3. Showing the	The student can	The student can	The student can	The student
solution steps in	clearly show the	clearly show the	clearly show the	can clearly
addition and	steps to solve	steps to solve	steps to solve	show the steps
subtraction word	addition and	addition and	addition and	to solve
problems	subtraction word	subtraction	subtraction	addition and
	problems involving	word problems	word problems	subtraction
	whole numbers up	involving whole	involving whole	word problems
	to 1,000 and 0 with	numbers up to	numbers up to	involving whole
	80% accuracy or	1,000 and 0with	1,000 and Owith	numbers up to
	more.	70–79%	60–69%	1,000 and Owith
		accuracy.	accuracy.	less than 60%
				accuracy.

Mathematics (M12101)

Strand 2: Measurement

Standard M 2.1 Basic understanding of measurement Measuring and estimating the size of the measure and apply.

Grade level indicators

M2.1 Gr2/2 Tell length in metres and centimetres, and compare length by using the same unit.

M2.1 Gr2/3 Tell volume and capacity in litres, and compare volume and capacity.

Learning Objective

Students will be taught to :

- 1. Measure and compare lengths using standard units.
- 2. Solve word problems involving length.

Learning Outcomes

Students will be able to:

- 1. Measure and record lengths of objects in meters and centimeters.
- 2. Know the relationship between meters and centimeters.
- 3. Read scales to the nearest division.
- 4. Measure and record distances of two points in meters and centimeters.
- 5. Compare lengths of objects in meters and centimeters.
- 6. Solve words problems involving length.

Learning Areas

- Measuring length in meters and centimeters
- Measuring distance
- Comparing length
- Solving word problems involving length

Teaching and Learning Activities

1. Briefly explain what length is.

2. Show students some standard measuring tools such as meter rulers, rulers, measuring tapes and metal measuring tapes.

3. Show them how long a meter and a centimeter are.

4. Introduce to students the relationship between meter and centimeter, and the abbreviations of these units. Explain the differences between length and height too.

5. Using some big items such as windows and cupboards in the class, ask students to measure their lengths using standard measuring tools in meters.

6. Using some small items such as books and pencils in the class, ask students to measure their lengths using standard measuring tools in centimeters.

7. Guide students on how to compare different lengths. Which is longer? Which is shorter? You may compare the heights of two students.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Assignment / Task Assessment Criteria		Learning Activities
1. Worksheet:	- Accurately identify the	- Measure the length or height of
Measuring Length in	length or height of objects in	various objects and distances between
Meters and	meters, centimeters, or a	two points. Measure along a given path
Centimeters	combination of both as per	in meters, centimeters, or both.
	the defined criteria.	
2. Worksheet:	- Estimate the length or	- Estimate the length or height in
Estimating Length in	height in meters accurately	meters by comparing with a reference
Meters	according to specified	length of 1 meter without using
	criteria.	measuring tools.
3. Worksheet:	- Accurately compare the	- Compare lengths of two objects in
Comparing Lengths	lengths of two objects in	meters and centimeters. If the meter
Using the Relationship	meters and centimeters	values are equal,compare the
Between Meters and	according to the defined	centimeter values. When units differ,
Centimeters	criteria.	convert to the same unit before
		comparison.
4. Worksheet: Solving	- Correctly show the solution	- Find the sum or difference of lengths
Word Problems	steps for word problems	given in meters and centimeters.
Involving Lengths in	involving lengths in meters	

Assignment / Task	Assessment Criteria	Learning Activities
Meters and	and centimeters as per the	
Centimeters	criteria.	

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Workpiece and Task Responsibilities

Assessment	Excellent (4)	Good (3)	Fair (2)	Needs
Criteria				Improvement (1)
 Measuring and stating length in meters and centimeters Estimating length in meters 	The student can measure and state length in meters and cms. with 80%accuracy or above. The student can estimate length in meters with 80% accuracy or	The student can measure and state length in meters and cms with 70%–79% accuracy. The student can estimate length in meters with 70%–79%	The student can measure and state length in meters and cms. with 60%–69% accuracy. The student can estimate length in meters with 60%–69%	The student can measure and state length in meters and cms. with less than 60% accuracy. The student can estimate length in meters with less
3. Comparing lengths using the relationship between meters and centimeters	above. The student can compare lengths using the relationship between meters and centimeters with 80% accuracy or above. The student can	accuracy. The student can compare lengths using the relationship between meters and centimeters with 70%–79% accuracy.	accuracy. The student can compare lengths using the relationship between meters and centimeters with 60%–69% accuracy.	than 60% accuracy. The student can compare lengths using the relationship between meters and centimeters with less than 60% accuracy.
4. Snowing methods to solve word problems involving length in meters and centimeters	show methods to solve word problems involving length in meters and centimeters with 80% accuracy or above.	show methods to solve word problems involving length in meters and centimeters with 70%–79% accuracy.	show methods to solve word problems involving length in meters and centimeters with 60%–69% accuracy.	The student can show methods to solve word problems involving length in meters and centimeters with less than 60% accuracy.
Content: weight measurement Time: 16 hours

Strand 2: Measurement and Geometry

Mathematics (M12101)

Understanding the Basics of Measurement, Estimating and Measuring Quantities, and Applying Them in Real-Life Contexts

Indicators:

M2.1 P.2/4: Measure and compare weights using kilograms and grams, as well as kilograms and hectograms (100-gram units).

M2.1 P.2/5: Demonstrate methods for solving addition and subtraction word problems involving weight measurements in kilograms and grams, and kilograms and hectograms.

Learning Objective

Students will be taught to :

- 1. Measuring weight in kilograms and grams
- 2. Estimating weight in kilograms
- 3. Comparing weights using the relationship between kilograms and grams
- 4. Solving word problems involving weight measured in kilograms and grams

Learning Areas

The weight of objects can be expressed in grams (g), kilograms and hectograms, or kilograms and grams.

Weight unit relationships:

1 kilogram (kg) = 10 hectograms (hg)

1 hectogram (hg) = 100 grams (g)

1 kilogram (kg) = 1,000 grams (g)

When comparing weights in kilograms and grams or kilograms and hectograms, the object with a greater number of kilograms is heavier. If the kilograms are equal, the one with more grams or hectograms is heavier.

To compare weights with different units, convert them to the same unit before comparing. To add or subtract weights measured in kilograms and grams or kilograms and hectograms, first convert all weights to the same unit and then perform the operation.

To solve word problems, follow these steps: Read and understand the problem. Plan how to solve it. Find the answer. Check the reasonableness of the result.

Teaching and Learning Activities

1. Guide students on how to add two 3-digit numbers.

- 2. Guide students to add three 3-digit numbers.
- 3. Guide students to find the unknown numbers in number sentences.
- 4. Using the word problem to guide students on how to solve it.

5. Write a number sentence involving addition on the board and ask students to create some word problems on it.

6. Guide students to subtract a number from a 3-digit number. Emphasize that subtraction must start with the ones, follow by the tens and lastly the hundreds.

7. Guide students to use addition to check the accuracy of answers from subtraction operations.

8. Guide students to find the unknown numbers in number sentences.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece / Task Responsibility

Workpiece / Task	Assessment Criteria /	Learning Activities
Responsibility	Indicators	
1. Worksheet on measuring	- Able to state the weight	- State the weight of objects using
and stating weight in	of various objects	units such as grams, kilograms and
kilograms and grams, and	accurately according to the	hectograms, or kilograms and grams
kilograms and hectograms	criteria	
2. Worksheet on comparing	- Understand the	- Compare weights using kilograms
weight using the	relationship between units	and grams, or kilograms and
relationship between	of weight	hectograms. If the weight in
kilograms and grams, and	- Compare weights in	kilograms is greater, it is heavier. If
kilograms and hectograms	kilograms and grams, or	the kilograms are equal, the one
	kilograms and hectograms	with more grams or hectograms is
	accurately according to the	heavier
	criteria	- When comparing weights with
	- Compare weights with	different units, convert them to the
	different units accurately	same unit before comparing
	according to the criteria	

Workpiece / Task	Assessment Criteria /	Learning Activities
Responsibility	Indicators	
3. Worksheet on solving	- Solve word problems	- Solve addition or subtraction
word problems involving	involving weights in	problems involving weight by
weights in kilograms and	kilograms and grams, or	converting the units to be the same
grams, or kilograms and	kilograms and hectograms	before calculating
hectograms	accurately according to the	
	criteria	

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment	Excellent (4)	Good (3)	Satisfactory (2)	Needs
Criteria				Improvement (1)
1. Measuring	Students can	Students can	Students can	Students can
and stating	measure and	measure and	measure and	measure and state
weight in	state weight in	state weight in	state weight in	weight in kilograms
kilograms and	kilograms and	kilograms and	kilograms and	and grams, or in
grams, or	grams, or in	grams, or in	grams, or in	kilograms and
kilograms and	kilograms and	kilograms and	kilograms and	hectograms with
hectograms	hectograms with	hectograms with	hectograms with	less than 60%
	80% accuracy or	70–79%	60–69% accuracy	accuracy
	above	accuracy		
2. Comparing	Students can	Students can	Students can	Students can
weight using the	compare weights	compare weights	compare weights	compare weights
relationship	using the	using the	using the	using the
between	relationship	relationship	relationship	relationship
kilograms and	between	between	between	between kilograms
grams, and	kilograms and	kilograms and	kilograms and	and grams, and
kilograms and	grams, and	grams, and	grams, and	kilograms and
hectograms	kilograms and	kilograms and	kilograms and	hectograms with
	hectograms with	hectograms with	hectograms with	less than 60%
	80% accuracy or	70–79%	60–69% accuracy	accuracy
	above	accuracy		

Assessment	Excellent (4)	Good (3)	Satisfactory (2)	Needs
Criteria				Improvement (1)
3. Showing	Students can	Students can	Students can	Students can show
methods to	show methods	show methods	show methods to	methods to solve
solve word	to solve word	to solve word	solve word	word problems
problems	problems	problems	problems	involving weight in
involving weight	involving weight	involving weight	involving weight	kilograms and
in kilograms and	in kilograms and	in kilograms and	in kilograms and	grams, or kilograms
grams, or	grams, or	grams, or	grams, or	and hectograms
kilograms and	kilograms and	kilograms and	kilograms and	with less than 60%
hectograms	hectograms with	hectograms with	hectograms with	accuracy
	80% accuracy or	70–79%	60–69% accuracy	
	above	accuracy		

Chapter !	5
-----------	---

Mathematics (M12101)

Strand 1: Numbers and Operations

Standard M1.1: Understanding of diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr2/5 Find the value of the unknown in the multiplication symbol sentence of a number of 1 digit by a number of up to 2 digits.

M1.1 Gr2/8 Shows how to find the answer to the 2-step problem of numbers up to 1000 and 0.

Learning Objective

Students will be taught to :

- 1. Understand multiplication as repeated addition.
- 2. Solve word problems involving multiplication of 1-digit numbers.
- 3. Understand and use the operations of multiplication
- 4. Solve word problems involving multiplication of 1-digit numbers by 2digit numbers

Learning Outcomes

Students will be able to:

- 1. Recognize multiplication as repeated addition.
- 2. Read and write number sentences for multiplication.
- 3. Build up multiplication tables for 2 to 9.
- 4. Multiply two numbers.
- 5. Know the properties of multiplication.
- 6. Solve word problems involving multiplication of 1-digit numbers.
- 7. Multiply 1-digit numbers by 10, 20, ..., 90.
- 8. Multiply 1-digit numbers by 2-digit numbers without regrouping and with regrouping.
- 9. Solve word problems involving the multiplication of 1-digit numbers by 2-digit numbers

Learning Areas

1.Meaning of multiplication

2. Multiplication of 1-digit numbers

3. Solving word problems involving the multiplication of 1-digit numbers

4. Multiplication of 1-digit numbers by 10, 20, ..., 90

5. Multiplication of 1-digit numbers by 2-digit numbers

6. Solving word problems involving the multiplication of 1-digit numbers by 2-digit numbers

Teaching and Learning Activities

1. Explain the meaning of multiplication as repeated addition.

2. Guide them how to write and read number sentences for multiplication.

3. Guide students to build their own multiplication tables of 1 to 5, using items or pictorial representation.

4. Help students to recall rapidly the multiplication tables by saying aloud and using flash cards. This need to be done daily until they are familiar with the tables.

5. Randomly pick a few students to recall the multiplication tables quickly and smoothly.

6. Guide them to write number sentences using the standard written method.

7. Then, continue to introduce multiplication tables of 6 to 9.

8. Ensure students can recall rapidly all the multiplication tables of 2 to 9.

9. Explain the properties of multiplication such as commutative property, multiplication by one and multiplication by zero.

10. When solving word problems, always ask students to understand the problems and write the number sentences.

11. Show students the relation between multiplying 3 with 2 and 3 with 20.

12. Guide students to do multiplication without regrouping, using the standard written method.

13. Explain to students how to solve it. Reiterate the importance of writing the number sentence before solving it.

Emphasized Skills:

1. Thinking skill

2. Problem-solving skill

3. Analyzing skill

Learning Task /	Assessment Criteria	Learning Activities
Assignment		
1. Worksheet on the	- Able to correctly represent	- Preparatory activities and pre-
Meaning of Multiplication	multiplication in symbolic form	test.
	according to the specified	- Study the meaning of
	criteria.	multiplication and practice
	- Able to correctly express	repeated addition.
	multiplication as repeated	
	addition according to the	
	specified criteria.	
2. Worksheet on	Able to correctly find the	- Study how to multiply a one-digit
Multiplying a One-Digit	product in a multiplication	number by 0 and by 1.
Number by a One-Digit	sentence involving a one-digit	- Practice finding the product in
Number	number multiplied by another	multiplication sentences involving
	one-digit number, according to	one-digit numbers.
	the specified criteria.	
3. Worksheet on	- Able to correctly find the	- Study how to multiply a one-digit
Multiplying a One-Digit	product in a multiplication	number by a two-digit number
Number by a Number Not	sentence involving a one-digit	using vertical multiplication.
Exceeding Two Digits	number and a number not	- Multiply the units digit first, then
	exceeding two digits, according	the tens digit.
	to the specified criteria.	- If the product is ten or more,
		carry over to the next place value.
4. Worksheet on Finding	- Able to correctly find the	- Study how to find the unknown
the Unknown in	unknown in a multiplication	in multiplication sentences.
Multiplication Sentences	sentence involving a one-digit	- Use multiplication facts (times
	number and a number not	tables) to find the missing value.
	exceeding two digits, according	
	to the specified criteria.	
5. Worksheet on Solving	- Able to show the correct	- Solve problems by reading and
Word Problems Involving	method of solving	understanding the problem,
Multiplication	multiplication word problems	planning a solution, finding the
	according to the specified	answer, and checking its
	criteria.	reasonableness.
		- When creating word problems,
		include both given and asked
		information, and ensure the
		problem is realistic.

Mathematics (M12101)

Content: Division

Strand 1: Numbers and Operations

Standard M1.1:Understanding of diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr2/6 Find the value of the unknown in the division symbol sentence with no more than 2-digit divisor and 1-digit divisor where the quotient

M1.1 Gr2/8 Shows how to find the answer to the 2-step problem of numbers up to 1000 and 0.

Learning Objective

Students will be taught to :

- 1. Understand division as sharing equally or grouping.
- 2. Solve word problems involving division.
- 3. Understand and use the operation of multiplications.

Learning Outcomes

Students will be able to:

- 1. Recognize multiplication as sharing equally or grouping.
- 2. Read and write number sentences for division.
- 3. Recognize division as the opposite of multiplication.
- 4. Divide by 1-digit divisors.
- 5. Identify exact division.
- 6. Solve word problems involving division.

Learning Areas

- 1. Meaning of division
- 2. Division as the opposite of multiplication
- 3. Dividing by 1-digit divisors
- 4. Exact division
- 5. Solving word problems involving division

Teaching and Learning Activities

1. Explain division as equal sharing or grouping.

2. Emphasize that division means equal sharing or grouping.

3. Guide them on how to write and read number sentences involving division. Label the number sentences.

4. Tell students that division is the opposite of multiplication. Write a few number sentences involving division. Ask a few students to rewrite them involving multiplication.

5. To divide easily, we need to remember the multiplication tables very well.

6. Explain the differences between exact division and division with a reminder to students.

7. Explain to students how to solve it. Reiterate the importance of writing the number sentence before solving it.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on the Meaning	- Able to explain the meaning	- Learn and explore the
of Division	of division correctly according	concept of division through
	to the specified criteria	real-life examples and
		discussions
2. Worksheet on Finding	- Able to find quotients and	- Study how to divide numbers
Quotients and Remainders	remainders accurately as per	and identify the quotient and
	the assessment criteria	remainder through guided
		practice
3. Worksheet on the	- Able to identify the	- Learn how multiplication and
Relationship Between	relationship between	division are related using visual
Multiplication and Division	multiplication and division	aids, fact families, and math
	correctly	sentence matching
4. Worksheet on Solving	- Able to solve division word	- Learn to analyze division word
Division Word Problems	problems accurately according	problems, write number
	to the criteria	sentences, show step-by-step
		solutions, and consider the
		reasonableness of the answer

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
5. Worksheet on Creating	- Able to create division word	- Learn how to create division
Division Word Problems	problems correctly based on	word problems by writing
	the criteria	number sentences, showing the
		solution process, and checking
		for reasonableness of the
		answer

Assessment Components

- 1. A minimum score of 60 percent.
- 2. Assessment result must be at Level 2 or higher.
- 3. Assessment result must be at Level 2 or higher.

Assessment Criteria	Quality Rating			
	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Understanding the	student can	Student can	Student can	Student can
Meaning of Division	explain the	explain the	explain the	explain the
	meaning of	meaning of	meaning of	meaning of
	division with 80%	division with	division with	division with
	accuracy or	70%–79%	60%–69%	less than 60%
	higher.	accuracy.	accuracy.	accuracy.
2. Finding Quotients	Student can find	Student can	Student can find	Student can
and Remainders	quotients and	find quotients	quotients and	find quotients
	remainders with	and remainders	remainders with	and remainders
	80% accuracy or	with 70%–79%	60%–69%	with less than
	higher	accuracy	accuracy	60% accuracy
3. Identifying the	Student can	Student can	Student can	Student can
Relationship	identify the	identify the	identify the	identify the
Between	relationship	relationship	relationship	relationship
Multiplication and	between	between	between	between
Division	multiplication	multiplication	multiplication	multiplication
	and division with	and division	and division with	and division
	80% accuracy or	with 70%–79%	60%–69%	with less than
	higher	accuracy	accuracy	60% accuracy

Assessment Criteria	Quality Rating			
	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
4. Solving Division	Student can	Student can	Student can	Student can
Word Problems	solve division	solve division	solve division	solve division
	word problems	word problems	word problems	word problems
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy	accuracy	60% accuracy
	higher			
5. Creating Division	Student can	Student can	Student can	Student can
Word Problems	create division	create division	create division	create division
	word problems	word problems	word problems	word problems
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy	accuracy	60% accuracy
	higher			

Mathematics (M12101)

Content: Time

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr2/1 Tell length in metres and centimetres, and compare length by using the same unit.

Learning Objective

Students will be taught to :

- 1. Understand, read and write the time.
- 2. Understand the units of time.

Learning Outcomes

Students will be able to:

- 1. Read and write the time to an hour
- 2. Read and write the time to five minutes.
- 3. Know the relationship between day, hour, minute, day, months and year.
- 4. Relate time to calendar.
- 5. Read calendar.

Learning Areas

- Reading and writing the time
- Reading and writing the time in hours and minutes
- 1 hour = 60 minutes; 1 day = 24 hours
- Months of the year
- Calendar

Teaching and Learning Activities

1. Using an analog clock, ask students to identify the minute hand, hour hand and second hand. Emphasize the difference between the hour hand and the minute hand.

2. Guide students to read the time in hours from analog clocks and digital clocks.

3. Explain the minutes on the clocks and the relationship between hours and minutes. Emphasize that each small mark on the clock represents a minute.

4. Guide students to read the time to the five minutes intervals. Introduce a few ways to read the time such as 'forty-five minutes past ten', 'ten forty five', 'a quarter to eleven', 'half past five' and 'fifteen minutes to eleven'.

5. Guide them to write the time too. It can be in numerals or in letters. Check on the spelling.

6. Emphasize that an hour has 60 minutes. When the minute hand moved round the clock once, the hour hand moves to the next number.

- 7. Emphasize that in a day there are 24 hours. The hour hand moves round the clock 2 times.
- 8. Guide students to read and spell the months of a year.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Assessment Criteria	Learning Activities	Learning Task / Activity
1. Worksheet: Reading a	- Able to read a calendar	- Learn how to read and
Calendar	correctly according to the	interpret a calendar
	given criteria	
2. Worksheet: Telling Time to	- Able to tell time to the	- Practice telling time using
the Nearest 5 Minutes	nearest 5 minutes accurately	clock models and real-life
		situations (5-minute intervals)
3. Task: Telling Duration in	- Able to tell duration in hours	- Learn to calculate and
Hours and Minutes	and minutes correctly	express the length of time in
		hours and minutes
4. Comparing Duration in Hours	- Able to compare time	- Practice comparing time
and Minutes	durations correctly in hours	intervals using charts or
	and minutes	number lines
5. Solving Word Problems	- Able to solve time-related	- Analyze and solve real-life
Involving Time	word problems accurately	time problems using logical
		reasoning and appropriate
		methods

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on the	- Accurately explain the	- Learn and understand the concept of
Concept of Division	meaning of division according	division.
	to the specified criteria.	
2. Worksheet on	- Accurately find the quotient	- Learn how to calculate the quotient
Finding Quotients and	and remainder of given	and remainder of a division problem.
Remainders	numbers according to the	
	specified criteria.	
3. Worksheet on the	- Accurately explain the	- Learn and explore the relationship
Relationship Between	relationship between	between multiplication and division.
Multiplication and	multiplication and division	
Division	according to the specified	
	criteria.	
4. Worksheet on	- Accurately solve division	- Learn to analyze division word
Solving Division Word	word problems according to	problems, write division number
Problems	the specified criteria.	sentences, show the method used to
		solve, and evaluate the reasonableness
		of the answer.
5. Worksheet on	- Correctly create division	- Learn to create division word
Creating Division Word	word problems according to	problems, write them as division
Problems	the specified criteria.	number sentences, show the solving
		method, and evaluate the
		reasonableness of the answer.

Assessment Components

- 1. A minimum score of 60 percent.
- 2. Assessment result must be at Level 2 or higher.
- 3. Assessment result must be at Level 2 or higher.

	Quality Rating			
Assessment	Need		Needs	
Criteria	Excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
1. Reading a	The student can	The student	The student can	The student
Calendar	read a calendar	can read a	read a calendar	can read a
	with 80%	calendar with	with 60%–69%	calendar with
	accuracy or	70%–79%	accuracy	less than 60%
	higher	accuracy		accuracy
2. Telling Time to	The student can	The student	The student can	The student
the Nearest 5	tell time to the	can tell time to	tell time to the	can express
Minutes	nearest 5	the nearest 5	nearest 5	time duration in
	minutes with	minutes with	minutes with	hours and
	80% accuracy or	70%–79%	60%–69%	minutes with
	higher	accuracy	accuracy	less than 60%
				accuracy
3. Telling	The student can	The student can	The student can	The student
Duration in Hours	express time	express time	express time	can express
and Minutes	duration in hours	duration in	duration in hours	time duration in
	and minutes with	hours and	and minutes with	hours and
	80% accuracy or	minutes with	60%–69%	minutes with
	higher	70%–79%	accuracy	less than 60%
		accuracy		accuracy
4. Comparing	The student can	The student can	The student can	The student can
Duration in Hours	compare time	compare time	compare time	compare time
and Minutes	durations in hours	durations in	durations in hours	durations in
	and minutes with	hours and	and minutes with	hours and
	80% accuracy or	minutes with	60%–69%	minutes with
	higher	70%–79%	accuracy	less than 60%
		accuracy		accuracy
5. Solving Time-	The student can	The student can	The student can	The student can
related Word	solve time-	solve time-	solve time-	solve time-
Problems	related word	related word	related word	related word
	problems with	problems with	problems with	problems with
	80% accuracy or	70%–79%	60%–69%	less than 60%
	higher	accuracy	accuracy	accuracy

Mathematics (M12101) Content: Volume measurement

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr2/6 Tell the days, months and year from a calendar.

Learning Objective

Students will be taught to :

- 1. Measure and compare volume in liters.
- 2. Measure and compare capacity in liters.
- 3. Solve word problems involving volume and capacity.

Learning Outcomes

Students will be able to:

- 1. Read scales to the nearest division.
- 2. Measure and record volumes in liter.
- 3. Compare volumes of two liquids in liters.
- 4. Measure and record capacity in liters.
- 5. Compare capacity of two containers in liters.
- 6. Solve word problems involving volume and capacity.

Learning Areas

- Measuring volume in liters
- Measuring capacity in liters
- Solving word problems involving volume and capacity

Teaching and Learning Activities

- 1. Briefly explain what volume is.
- 2. Show students some standard measuring tools such as measuring spoons, measuring cups,

measuring cylinders and beakers.

3. Introduce the unit liter and its abbreviation. Show them how much a liter of water is.

4. Using some containers such as jugs and bowls, ask students to measure their volumes using standard measuring tools in liters.

- 5. Explain to students the differences between volume and capacity.
- 6. Guide students to solve them.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on Measuring	- Able to measure volume	- Learn and experiment by
Volume and Capacity Using	and capacity using non-	measuring the volume and
Non-standard Units	standard units correctly	capacity of various items using
	according to the given criteria	non-standard units
2. Worksheet on Measuring	- Able to measure volume	- Hands-on activity measuring
Volume and Capacity in	and capacity in teaspoons,	items using standard units such
Teaspoons, Tablespoons,	tablespoons, measuring cups,	as teaspoons, tablespoons,
Measuring Cups, and Liters	and liters correctly	measuring cups, and liters
3. Worksheet on Comparing	- Able to compare volume	- Practice comparing the volume
Volume and Capacity Using	and capacity in teaspoons,	and capacity of different items
Standard Units	tablespoons, measuring cups,	using standard measurement
	and liters correctly	units
4. Worksheet on Solving Word	Worksheet on Solving Word	- Able to solve volume and
Problems Involving Volume	Problems Involving Volume	capacity problems involving
and Capacity	and Capacity	teaspoons, tablespoons,
		measuring cups, and liters
		correctly

Workpiece and Task Responsibilities

Assessment Components

- 1. A minimum score of 60 percent.
- 2. Assessment result must be at Level 2 or higher.
- 3. Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Measuring	Student can	Student can	Student can	Student can
Volume and	measure volume	measure	measure volume	measure
Capacity Using	and capacity	volume and	and capacity	volume and
Non-standard	using non-	capacity using	using non-	capacity using
Units	standard units	non-standard	standard units	non-standard
	with 80%	units with	with 60%–69%	units with less
	accuracy or	70%–79%	accuracy	than 60%
	higher	accuracy		accuracy
2. Measuring	Student can	Student can	Student can	Student can
Volume and	measure using	measure using	measure using	measure using
Capacity in	standard units	standard units	standard units	standard units
Teaspoons,	with 80%	with 70%–79%	with 60%–69%	with less than
Tablespoons,	accuracy or	accuracy	accuracy	60% accuracy
Measuring Cups,	higher			
and Liters				
3. Comparing	Student can	Student can	Student can	Student can
Volume and	compare volume	compare	compare volume	compare
Capacity in	and capacity with	volume and	and capacity with	volume and
Standard Units	80% accuracy or	capacity with	60%–69%	capacity with
	higher	70%–79%	accuracy	less than 60%
		accuracy		accuracy
4. Solving Word	Student can solve	Student can	Student can solve	Student can
Problems	word problems	solve word	word problems	solve word
Involving Volume	with 80%	problems with	with 60%–69%	problems with
and Capacity	accuracy or higher	70%–79%	accuracy	less than 60%
		accuracy		accuracy

Mathematics (M12101)

Content: Geometric figure

Strand 2: Measurement

Standard M2.2: Solving measurement problems

Grade level indicators

M2.1 Gr2/1 Tell length in metres and centimetres, and compare length by using the same unit.

Learning Objective

Students will be taught to :

- 1. Understand and use terms related to 2-D and 3-D shapes.
- 2. Understand the shape patterns.

Learning Outcomes

Students will be able to:

- 1. Identifying 2-D and 3-D shapes.
- 2. Label the parts of 2-D and 3-D shapes.
- 3. Identify shape patterns.
- 4. Form shape patterns.

Learning Areas

- Two-dimensional (2-D) shapes
- Three-dimensional (3-D) shapes
- Shape patterns

Teaching and Learning Activities

1. Refresh students' memory of 2-D shapes such as triangles, rectangles, squares, circles and

ovals.

- 2. Draw a few 2-D shapes and ask students to identify them.
- 3. Name a few 2-D shapes and ask students to draw them on the board.
- 4. Show and introduce to students 3-D shapes using models such as cubes, cuboids, pyramids, cones, spheres and cylinders.
 - 5. Ask them to give examples of things in our daily life that have 3-D shapes.
 - 6. Introduce the parts of a 3-D shape such as the face, edge and corner.
 - 7. Draw alternate squares and triangles. Guide students to identify the pattern.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Assessment Components

- 1. A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on Polygons	Able to classify and describe the	- Learn the properties and
	characteristics of polygons	classification of different types
	correctly according to the given	of polygons through discussion
	criteria	and activities
2. Worksheet on Circles and	- Able to classify and describe	- Study the features of circles
Ovals	the characteristics of circles and	and ovals and practice
	ovals correctly	identifying and classifying them
		through observation and
		comparison
3. Worksheet on Drawing 2D	- Able to draw 2D geometric	- Learn how to draw 2D shapes
Geometric Shapes Using	shapes using templates correctly	by using shape templates and
Shape Templates	according to the criteria	tracing activities
4. Worksheet on Repeating	- Able to create repeating	- Able to create repeating
Patterns Using Geometric	patterns with geometric and	patterns with geometric and
and Other Shapes	other shapes correctly	other shapes correctly
	according to the criteria	according to the criteria

Workpiece and Task Responsibilities

Assessment Components

- 1. A minimum score of 60 percent.
- 2. Assessment result must be at Level 2 or higher.
- 3. Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Classification	The student	The student	The student	The student
and Description	accurately	classifies and	classifies and	classifies and
of Polygons	classifies and	describes	describes	describes
	describes the	polygon	polygon	polygon
	properties of	properties with	properties with a	properties with
	polygons with a	a score	score between	a score lower
	score of 80% or	between 70%	60% and 69%.	than 60%.
	higher.	and 79%.		
2. Classification	The student	The student	The student	The student
and Description	accurately	classifies and	classifies and	classifies and
of Circles and	classifies and	describes the	describes the	describes the
Ovals	describes the	characteristics	characteristics of	characteristics
	characteristics of	of circles and	circles and ovals	of circles and
	circles and ovals	ovals with a	with a score	ovals with a
	with a score of	score between	between 60%	score lower
	80% or higher.	70% and 79%.	and 69%.	than 60%.
3. Construction of	The student	The student	The student	The student
2D Geometric	accurately draws	draws 2D	draws 2D	draws 2D
Figures Using	2D geometric	geometric	geometric shapes	geometric
Shape Models	shapes using	shapes using	using templates	shapes using
	provided	templates with	with a score	templates with
	templates or	a score	between 60%	a score lower
	models with a	between 70%	and 69%.	than 60%.
	score of 80% or	and 79%.		
	higher.			
4. Creation of	The student	The student	The student	The student
Repeating	correctly creates	creates	creates repeating	creates
Patterns Using	repeating	repeating	patterns using	repeating
Geometric and	patterns using	patterns using	geometric and	patterns using
Non-Geometric	geometric and	geometric and	other shapes with	geometric and
Shapes	other shapes with	other shapes	a score between	other shapes
	a score of 80% or	with a score	60% and 69%.	with a score
	higher.	between 70%		lower than
		and 79%.		60%.

Mathematics (M12101)

Content: Addition, subtraction, multiplication, division

Time: 24 hours

Strand 1: Numbers and Operations

Standard M1.1:Understanding of diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr2/7 Find the results of adding, subtracting, multiplying, and dividing a number of numbers up to 1,000 and 0.

M1.1 Gr2/8 Shows how to find the answer to the 2-step problem of numbers up to 1000 and 0.

Learning Objective

Students will be taught to :

- 1. Perform addition of numbers within 1,000.
- 2. Perform computations involving addition to solve word problems.
- 3. Perform subtraction of numbers within 1,000.
- 4. Perform computations involving addition and subtraction to solve word problems.

Learning Outcomes

Students will be able to:

- 1. Add up two 3-digit numbers.
- 2. Add up three 3-digit numbers.
- 3. Solve problems involving addition.
- 4. Subtract a number from a 3-digit number.
- 5. Use addition to check accuracy of answers from subtraction operations.
- 6. Solve problems involving subtraction

Learning Areas

- Addition within 1,000
- Using addition to solve word problems
- Subtraction within 1,000
- Using subtraction to solve word problems

Teaching and Learning Activities

1. Guide students on how to add two 3-digit numbers.

2. Guide students to add three 3-digit numbers.

3. Guide students to find the unknown numbers in number sentences.

4. Using the word problem to guide students on how to solve it.

5. Write a number sentence involving addition on the board and ask students to create some word problems on it.

6. Guide students to subtract a number from a 3-digit number. Emphasize that subtraction must start with the ones, follow by the tens and lastly the hundreds.

7. Guide students to use addition to check the accuracy of answers from subtraction operations.

8. Guide students to find the unknown numbers in number sentences.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on	- Accurately finds the results of	- Explore and discuss as a class to
Mixed Operations of	mixed operations involving	find the results of mixed operations
Whole Numbers (not	addition, subtraction,	involving whole numbers not
exceeding 1,000 and	multiplication, and division of	exceeding 1,000 and 0
0)	whole numbers (up to 1,000 and	
	0), in accordance with the	
	specified criteria	
2. Worksheet on	- Correctly solves and finds	- Collaboratively analyze word
Solving Word	answers to word problems	problems involving mixed
Problems Involving	involving mixed operations	operations and show step-by-step
Mixed Operations	according to the specified criteria	solutions while reflecting on the
		reasonableness of the results
3. Worksheet on	- Accurately creates and solves	- Learn how to construct word
Creating Word	mixed-operation word problems	problems involving mixed
Problems Involving	according to the assessment	operations, write mathematical
Mixed Operations	criteria	expressions, and show step-by-step
		solutions while considering the
		reasonableness of the answers

Assessment Components

- 1 .Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement (1)
1. Performing	The student	The student	The student	The student
Mixed Operations	accurately	computes	computes mixed	computes mixed
	computes mixed	mixed	operations with a	operations with a
	operations addition,	operations with	score between	score below 60%.
	subtraction,	a score	60% and 69%.	
	multiplication, and	between 70%		
	division) with a	and 79%.		
	score of 80% or			
	above.			
2. Solving Word	The student	The student	The student	The student solves
Problems	accurately solves	solves word	solves word	word problems
Involving Mixed	word problems	problems with	problems with a	with a score below
Operations	involving mixed	a score	score between	60%.
	operations with a	between 70%	60% and 69%.	
	score of 80% or	and 79%.		
	above.			
3. Creating Word	The student	The student	The student	The student
Problems	successfully	constructs and	constructs and	constructs and
Involving Mixed	constructs word	solves	solves problems	solves problems
Operations	problems	problems with	with a score	with a score below
	involving mixed	a score	between 60%	60%.
	operations and	between 70%	and 69%.	
	solves them with	and 79%.		
	a score of 80% or			
	above.			

Mathematics (M12101)

Strand 3: Geometry

Standard M3.1: Ability to explain and analyse two-dimensional and three-dimensional geometric figures

Grade level indicators

M3.1 Gr2/1 Identify two-dimensional geometric figures whether in the form of triangles,

Learning Objective

Students will be taught to :

- 1. Understand and use terms related to 2-D and 3-D shapes.
- 2. Understand the shape patterns.

Learning Outcomes

Students will be able to:

- 1. Identifying 2-D and 3-D shapes.
- 2. Label the parts of 2-D and 3-D shapes.
- 3. Identify shape patterns.
- 4. Form shape patterns.

Learning Areas

- Two-dimensional (2-D) shapes
- Three-dimensional (3-D) shapes
- Shape patterns

Teaching and Learning Activities

1. Refresh students' memory of 2-D shapes such as triangles, rectangles, squares, circles and ovals.

2. Draw a few 2-D shapes and ask students to identify them.

- 3. Name a few 2-D shapes and ask students to draw them on the board.
- 4. Show and introduce to students 3-D shapes using models such as cubes, cuboids, pyramids, cones, spheres and cylinders.
 - 5. Ask them to give examples of things in our daily life that have 3-D shapes.
 - 6. Introduce the parts of a 3-D shape such as the face, edge and corner.
 - 7. Draw alternate squares and triangles. Guide students to identify the pattern.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on Reading	- Able to interpret pictographs in	- Study and practice
Pictographs where 1 symbol	which 1 image represents 2 units	reading pictographs where
represents 2 units	accurately and in accordance with	each symbol represents 2
	the specified criteria	units
2. Worksheet on Reading	- Able to interpret pictographs in	- Study and practice
Pictographs where 1 symbol	which 1 image represents 5 units	reading pictographs where
represents 5 units	accurately and in accordance with	each symbol represents 5
	the specified criteria	units
3. Worksheet on Creating	- Able to interpret pictographs in	- Study and practice
Word Problems Involving	which 1 image represents 10 units	reading pictographs where
Mixed Operations	accurately and in accordance with	each symbol represents 10
	the specified criteria	units

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

	Quality Rating			
Assessment Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Reading	The student can	The student	The student can	The student
pictographs where 1	accurately	can interpret	interpret	can interpret
symbol represents 2	interpret	pictographs	pictographs with	pictographs
units	pictographs with	with 1 symbol	1 symbol	with 1 symbol
	1 symbol	representing 2	representing 2	representing 2
	representing 2	units at 70% –	units at 60% –	units below
		79%.	69%.	60%.

		Quality	' Rating	
Assessment Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
	units at 80% or higher.			
2. Solving Word	The student can	The student	The student can	The student
Problems Involving	accurately	can interpret	interpret	can interpret
Mixed Operations	interpret	pictographs	pictographs with	pictographs
	pictographs with	with 1 symbol	1 symbol	with 1 symbol
	1 symbol	representing 5	representing 5	representing 5
	representing 5	units at 70% –	units at 60% –	units below
	units at 80% or	79%.	69%.	60%.
	higher.			
3. Creating Word	The student can	The student	The student can	The student
Problems Involving	accurately	can interpret	interpret	can interpret
Mixed Operations	interpret	pictographs	pictographs with	pictographs
	pictographs with	with 1 symbol	1 symbol	with 1 symbol
	1 symbol	representing 10	representing 10	representing 10
	representing 10	units at 70% –	units at 60% –	units below
	units at 80% or	79%.	69%.	60%.
	higher.			

Grade 3 Unit Design Framework

Mathematics (M13101)

Content: cardinal numbers not exceeding 100,000 Time: 14 hours

Strand 1: Numbers and Algebra

Standard M 1.1: Understand the variety of number representations, number systems, number operations, their results, properties of operations, and applications. Standard M 1.2: Understand and analyze patterns, relationships, functions, sequences, and series, and apply this knowledge.

Grade level indicators

- M 1.1 Gr.3/1: Read and write Hindu-Arabic numerals, Thai numerals, and number words for counting numbers not exceeding 100,000 and zero.
- M 1.1 Gr.3/2: Compare and order counting numbers not exceeding 100,000 in various situations.
- M 1.2 Gr.3/1: Identify missing numbers in increasing or decreasing number patterns with equal intervals.

Learning Content:

- 1. Reading and writing Hindu-Arabic numerals, Thai numerals, and number words.
- 2. Place value and value of digits in each place, including expanded form.
- 3. Comparing and ordering numbers.
- 4. Patterns of numbers that increase or decrease by a constant value.

Core Concepts:

Reading counting numbers not exceeding 100,000 is based on place value, read from left to right. Numbers can be written in Hindu-Arabic numerals, Thai numerals, or words, and may include four-digit, five-digit, or six-digit numbers with units, tens, hundreds, thousands, ten-thousands, and hundred-thousands places. Writing numbers in expanded form involves expressing the number as a sum of the values of its digits according to place value.

Comparing two numbers uses the terms **equal to**, **greater than**, and **less than**, represented by the symbols =, >, and <. Ordering numbers can be done by identifying the greatest or smallest number first, then arranging the numbers from greatest to least or least to greatest.

Number patterns that increase or decrease by a constant value are sequences where each number relates to the next by adding or subtracting the same amount.

Key Competencies of Learners:

- Life skills
- Thinking skills Desirable Characteristics:
- Love of learning
- Determination and perseverance in work

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Learning Activities	
Assignments		-	
1.Worksheet: Reading and	- Accurately read and write	- Study, learn, and practice	
Writing Hindu-Arabic	Hindu-Arabic numerals, Thai	reading and writing Hindu-	
Numerals, Thai Numerals,	numerals, and number words.	Arabic numerals, Thai	
and Number Words		numerals, and number words	
Representing Quantities or		representing quantities or	
Counting Numbers Not		counting numbers not	
Exceeding 100,000 and		exceeding 100,000 and zero by	
Zero		using a hundred chart or an	
		abacus, and arranging the	
		beads to represent various	
		numbers.	
2.Worksheet: Comparing	- Correctly use place value and	- Study and learn from lesson	
and Ordering Numbers	digit values, including the use of	materials on comparing and	
	zero to hold place positions.	ordering numbers, and practice	
	- Accurately write numbers in	accordingly.	
	expanded form.		
	- Correctly compare numbers		
	and use the symbols =, \neq , >,		
	and < appropriately.		
	- Correctly order up to five		
	numbers.		
3. Worksheet: Describing	- Accurately describe the	- Study, learn, and practice	
Quantities and	quantities and relationships in	describing quantities and	
Relationships in Number	number patterns that increase	relationships in number	
Patterns Increasing by 3, 4,	by 3, 4, 25, and 50, decrease by	patterns that increase by 3, 4,	
25, and 50, and Decreasing	3, 4, 25, and 50, and in repeating	25, and 50; decrease by 3, 4,	
by 3, 4, 25, and 50,	patterns.	25, and 50; and in repeating	
Including Repeating		patterns.	
Patterns			

Assessment Includes:

Knowledge: Achieve a score of 60% or higher. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Satisfactory (2)	Improvement
				(1)
1. Reading and	Students can	Students can	Students can	Students can
writing Hindu-	read and write	read and write	read and write	read and write
Arabic numerals,	Hindu-Arabic	Hindu-Arabic	Hindu-Arabic	Hindu-Arabic
Thai numerals,	numerals, Thai	numerals, Thai	numerals, Thai	numerals, Thai
and number	numerals, and	numerals, and	numerals, and	numerals, and
words	number words	number words	number words	number words
	with 80% or	with 70% - 79%	with 60% - 69%	with less than
	higher accuracy.	accuracy.	accuracy.	60% accuracy.
2. Use of place	Students can	Students can	Students can	Students can
value and digit	correctly use	correctly use	correctly use	correctly use
values in each	place value and	place value and	place value and	place value and
place, and writing	digit values and	digit values and	digit values and	digit values and
numbers in	write numbers in	write numbers	write numbers in	write numbers in
expanded form	expanded form	in expanded	expanded form	expanded form
	with 80% or	form with 70% -	with 60% - 69%	with less than
	higher accuracy.	79% accuracy.	accuracy.	60% accuracy.
3. Comparing	Students can	Students can	Students can	Students can
numbers and	compare	compare	compare	compare
using the symbols	numbers and use	numbers and	numbers and	numbers and
=, ≠, >, <	the symbols =, \neq ,	use the	use the symbols	use the symbols
	>, < with 80% or	symbols =, ≠, >,	=, ≠, >, < with	=, ≠, >, < with
	higher accuracy.	< with 70% -	60% - 69%	less than 60%
		79% accuracy.	accuracy.	accuracy.
4. Describing	Students can	Students can	Students can	Students can
quantities and	describe	describe	describe	describe
relationships in	quantities and	quantities and	quantities and	quantities and
number patterns	relationships in	relationships in	relationships in	relationships in

A	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Satisfactory (2)	Improvement
				(1)
that increase or	number patterns	number	number patterns	number patterns
decrease by	that increase or	patterns that	that increase or	that increase or
equal intervals	decrease by	increase or	decrease by	decrease by
	equal intervals	decrease by	equal intervals	equal intervals
	with 80% or	equal intervals	with 60% - 69%	with less than
	higher accuracy.	with 70% - 79%	accuracy.	60% accuracy.
		accuracy.		

Mathematics (M13101)

Content: Addition and subtraction of natural numbers not exceeding 100,000 Time: 20 hours

Strand 1: Numbers and Algebra

Standard M 1.1 Understand the diversity of number representations, number systems, number operations, their results, properties of operations, and their applications.

Grade level indicators

M 1.1 Gr.3/5: Find the value of an unknown number in addition and subtraction equations involving natural numbers not exceeding 100,000 and 0.

M 1.1 Gr.3/8: Find the result of mixed operations (addition, subtraction, multiplication, and division) of natural numbers not exceeding 100,000 and 0.

M 1.1 Gr.3/9: Show methods for solving two-step word problems involving natural numbers not exceeding 100,000 and 0.

Learning Content

- Addition and subtraction
- Multiplication and both long and short division
- Mixed operations (addition, subtraction, multiplication, division)
- Solving and creating word problems, along with finding solutions

Core Concepts

- Finding the sum of two numbers with and without carrying.
- Finding the difference between two numbers with and without borrowing.
- Determining the value of an unknown in equations using the relationship between addition and subtraction.
- Solving word problems by reading and understanding the problem, planning the solution, finding the answer, and verifying the reasonableness of the result.
- Creating word problems must include both given information and the question part, and the created problems must be realistic.

Desirable Characteristics

- Discipline
- Determination in work

Work Pieces and Assignments:

Work Pieces / Assignments	Assessment Criteria	Learning Activities	
1. Worksheet: Addition and	- Perform addition and	- Study, learn, and practice	
Subtraction of Natural	subtraction of natural	addition and subtraction through	
Numbers Not Exceeding	numbers not exceeding	example charts, demonstrations	
100,000	100,000 accurately.	using abacus, and various	
		methods.	
2.Worksheet: Word	- Solve addition word	- Collaboratively analyze	
Problems – Addition	problems correctly.	addition word problems and	
		show step-by-step solutions to	
		find the correct answers.	
3. Worksheet: Word	- Solve subtraction word	- Collaboratively analyze	
Problems – Subtraction	problems correctly.	subtraction word problems and	
		show step-by-step solutions to	
		find the correct answers.	
4. Worksheet: Creating Word	- Create accurate word	- Practice creating addition and	
Problems – Addition and	problems involving addition	subtraction word problems using	
Subtraction	and subtraction. group work and problem		
		processes.	

Assessment Includes:

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Aspect	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
1. Finding the	The student can	The student	The student can	The student
Value of	correctly find the	can find the	find the value of	can find the
Unknowns in	value of	value of	unknowns in such	value of
Addition and	unknowns in	unknowns in	equations with	unknowns in
Subtraction	addition and	such equations	60–69% accuracy.	such equations
Equations with	subtraction	with 70–79%		with less than
Natural Numbers	equations	accuracy.		60% accuracy.

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Satisfactory (2)	Improvement
				(1)
up to 100,000	involving natural			
and 0	numbers up to			
	100,000 and 0			
	with 80% or			
	higher accuracy.			
2. Solving	The student can	The student	The student can	The student
Addition and	correctly	can perform	perform such	performs such
Subtraction of	calculate addition	such	calculations with	calculations
Natural Numbers	and subtraction	calculations	60–69% accuracy.	with less than
up to 100,000	of natural	with 70–79%		60% accuracy.
and 0	numbers up to	accuracy.		
	100,000 and 0			
	with 80% or			
	higher accuracy.			
3. Showing Steps	The student can	The student	The student	The student
to Solve Word	clearly	demonstrates	demonstrates the	demonstrates
Problems	demonstrate the	the solution	solution process	the solution
Involving Natural	solution process	process with	with 60–69%	process with
Numbers up to	for word	70–79%	accuracy.	less than 60%
100,000 and 0	problems	accuracy.		accuracy.
	involving natural			
	numbers up to			
	100,000 and 0			
	with 80% or			
	higher accuracy.			

Mathematics (M13101)

Content: Time

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr3/2 Write the solution to solve word problems about the time and the duration of the time

Learning Content

- Telling time in hours and minutes
- Writing and reading time using a period (.) or a colon (:)
- Telling durations in hours and minutes
- Comparing durations using the relationship between hours and minutes
- Reading and writing schedules or activities with specified times
- Solving word problems related to time and duration
- •

Core Concepts / Key Ideas

- Telling time in hours and minutes
- Expressing and interpreting time using a period (e.g., 10.30) or a colon (e.g., 10:30)
- Comparing durations given in hours and minutes
- Comparing durations with different time units
- Recording activities with specific times
- Solving word problems involving time and duration
- ٠

Key Competencies of Learners

- Communication skills
- Thinking skills
- •

Desirable Characteristics

- Honesty and integrity
- Eagerness to learn
Work Pieces and Assignments:

Work Pieces /		Leorning Activities	
Assignments	Assessment Criteria		
1. Worksheet: Telling Time	- Accurately tell time to the	- Study, discuss, and practice	
on the Hour	hour.	telling time to the hour together.	
2. Telling Time in Hours	- Accurately tell time in hours	- Study, discuss, and practice	
and Minutes	and minutes.	telling time in hours and	
		minutes collaboratively.	
3. Worksheet: Expressing	- Accurately express durations	- Study, discuss, and practice	
Duration in Hours and	in hours and minutes using	expressing duration in hours and	
Minutes	proper mathematical language	minutes.	
	and symbols.		
4. Worksheet: Telling Time	- Accurately tell time using	- Study, discuss, and practice	
Using Digital Clocks	digital clocks.	telling time using digital clocks.	
5. Worksheet: Comparing	- Accurately compare durations	- Study, discuss, and practice	
Durations Using Hour-	by applying the relationship	comparing durations using the	
Minute Relationships	between hours and minutes.	relationship between hours and	
		minutes.	
6. Worksheet: Reading and	- Accurately read and write	- Study, discuss, and practice	
Writing Time-Based Activity	records of activities with	reading and writing activity	
Records	specified time	records that include time	
7. Worksheet: Solving	- Accurately solve word	- Collaboratively analyze	
Word Problems Involving	problems involving time and	problems and practice solving	
Time and Duration	duration.	time and duration word	
		problems.	

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Assessment	Excellent (4)	Good (3)	Excellent (4)	Needs Improvement (1)
1.Telling Time in Hours and Minutes	The student can accurately tell time in hours and minutes with at least 80% accuracy.	The student can tell time in hours and minutes with 70–79% accuracy.	The student can tell time in hours and minutes with 60–69% accuracy.	The student can tell time in hours and minutes with less than 60% accuracy.
2. Writing and Reading Time Using a Period (.) or a Colon (:)	The student can accurately write and read time using a period (.) or a colon (:) with at least 80% accuracy.	The student can write and read time using correct symbols with 70–79% accuracy.	The student can write and read time using correct symbols with 60–69% accuracy.	The student can write and read time using correct symbols with less than 60% accuracy.
3. Expressing Duration in Hours and Minutes	The student can accurately express duration in hours and minutes with at least 80% accuracy.	The student can express duration with 70–79% accuracy.	The student can express duration with 60–69% accuracy.	The student can express duration with less than 60% accuracy.
4. Comparing Durations Using Hour–Minute Relationships	The student can accurately compare durations using hour-minute relationships with at least 80% accuracy.	The student can compare durations with 70–79% accuracy.	The student can compare durations with 60–69% accuracy.	The student can compare durations with less than 60% accuracy.

A		Qua	ality Levels	
Assessment Aspect	Excellent (4)	Good (3)	Excellent (4)	Needs Improvement (1)
5. Reading and Writing Activity Logs with Specified Times	The student can accurately read and write activity logs with time references with at least	The student can read and write activity logs with 70–79% accuracy.	The student can read and write activity logs with 60–69% accuracy.	The student can read and write activity logs with less than 60% accuracy.
6. Solving Word Problems Involving Time and Duration	The student can accurately solve word problems related to time and duration with at least 80% accuracy.	The student can solve such problems with 70–79% accuracy.	The student can solve such problems with 60–69% accuracy.	The student can solve such problems with less than 60% accuracy.

Mathematics (M13101)

Content: Geometric shapes

Strand 2: Measurement And Geometry

Standard M2.2: Understanding and analyzing geometric patterns The Treasure of geometry is the relationship between geometric shapes and geometric theorem and applied.

Grade level indicators

GR. 2.2 P.3/1 Students identify 2-dimensional geometric shapes that have lines of symmetry and state the number of lines of symmetry.

Learning Content

- Shapes with lines of symmetry
- Characteristics of symmetrical figures

Core Concept

A line of symmetry is a line that divides a figure into two mirror-image halves . When a shape is folded along the line of symmetry, both sides match exactly. Some shapes have only one line of symmetry, while others have more than one.

Desirable Traits

- Honesty and Integrity
- Lifelong Learning Mindset

Work Pieces and Assignments:

Work Pieces /	Assassment Critoria	Learning Activities	
Assignments	Assessment Chtena	Learning Activities	
1. Worksheet: Identifying 2D	- Students can identify 2-	- Study and learn from real-life	
Geometric Shapes with Lines	dimensional geometric shapes	material s and instructional	
of Symmetry	that have lines of symmetry	media to explore 2D shapes	
	and describe the	with lines of symmetry and	
	characteristics of symmetrical	describe their symmetrical	
	shapes accurately.	properties.	
2. Worksheet: Stating the	- Students can c orrectly state	- Participate in group	
Number of Lines of	the number of lines of	discussions, hands-on practice,	
Symmetry in 2D Shapes	symmetry for various 2-	and learning activities to	
	dimensional geometric	determine how many lines of	
	shapes.	symmetry each 2D shape has.	

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- **3. Desirable Characteristics:** Achieve an evaluation level of 2 or higher.

Assessment	Criteria
------------	----------

A		Quality Levels		
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
1. Identifying	Student can	Student can	Student can	Student can
Shapes with Lines	identify shapes	identify shapes	identify shapes	identify shapes
of Symmetry	that have lines of			
	symmetry with at	symmetry with	symmetry with	symmetry with less
	least 80%	70–79%	60–69% accuracy.	than 60% accuracy.
	accuracy.	accuracy.		
2. Identifying	Student can	Student can	Student can	Student can
Shapes with	identify shapes	identify shapes	identify shapes	identify shapes
Multiple Lines of	with multiple	with multiple	with multiple	with multiple lines
Symmetry and	lines of symmetry	lines of	lines of	of symmetry and
Stating the	and state the	symmetry and	symmetry and	state the number
Number of Lines	number of lines	state the	state the number	of lines with less
	with at least 80%	number of lines	of lines with 60–	than 60%
	accuracy.	with 70–79%	69% accuracy.	accuracy.
		accuracy.		
3. Applying	Student can	Student can	Student can	Student can apply
Knowledge of	apply knowledge	apply	apply knowledge	knowledge of
Symmetry in	of symmetry with	knowledge of	of symmetry with	symmetry with
Real-Life or	at least 80%	symmetry with	60–69%	less than 60%
Mathematical	accuracy.	70–79%	accuracy.	accuracy.
Contexts		accuracy.		

Mathematics (M13101)

Content: Picture charts and one way table

Strand 3: Data Analysis and Probability

Standard M3.1: Understanding Statistical process and ability to apply statistical methodology

for data analysis to solve the problem.

Grade level indicators

M3.1 Gr3/1 Draw and write a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step

M3.1 Gr3/2 Write the one way table from the number data and using one way table data to find the answer

Learning Content

- Data collection and classification
- Reading and creating pictographs (picture graphs)
- Reading and creating one-way tables

Core Concept

Data collection involves gathering factual information about a specific topic or area of interest. Classifying data helps to organize it for easier use and analysis.

A **pictograph** (picture graph) uses images or symbols to represent quantities. The number of symbols used depends on the data and the scale defined in the graph.

Data can also be presented using a **one-way table**, which organizes information clearly in a single category or direction.

Key Competencies

- Communication skills: Ability to express understanding and explain data clearly
- Thinking skills: Ability to analyze, classify, and interpret data

Desirable Characteristics

- Determination in completing tasks
- Curiosity and eagerness to learn

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Loorping Activities	
Assignments	Assessment Chteria	Learning Activities	
1. Worksheet: Reading	- Students c an gather and classify	- Study, explore, and practice	
and Creating Pictographs	data about themselves and their	planning how to collect data	
	surroundings in daily life, and	on a topic of personal interest,	
	create accurate pictographs from	then represent the data as a	
	that data.	pictograph.	
2. Worksheet:	- Students can accurately interpret	- Learn through group	
Interpreting Pictographs	comparative data shown in	discussions, analyzing sample	
and Answering Questions	pictographs and answer related	pictographs, and practice	
	questions.	answering questions based on	
		the presented data.	
3. Worksheet: Reading	- Students can read and construct	- Work in groups to collect and	
and Creating One-Way	one-way tables correctly.	organize data, create a one-	
Tables		way table, and present and	
		peer-assess their work	
		collaboratively.	

Assessment Includes:

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
1. Data Collection	Student can	Student can	Student can	Student can
and Classification	collect and	collect and	collect and	collect and classify
(about self and	classify data	classify data with	classify data with	data with less than
daily environment)	about	70–79%	60-69% accuracy.	60% accuracy.
	themselves and	accuracy.		
	their			
	surroundings			
	with at least			
	80% accuracy.			

A	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
2. Reading	Student can	Student can	Student can	Student can
Pictographs	interpret	interpret	interpret	interpret
	pictographs with	pictographs with	pictographs with	pictographs with
	at least 80%	70–79%	60–69%	less than 60%
	accuracy.	accuracy.	accuracy.	accuracy.
3. Creating	Student can	Student can	Student can	Student can
Pictographs	create	create	create	create pictographs
	pictographs	pictographs with	pictographs with	with less than
	accurately (≥	70–79%	60–69%	60% accuracy.
	80%).	accuracy.	accuracy.	
4. Reading and	Student can	Student can do	Student can do	Student can do so
Comparing One-	read, compare,	so with 70–79%	so with 60–69%	with less than
Way Tables	and answer	accuracy.	accuracy.	60% accuracy.
	questions based			
	on one-way			
	tables with \geq			
	80% accuracy.			
5. Creating One-	Student	Student	Student	Student
Way Tables	can construct	can construct	can construct	can construct
	one-way tables	one-way tables	one-way tables	one-way tables
	correctly (≥	with 70–79%	with 60–69%	with less than
	80%).	accuracy.	accuracy.	60% accuracy.

Mathematics (M13101)

Content: Fraction

Strand 1:Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

- M1.1 Gr3/3 Telling, Reading and Writing fraction as a number on the number line; represent fractions on a number line diagram.
- M1.1Gr3/4 Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole.
- M1.1 Gr3/10 Find the sum of fractions with like denominators where the total does not exceed 1, and find the difference of fractions with like denominators.
- M1.1 Gr3/11 Write the solution to solve word problems of the addition and subtraction of fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Learning Content

- Fractions with numerators less than or equal to their denominators
- Comparing and ordering fractions
- Addition and subtraction of fractions
- Solving word problems involving the addition and subtraction of fractions

Core Student Competencies

- Communication skills
- Thinking skills

Desirable Student Attributes

- Determination in completing tasks
- Love of learning

Work Pieces and Assignments:

Work Pieces /	Association on the Criteria	Loorping Activition	
Assignments	Assessment Criteria	Learning Activities	
1. Worksheet: Identifying,	- Students can identify, read,	- Study, explore, and practice	
Reading, and Writing	and write fractions to represent	how to represent quantities	
Fractions to Represent	quantities and illustrate objects	using fractions through	
Quantities	based on given fractions	examples and exercises.	
	accurately.		
2. Worksheet: Comparing	- Students can accurately	- Study, analyze together, and	
and Ordering Fraction	compare and order fractions	practice comparing and ordering	
		fractions using guided practice	
		and group activities.	
3. Worksheet: Addition	- Students can correctly	- Practice exercises focused on	
and Subtraction of	perform addition and	adding and subtracting fractions	
Fractions	subtraction of fractions.	with like denominators.	
4. Worksheet: Solving	- Students can correctly solve	- Learn and analyze word	
Word Problems Involving	word problems involving the	problems together, followed by	
Fraction Addition and	addition and subtraction of	individual and group practice to	
Subtraction	fractions.	solve fraction-based word	
		problems.	
		- Engage in structured exercises	
		to reinforce solving word	
		problems involving fraction	
		addition and subtraction.	

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

Assessment (Criteria
--------------	----------

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
1.Reading and	Student can read	Student can	Student can read	Student can read
Writing Fractions	and write	read and write	and write fractions	and write fractions
to Represent	fractions to	fractions to	to represent	to represent
Quantities	represent	represent	quantities with	quantities with less
	quantities with	quantities with	60–69% accuracy.	than 60% accuracy.
	accuracy ≥ 80%.	70–79%		
		accuracy.		
2. Comparing and	Student can	Student can	Student can	Student can
Ordering Fractions	compare and	compare and	compare and	compare and
with Like	order fractions	order fractions	order fractions	order fractions
Denominators	with like	with 70–79%	with 60–69%	with less than
	denominators ≥	accuracy.	accuracy.	60% accuracy.
	80% accuracy.			
3. Comparing and	Student can	Student can	Student can	Student can
Ordering Fractions	compare and	compare and	compare and	compare and
with Like	order fractions	order fractions	order fractions	order fractions
Numerators	with like	with 70–79%	with 60–69%	with less than
	numerators ≥	accuracy.	accuracy.	60% accuracy.
	80% accuracy.			
4. Adding and	Student can add	Student can	Student can add	Student can add
Subtracting	and subtract	add and	and subtract	and subtract
Fractions with	fractions with like	subtract	fractions with 60–	fractions with less
Like	denominators ≥	fractions with	69% accuracy.	than 60%
Denominators	80% accuracy.	70–79%		accuracy.
		accuracy.		
5. Solving Word	Student can solve	Student can	Student can solve	Student can solve
Problems	word problems	solve word	word problems	word problems
Involving Addition	involving addition	problems	involving addition	involving addition
and Subtraction	and subtraction	involving	and subtraction	and subtraction of
of Fractions	of fractions with \geq	addition and	of fractions with	fractions with less
	80% accuracy.	subtraction of	60-69% accuracy.	

A	Quality Levels			
Assessment Aspect	Excellent (4)	Good (3)	Excellent (4)	Needs Improvement
				(1)
		fractions with		than 60%
		70–79%		accuracy.
		accuracy.		

Mathematics (M13101)

Content: Multiplication

Time: 16 hours

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr.3/6 finding answer of the unknown whole number by using Mathematical symbols showing multiply one-digit with four- digit and two-digit with two- digit

M 1.1 Gr. 3/8 Find the result of addition, subtraction, multiplication, and division of mixed operations involving whole numbers up to 100,000 and zero.

M 1.1 Gr. 3/9 Show the method to find the answer to two-step word problems involving whole numbers up to 100,000 and zero.

Learning Content

- 1. Multiplying a one-digit number by a number up to four digits
- 2. Multiplying two-digit numbers by two-digit numbers
- 3. Multiplication word problems
- 4. Creating multiplication word problems

Key Concepts

Multiplying a one-digit number by 100, 200, 300, ... 900 or by 1,000, 2,000, 3,000, ... 9,000: Find the product by multiplying the one-digit number by 1, 2, 3, ... 9 and then adding two or three zeros at the end.

Finding the product of a one-digit number and a number up to four digits by setting up the multiplication: multiply the units digit first, then the tens, hundreds, and thousands digits in order. Multiplying a two-digit number by a multiple of 10: multiply the two-digit number by the whole number, then add a zero at the end.

Multiplying a two-digit number by another two-digit number: use the distributive property by place value, multiply starting from the units place and then the tens place, and then add the results together.

Finding the unknown value in an equation can be solved using multiplication facts. Solving word problems involves understanding the problem, planning, solving, finding the answer, and checking the reasonableness of the solution.

Creating word problems should include both the given information and the question.

Key Competencies for Learners

- 1. Communication skills
- 2. Thinking skills

Desired Characteristics

- 3. Perseverance in work
- 4. Eagerness to learn

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Learning Activities
Assignments		
1. Worksheet on	- Multiply a one-digit number	- Review the meaning of
Multiplication	by a number up to four digits	multiplication, learn, and
Multiplying a one-digit	correctly	practice multiplying a one-digit
number by a number up		number by a number up to four
to four digits		digits
2. Worksheet on	- Multiply two-digit numbers by	- Learn and practice multiplying
Multiplication	two-digit numbers correctly	two-digit numbers by two-digit
Multiplying two-digit		numbers
numbers by two-digit		
numbers		
3. Worksheet on	- Solve multiplication word	- Analyze word problems
Multiplication Word	problems and find correct	together and practice solving
Problems	answers	multiplication word problems
		and finding answers
4. Worksheet on	- Create multiplication word	- Analyze the process of creating
Creating Multiplication	problems correctly	multiplication word problems
Word Problems		together using group work

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

	Quality Levels			
Assessment	Excellent (4)		Excellent (4)	Needs
Aspect		Good (3)		Improvement
				(1)
1. Multiplication	Students can	Students can	Students can	Students can
of a one-digit	multiply a one-	multiply a one-	multiply a one-	multiply a one-
number by a	digit number by a	digit number by	digit number by a	digit number by
number up to	number up to	a number up to	number up to	a number up to
four digits	four digits with	four digits with	four digits with	four digits with
	80% or higher	70% - 79%	60% - 69%	less than 60%
	accuracyร้อยละ 80 ขึ้นไป	accuracy	accuracy	accuracy
2. Multiplication	Students can	Students can	Students can	Students can
of two-digit	multiply two-digit	multiply two-	multiply two-digit	multiply two-
numbers by two-	numbers by two-	digit numbers by	numbers by two-	digit numbers
digit numbers	digit numbers	two-digit	digit numbers	by two-digit
	with 80% or	numbers with	with 60% - 69%	numbers with
	higher accuracy	70% - 79%	accuracy	less than 60%
		accuracy		accuracy
3. Finding the	Students can find	Students can	Students can find	Students can
unknown value in	the unknown	find the	the unknown	find the
multiplication	value in	unknown value	value in	unknown value
equations	multiplication	in multiplication	multiplication	in multiplication
	equations with	equations with	equations with	equations with
	80% or higher	70% - 79%	60% - 69%	less than 60%
	accuracy	accuracy	accuracy	accuracy
4.Multiplication	Students can	Students can	Students can	Students can
word problems	solve	solve	solve	solve
	multiplication	multiplication	multiplication	multiplication
	word problems	word problems	word problems	word problems
	with 80% or	with 70% - 79%	with 60% - 69%	with less than
	higher accuracy	accuracy	accuracy	60% accuracy
5. Creating	Students can	Students can	Students can	Students can
multiplication	create	create	create	create
word problems	multiplication	multiplication	multiplication	multiplication
	word problems	word problems	word problems	word problems
	with 80% or	with 70% - 79%	with 60% - 69%	with less than
	higher accuracy	accuracy	accuracy	60% accuracy

Mathematics (M13101)

Content: Division

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr.3/7 finding answer of the unknown whole number by using Mathematical symbols for division that dividend not more than 4 digits divide with 1-digit divisor.

M 1.1 Gr. 3/8 Find the result of addition, subtraction, multiplication, and division of mixed operations involving whole numbers up to 100,000 and zero.

M 1.1 Gr. 3/9 Show the method to find the answer to two-step word problems involving whole numbers up to 100,000 and zero.

Learning Content

Division where the dividend is no more than four digits and the divisor is a one-digit number Word problems involving division

Creating word problems involving division

Key Concepts

Finding quotients and remainders using long division:

When dividing at any place value, write the single-digit quotient for that specific place.

If the dividend has 2 digits and the divisor has 1 digit, begin dividing from the tens place, then move to the units place.

If the dividend has 3 digits, start from the hundreds place, then tens, and units.

If the dividend has 4 digits, start from the thousands place, then hundreds, tens, and units respectively.

Finding quotients and remainders using short division (for dividends up to four digits and one-digit divisors):

Apply the same principle as in long division—write the single-digit quotient for each place value.

Finding unknown values in division sentences can be done by applying the relationship between multiplication and division.

Solving word problems:

Read and understand the problem, make a plan, solve the problem, find the answer, and check the reasonableness of the answer.

Creating word problems:

1. A complete word problem must contain both the given information and the question being

2. asked. The problem created should also be realistic and possible.

Key Competencies for Learners

- Communication skills
- Thinking skills

Desired Characteristics

- Determination in work
- Love of learning

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	
Assignments		
1. Worksheet on	- Understanding division	- Study the meaning and methods of
Division	where the dividend does not	division by examining examples of
	exceed four digits and the	multiplication and division, answering
	divisor is a single digit	questions, and participating in group
		discussions
		- Practice skills through exercises and
		activities
2. Worksheet on	- Solving division word	- Learn to solve word problems by
Division Word	problem	reading and understanding the
Problems	- Creating division word	problem, planning the solution,
	problems	finding the answer, and checking the
		reasonableness of the result
		- Practice creating problems that
		include both the given information
		and the question
		- Develop skills through practice and
		exercises

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A concernent	Quality Levels				
Assessment	Excellent (4)		Excellent (4)	Needs	
Aspect		Good (3)		Improvement	
				(1)	
1. Finding the	Students can	Students can	Students can	Students can find	
Unknown in	find the value	find the value of	find the value of	the value of the	
Division	of the unknown	the unknown in	the unknown in	unknown in a	
Sentences where	in a division	a division	a division	division sentence	
the dividend is no	sentence with a	sentence with a	sentence with a	with a dividend	
more than 4	dividend up to	dividend up to 4	dividend up to 4	up to 4 digits and	
digits and the	4 digits and a	digits and a one-	digits and a one-	a one-digit divisor	
divisor is a one-	one-digit divisor	digit divisor with	digit divisor with	with less than	
digit number	with 80% or	70% - 79%	60% - 69%	60% accuracy.	
	higher accuracy.	accuracy.	accuracy.		
2. Solving Mixed	Students can	Students can	Students can	Students can	
Operations	solve mixed	solve mixed	solve mixed	solve mixed	
(Addition,	operations with	operations with	operations with	operations with	
Subtraction,	whole numbers	whole numbers	whole numbers	whole numbers	
Multiplication,	up to 100,000	up to 100,000	up to 100,000	up to 100,000	
Division) Involving	and zero with	and zero with	and zero with	and zero with	
whole numbers	80% or higher	70% - 79%	60% - 69%	less than 60%	
up to 100,000	accuracy.	accuracy.	accuracy.	accuracy.	
and zero					

	Quality Levels			
Assessment	Excellent (4)		Excellent (4)	Needs
Aspect		Good (3)		Improvement
				(1)
3. Two-Step Word	Students can	Students can	Students can	Students can
Problems	show the	show the	show the	show the method
Involving whole	method to	method to solve	method to solve	to solve two-step
numbers up to	solve two-step	two-step word	two-step word	word problems
100,000 and zero	word problems	problems with	problems with	with whole
	with whole	whole numbers	whole numbers	numbers up to
	numbers up to	up to 100,000	up to 100,000	100,000 and zero
	100,000 and	and zero with	and zero with	with less than
	zero with 80%	70% - 79%	60% - 69%	60% accuracy.
	or higher	accuracy.	accuracy.	
	accuracy.			

Mathematics (M13101)

Content: Measure of Length

Strand 2: Measurement and geometry

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

- M2. 1 Gr3/ 3 Using appropriate measuring tools to measure and tell length in metres, centimetres and millimetres
- M2.1 Gr3/4 Estimate the answer of the length in metres and centimetres.
- M2.1 Gr3/5 Comparing the length between centimetres and millimetres/kilometres and metres from the situation.
- M2.1 Gr3/6 Write the solution to solve word problems about the length in centimetres and millimetres/ centimetres, kilometres and metres.

Learning Content

- Measuring length in centimeters and millimeters, meters and centimeters, kilometers and meters
- Choosing appropriate measuring tools for length
- Estimating length in meters and centimeters
- Comparing lengths using the relationship between units of length
- Solving word problems involving length

Key Concepts

- Expressing the length of objects in centimeters and millimeters, or in meters and centimeters
 - 10 millimeters = 1 centimeters
 - 100 centimeters = 1 meters
- Distance may be expressed in kilometers or in kilometers and meters
 - 1,000 meters = 1 kilometers
- When measuring the length of objects, appropriate tools and units of measurement should be chosen for accuracy.
- Estimating length in meters and centimeters involves giving an approximate measurement without using measuring tools, aiming to be as close as possible to the actual length.
- Comparing lengths or distances with different units requires converting all values to the same unit using unit conversion relationships before comparing.
- Solving word problems involves reading and understanding the problem, planning the solution, finding the answer, and verifying the reasonableness of the answer.

• Word problems may require the use of addition, subtraction, multiplication, or division involving measurements of length.

Key Competencies for Learners

- Communication skills
- Thinking skills

Desired Characteristics

- Determination in work
- Love of learning

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Learning Activities	
Assignments			
1. Worksheet: Measuring	- Measuring length in	- Studying the unit of length:	
Length in Centimeters	centimeters	centimeter	
		- Practicing length measurement	
		using a ruler	
2. Worksheet: Measuring	- Measuring length in meters	- Studying the unit of length:	
Length in Meters		meter	
		- Practicing measurement using a	
		meter stick, tape measure, and	
		measuring tape	
3. Worksheet: Comparing	- Comparing lengths and	- Practicing comparison using	
Lengths and Heights	heights	units such as meters,	
		centimeters, and millimeters	
4. Worksheet: Estimating	- Estimating length and	- Group activities and discussions	
Length and Distance	distance	on estimating length and	
		distance	
		- Practicing estimation using real	
		objects or places with	
		measurable lengths and	
		distances	
5. Worksheet: Solving	- Solving word problems	- Studying and practicing	
Word Problems Related to	involving length and distance	problem-solving processes	
Length and Distance			

Assessment Includes:

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- **3. Desirable Characteristics:** Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Assessment Aspect	Excellent (4)	Good (3)	Excellent (4)	Needs Improvement (1)
 Selecting Appropriate Measuring Tools and Measuring Lengths Measure and report the length of various objects in centimeters and millimeters, meters and centimeters 	The student can appropriately select measuring tools and accurately measure and report lengths in centimeters and millimeters, meters and centimeters with 80% or higher accuracy.	The student can do so with 70– 79% accuracy.	The student can do so with 60– 69% accuracy.	The student can do so with less than 60% accuracy.
2. Estimating Length in Meters and Centimeters	The student can estimate length in meters and centimeters with 80% or higher accuracy.	The student can estimate length in meters and centimeters with 70–79% accuracy.	The student can estimate length in meters and centimeters with 60–69% accuracy.	The student can estimate length in meters and centimeters with less than 60% accuracy.

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
3. Comparing	The student can	The student can	The student can	The student can
Lengths Between	compare lengths	do so with 70–	do so with 60–	do so with less
Units Comparing	between	79% accuracy.	69% accuracy.	than 60%
centimeters and	centimeters and			accuracy.
millimeters,	millimeters,			
meters and	meters and			
centimeters,	centimeters,			
kilometers and	kilometers and			
meters in various	meters in			
situations	different			
	situations with			
	80% or higher			
	accuracy.			
4. Solving Word	The student can	The student	The student can do	The student can
Problems	clearly show how	can do so with	so with 60–69%	do so with less
Involving Length	to solve word	70–79%	accuracy.	than 60%
	problems	accuracy.		accuracy.
	involving these			
	units with 80% or			
	higher accuracy.			

Mathematics (M13101)

Content: Let's measure of weight

Strand 2:Measurement and geometry

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

- M2.1 Gr3/7 Using appropriate weighing machine to measure and tell weight in kilogrammes and grammes.
- M2.1 Gr3/8 Estimate the answer of the weight in kilogrammes and grammes.
- M2.1 Gr3/9 Comparing the weight between kilogrammes and grammes/metric ton and grammes from the situation.
- M2.1 Gr3/10 Demonstrate methods for solving word problems involving weight using units of kilograms and grams, as well as metric tons and kilograms.

Learning Content

- 1. Choosing appropriate weighing instruments
- 2. Estimating weight in kilograms and hectograms
- 3. Comparing weights using the relationship between kilograms and grams, metric tons and kilograms

4. Solving word problems involving weight

Key Concepts

Weight can be expressed in **kilograms and hectograms**, or in **kilograms and grams**. When measuring the weight of objects, it is important to choose a suitable scale and use appropriate units of measurement.

Estimating weight means giving an approximate weight of an object without using a scale. This can be done by comparing it to known weights of familiar objects.

When comparing weights that use **different units**, convert them to the **same unit** first using the relationships:

1 kilogram = 1,000 grams

1 metric ton = 1,000 kilograms

To solve word problems about weight, students should:

Read and understand the problem

Plan how to solve it

Find the answer

Check if the answer is reasonable

Solving these problems may involve using addition, subtraction, multiplication, or division with weight units.

Key Competencies for Learners

- 1. Communication skills
- 2. Thinking skills

Desirable Characteristics

- 1. Determination in working
- 2. Eagerness to learn

Work Pieces and Assignments:

Work Pieces / Assignments	Assessment Criteria	Learning Activities
1. Reading weight in	- Learning how to read	- Studying standard types of
kilograms, grams, and	weights in kilograms, grams,	scales and units used for
hectograms	and hectograms	weighing (kilograms)
	- Choosing appropriate	- Practicing reading weight values
	weighing scales	correctly using suitable weighing
		tools
2. Comparing weights using	- Comparing weights based on	- Studying how to compare
unit relationships	the relationship between	weights using kilograms, grams,
		and hectogram
		- Using supplementary media
		and learning materials for
		exploration
		- Practicing skills in converting
		and comparing different weight
		units
3. Estimating weights of	- Activities to estimate the	- Group discussions about
various objects	weight of different objects	estimation techniques and
	without using a scale	actual weight reading
		-Practicing weight estimation
		based on familiar object weights
		- Comparing estimated weight
		with actual weight for better
		accuracy

Work Pieces / Assignments	Assessment Criteria	Learning Activities
4. Solving real-world	- Using mathematical	- Group activities for solving
problems related to weight	language and symbols to	word problems involving weight
	clearly express solutions	- Practice reading and
	- Group activities for solving	understanding problems,
	word problems involving	planning solutions, finding
	weight	answers, and checking for
		reasonableness
		- Develop analytical thinking
		skills by solving problems from
		sentence strips

Assessment Includes:

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels				
Assessment				Needs	
, opeee	Excellent (4)	Good (3)	Excellent (4)	Improvement	
				(1)	
1.Selecting	Students can	Students can	Students can do	Students can do	
appropriate	select	do so with 70–	so with 60–69%	so with less than	
scales and	appropriate	79% accuracy.	accuracy.	60% accuracy.	
measuring in	scales and				
kilograms and	measure weights				
hectograms	in kilograms and				
	hectograms with				
	at least 80%				
	accuracy.				
2. Estimating	Students can	Students can	Students can do	Students can do	
weights in	estimate weights	do so with	so with 60–69%	so with less than	
kilograms and	in kilograms and	70–79%	accuracy.	60% accuracy.	
hectograms	hectograms with	accuracy.			
	at least 80%				
	accuracy.				

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
3. Comparing	Students can	with 70–79%	with 60–69%	with less than
weights: kilograms	compare	accuracy.	accuracy.	60% accuracy.
to grams, metric	weights using			
tons to kilograms	conversion			
	between			
	kilograms and			
	grams, metric			
	tons and			
	kilograms from			
	various contexts			
	with at least			
	80% accuracy.			
4. Solving word	Students	with 70–79%	with 60–69%	with less than
problems	can	accuracy.	accuracy.	60% accuracy.
involving weight	demonstrate			
(kg & g, metric	methods for			
tons & kg)	solving word			
	problems			
	involving			
	weights in			
	kilograms and			
	grams, or metric			
	tons and			
	kilograms with			
	at least 80%			
	accuracy.			

Mathematics (M13101)

Strand 2: Measurement and geometry

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1Gr3/11 Using appropriate measuring tools to measure and compare volume capacity in litres and milliliters.

M2.1Gr3/12 Estimate the answer of the volume and the capacity in litres.

M2.1Gr3/13 Write the solution to solve word problems about of the volume and the capacity in litres and milliliters.

Learning Content

- Measuring volume and capacity in liters and milliliters
- Selecting appropriate measuring tools
- Estimating volume and capacity in liters
- Comparing volume and capacity using the relationships between liters, milliliters, teaspoons, tablespoons, and measuring cups with milliliters
- Solving word problems involving volume and capacity with units in liters and milliliters

Key Concepts

- Volume and capacity of containers can be expressed in liters, milliliters, or a combination of both. When measuring the volume of various substances, appropriate measuring tools should be used, and the volume should be stated in suitable units.
- Estimating the volume and capacity of containers in liters involves making an approximate judgment of the actual volume or capacity without using measuring tools.
- When comparing volumes or capacities of different items with different units, it is necessary to convert all measurements to the same unit before making comparisons. Use the following conversions:
 - 1 liter = 1,000 milliliters
 - 1 teaspoon = 5 milliliters
 - 1 tablespoon = 15 milliliters
 - 1 measuring cup = 250 milliliters
- To solve word problems, students should read and understand the problem, make a plan to solve it, find the answer, and verify the reasonableness of the result.

Core Competencies of Learners

- Communication skills
- Thinking skills

Desirable Characteristics

- Diligence in work
- Love of learning

Work Pieces and Assignments:

Work Pieces /	Associate ant Critoria	Learning Activities	
Assignments	Assessment Chtena		
1. Worksheet: Measuring	- Measuring volume and	- Studying measuring tools and	
Volume and Capacity in	capacity in liters and milliliters	the units used in measurement,	
Liters and Milliliters (Using	(using appropriate measuring	focusing on liters	
Appropriate Measuring	tools)	-Practicing measurement skills	
Tools)		using measuring instruments	
2. Worksheet: Comparing	- Comparing volume and	- Studying how to compare the	
Volume and Capacity	capacity using the	volume and capacity of different	
Using the Relationship	relationship between liters,	items	
Between Liters, Milliliters,	milliliters, teaspoons,	- Practicing the process of	
Teaspoons, Tablespoons,	tablespoons, and measuring	comparing volume and capacity	
and Measuring Cups	cups		
3. Worksheet: Estimating	- Estimating volume and	- Group activities related to	
Volume and Capacity in	capacity in liters	estimating volume and capacity	
Liters		in liters	
4. Worksheet: Solving	- Solving word problems	- Studying measurement-related	
Word Problems Involving	involving volume and capacity	word problems	
Volume and Capacity in	in liters and milliliters	- Practicing problem analysis,	
Liters and Milliliters		solving problems, finding	
		answers, and verifying	
		reasonableness	

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
1. Selecting	Students can	Students can	Students can	Students can
Appropriate	select appropriate	select	select appropriate	select
Measuring Tools	measuring tools	appropriate	measuring tools to	appropriate
and	to measure and	measuring tools	measure and	measuring tools
Measuring/Compa	compare volume	to measure and	compare volume	to measure and
ring Volume and	and capacity in	compare	and capacity in	
Capacity in Liters	liters and	volume and	liters and	
and Milliliters	milliliters with	capacity in liters	milliliters with	
	80% accuracy or	and milliliters	60%–69%	
	higher.	with 70%–79%	accuracy.	
		accuracy.		
2. Estimating	Students can	Students can	Students can	Students can
Volume and	accurately	estimate	estimate volume	estimate
Capacity in Liters	estimate volume	volume and	and capacity in	volume and
	and capacity in	capacity in liters	liters with 60%–	capacity in liters
	liters at 80% or	with 70%–79%	69% accuracy.	with less than
	above.	accuracy.		60% accuracy.
3. Solving Word	Students can	Students can	Students can	Students can
Problems	demonstrate	demonstrate	demonstrate	demonstrate
Involving Volume	methods to solve	methods to	methods to solve	methods to
and Capacity in	word problems	solve such	such problems	solve such
Liters and	involving volume	problems with	with 60%–69%	problems with
Milliliters	and capacity with	70%–79%	accuracy.	less than 60%
	units in liters and	accuracy.		accuracy.
	milliliters at 80%			
	accuracy or			
	higher.			

Mathematics (M13101)

Content: Learning about Money

Strand 2: Measurement and geometry

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr3/1 Write the solution to solve word problems about money.

Learning Content

- Expressing amounts of money and writing money amounts using a decimal point
- Comparing amounts of money and exchanging money
- Reading and recording income and expenses
- Solving money-related word problems

Key Concepts

- Expressing amounts of money using different banknotes and coins by stating amounts in baht, satang, or both baht and satang. Representing money using various banknotes and coins according to the specified amount.
- Writing money amounts using a decimal point: a dot is used to separate baht and satang, and the unit "baht" is written at the end. When reading amounts written with a decimal point, the numbers before the dot represent baht, and the numbers after the dot represent satang.
- Comparing amounts of money by first comparing the baht amounts; if the baht amounts are equal, then compare the satang amounts.
- Money can be exchanged only if the amount exchanged equals the amount received.
- Solving word problems involves reading and understanding the problem, planning a solution, finding the answer, and verifying the reasonableness of the solution.
- Recording income and expenses includes a title, date (day, month, year), and a table. The table records the date (day, month, year), the item, income, expenses, and the remaining balance.

Core Competencies of Learners

- Communication skills
- Thinking skills

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Learning Activities	
Assignments			
1. Worksheet: Expressing	- Expressing amounts of money	- Studying how to express and	
Amounts of Money and	and writing amounts using a	write money amounts with a	
Writing Money Amounts	decimal point decimal point		
Using a Decimal Point		- Practicing reading and writing	
		money amounts	
2. Worksheet: Comparing	- Comparing amounts of	- Practicing skills in comparing	
Amounts of Money and	money and exchanging money	money amounts and exchanging	
Exchanging Money		money	
		- Group activities on comparing	
		amounts of money	
3. Worksheet: Reading and	- Reading and writing income	- Activities involving reading and	
Writing Income and	and expense records	writing income and expense	
Expense Record		record	
4. Worksheet: Solving	- Solving word problems	- Practicing problem-solving	
Word Problems Related to	related to money	processes related to money	
Money	- Creativity in creating word	- Creating word problems based	
	problems	on real-life situations	

Assessment Includes:

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Assessment	Excellent (4)	Good (3)	Excellent (4)	Needs
Aspect				Improvement
				(1)
1. Expressing and	Students can	Students can	Students can	Students can
Writing Money	express and write	express and	express and	express and write
Amounts Using a	money amounts	write money	write money	money amounts
Decimal Point	using a decimal	amounts using a	amounts using	using a decimal
	point with 80%	decimal point	a decimal point	point with less

	Quality Levels			
Assessment				Needs
Aspect	Excellent (4)	Good (3)	Excellent (4)	Improvement
				(1)
	accuracy or	with 70%–79%	with 60%–69%	than 60%
	higher.	accuracy.	accuracy.	accuracy.
2. Comparing	Students can	Students can	Students can	Students can
Amounts of	compare	compare	compare	compare
Money and	amounts of	amounts of	amounts of	amounts of
Exchanging	money and	money and	money and	money and
Money	exchange money	exchange	exchange	exchange money
	with 80%	money with	money with	with less than
	accuracy or	70%–79%	60%-69%	60% accuracy.
	higher.	accuracy.	accuracy.	
3. Reading and	Students	Students	Students	Students
Writing Income	can read and	can read and	can read and	can read and
and Expense	write income and	write income	write income	write income and
Records	expense records	and expense	and expense	expense records
	with 80%	records with	records with	with less than
	accuracy or	70%–79%	60%–69%	60% accuracy.
	higher.	accuracy.	accuracy.	
4. Showing	Students can	Students can	Students can	Students can
Methods to Solve	demonstrate	demonstrate	demonstrate	demonstrate
Money-Related	methods to solve	methods to	methods to	methods to solve
Word Problems	money-related	solve money-	solve money-	money-related
	word problems	related word	related word	word problems
	with 80%	problems with	problems with	with less than
	accuracy or	70%–79%	60%–69%	60% accuracy.
	higher.	accuracy.	accuracy.	

Mathematics (M13101)

Content: Mathematical skill and processes

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

- M1.2 Gr3/1 Perform addition, subtraction, multiplication, and division—including mixed operations—of whole numbers not exceeding 100,000 and zero, with an awareness of the reasonableness of the answers.
- M1.2 Gr3/2 Analyze and show the steps to solve word problems and mixed-operation problems involving whole numbers not exceeding 100,000 and zero, with an awareness of the reasonableness of the answers, and create word problems.

Learning Content

- Mixed operations: addition, subtraction, multiplication, and division
- Word problems involving mixed operations
- Creating word problems involving mixed operations

Key Concepts

- To solve mixed operations (addition, subtraction, multiplication, and division), calculate expressions in parentheses first, then find the final result.
- Comparing results of mixed operations can be done by evaluating which result is greater, smaller, or equal—sometimes without full calculation.
- Solving two-step word problems involving addition, subtraction, multiplication, or division involves:
 - Reading and understanding the problem
 - Planning a solution
 - Finding the answer
 - Verifying the reasonableness of the result
- Creating two-step word problems must include both the given information and the question being asked.

Core Competencies of Learners

- Communication skills
- Thinking skills
- •

Desirable Characteristics

- Diligence in work
- Love of learning

Work Pieces and Assignments:

Work Pieces /	Assessment Criteria	Learning Activities	
1 Worksheet on addition	Addition subtraction	Learn the meaning and	
subtraction multiplication	multiplication division	methods of addition	
and division	Mixed	subtraction multiplication	
	Mixed	division Summarize knowledge	
		as a mind man	
2 Worksheet on Showing	Shows how to solve problems	Practice skills of addition	
2. WORSHEEL ON Showing	involving addition subtraction	subtraction multiplication	
now to do Mixed addition,	multiplication, and division	subtraction, multiplication,	
subtraction, multiplication,	multiplication, and division.	mixed division, solving problems,	
3. Worksheet on showing	- Addition, subtraction,	- Practice problem analysis skills,	
how to solve problems	multiplication, division	show how to solve problems,	
involving addition,	Mixed	find answers and check answers	
subtraction, multiplicate	- Demonstration of problem	appropriately Use a variety of	
	solving Mixed addition,	methods	
	subtraction, multiplication,	- Practice teamwork skills to	
	division problems	analyze, solve problems, find	
	- Demonstration of problem	answers and check answers	
	solving Mixed addition,		
	subtraction, multiplication,		
	division		
4. Worksheet on Creating	- Work on creating problem-	- Study how to create problems	
Addition, Subtraction,	solving Addition, subtraction,	from real objects or search for	
Multiplication, and Division	multiplication, division	information from learning	
Problem	- Using a variety of methods to	materials	
	solve problems	- Practice creating problems	
	- Being creative in creating	- Doing worksheet activities	
	problems		

- 1. Knowledge: Achieve a score of 60% or higher.
- 2. Mathematical Skills and Processes: Achieve an evaluation level of 2 or higher.
- 3. Desirable Characteristics: Achieve an evaluation level of 2 or higher.

A	Quality Levels			
Aspect	Excellent (4)	Good (3)	Excellent (4)	Needs Improvement (1)
1. Finding the	Students can find	Students can	Students can find	Students can
result of	the results of	find the results	the results of	find the mixed
addition,	addition,	of mixed	mixed addition,	addition,
subtraction,	subtraction,	addition,	subtraction,	subtraction,
multiplication,	multiplication,	subtraction,	multiplication	multiplication
division of	and division of	multiplication	and division of	and division
numbers not	numbers not	and division of	numbers not	results of whole
exceeding	exceeding	whole numbers	exceeding	numbers
100,000 and 0	100,000 and 0	not exceeding	100,000 and 0 at	not exceeding
	80% or more	100,000	60 – 69 percent.	100,000 and 0
		and 0		less than
		70 – 79 percent		60 percent.
2. Problem	Students can	Students can	Students can	Students can
2 steps of	demonstrate 80%	demonstrate	demonstrate	demonstrate
numbers not	or more of their	how to find the	how to find the	how to find the
exceeding	ability to find the	answer to a 2-	answer to a 2-	answer to a two-
100,000 and 0	answer to a two-	step problem of	step problem of	step problem
	step problem	numbers up to	numbers up to	involving
	involving	100,000 and 0	100,000 and 0 at	numbers up to
	numbers up to	at 70-79%.	60-69%.	100,000 and
	100,000 and zero.			zero. Less than
				60 percent
3. Creating	Students can	Students can	Students can	Students can
Addition,	create addition,	create mixed	create mixed	create mixed
subtraction,	subtraction,	addition,	addition,	addition,
multiplication,	multiplication,	subtraction,	subtraction,	subtraction,
and division	and division	multiplication,	multiplication,	multiplication,
problems and	problems and	and division	and division	and division
finding the	find answers at	problems and	problems and	problems and
answer	least 80%.	find the	find the answers	find the
		answers.70 –	60-69%.	answers.
		79%		Less than 60
				percent
Grade 4 Unit Design Framework

Mathematics (M14101)

Content: Numbers Greater than 100,000

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

- M1.1 Gr4/1 Write and read Hindu-Arabic and Thai numerals and written forms showing cardinal numbers, 0, fractions, and one-place decimals.
- M1.1 Gr4/2 Compare and arrange sequence of cardinal numbers and 0, fractions, and oneplace decimals.

Learning Objective

Students will be taught to :

- 1. Understand numbers greater than 100,000.
- 2. Compare and order numbers greater than 100,000.
- 3. Recognize and extend number patterns formed by counting on and counting back.
- 4. Estimation of counts and use of the symbol of =

Learning Outcomes

Students will be able to:

- 1. Count, read and write numbers greater than 100,000 in numerals.
- 2. Identify place value and value of each digit.
- 3. Write numbers in expanded form.
- 4. Compare and order numbers greater than 100,000.
- 5. Count forward and count backward.
- 6. Extend number sequences.
- 7. Complete missing terms in given number sequences.

Learning Areas

- Reading and writing numbers greater than 100,000
- Place value, digit value and using zero as a placeholder
- Writing numbers in the expanded form
- Comparing numbers
- Ordering numbers
- Number patterns

Teaching and Learning Activities

1. Guide students to understand hundreds, thousands and millions. Guide students to read and write the numbers.

2. Write a few numbers containing more than 5 digits on the board and have students read them and write the number words.

3. Write a 7-digit number on the board and explain the place value of each digit and its value. Emphasize that a zero in a number has a place value.

4. Get three students to write numbers containing more than five digits. Then, get the other students to state the place value of each digit in each number and its value.

5. When expanding numbers, it is better for students to present a number in a place value table first before writing it in expanded form. Try a few numbers with zero.

6. Remind students of the signs of comparison and the terms used in comparison such as 'greater than', 'more than', 'less than', 'smaller than', 'equal to' and 'not equal to'.

7. Emphasize to students to first compare the number of digits when comparing two numbers before comparing the values of the leftmost digits.

8. Remind students of the meanings of ascending and descending.

9. Explain what number pattern is. The number pattern may increase or decrease.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Writing and reading	- Writing Hindu-Arabic numerals,	Study of reading and writing
numbers greater than	Thai numerals and number letters	of numbers
100,000		
2. The emergence of the	Telling the value of each digit	Study of the origin of
main principles of millions,		numbers using an abacus
tens of millions, and		
hundreds of millions		
3. Telling the value of each	Writing numbers greater than	Study examples of stating the
digit in a number greater	100,000 in expanded form	value of each digit in a given
than 100,000		number.
4. Writing numbers greater	Writing numbers greater than	A study of writing shows
than 100,000 in expanded	100,000 in expanded form	numbers greater than 100,000
form		in expanded form.
5. A study of writing shows	Comparing and sorting numbers	Study of principles and
numbers greater than	greater than 100,000	methods for comparing and
100,000 in expanded form.		ordering numbers greater
		than 100,000.
6. Approximation to the	Approximate values using	Study of approximation to
nearest ten, hundred,	symbols of =	integers of ten, hundred,
thousand, ten thousand,		thousand, ten thousand,
hundred thousand, and		hundred thousand and
million.		million.

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assassment Itom	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1. Writing and Reading Hindu-Arabic numerals Thai numerals and letters representing counting numbers greater than 100,000	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 80% accuracy or higher.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 70%–79% accuracy.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 60%–69% accuracy.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with less than 60% accuracy.
2. Cutting board shows the number of counts greater than 100,000 in distribution form	Students can correctly write numbers greater than 100,000. with 80% accuracy or higher.	Students can correctly write numbers greater than 100,000. with 70%–79% accuracy.	Students can correctly write numbers greater than 100,000. with 60%–69% accuracy.	Students can correctly write numbers greater than 100,000. with less than 60% accuracy.
3. Comparing and sorting Counts greater than 100,000 from various situations	Students can correctly compare and order numbers greater than 100,000. with 80% accuracy or higher.	Students can correctly compare and order numbers greater than 100,000. with 70%–79% accuracy	Students can correctly compare and order numbers greater than 100,000. with 60%–69% accuracy.	Students can correctly compare and order numbers greater than 100,000. with less than 60% accuracy.
4. Approximation Approximate values are integers of ten, hundred, thousand, ten	Students can estimate values to the nearest ten, hundred, thousand. ten	Students can estimate values to the nearest ten, hundred, thousand, ten	Students can estimate values to the nearest ten, hundred, thousand. ten	Students can estimate values to the nearest ten, hundred, thousand. ten

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
thousand, hundred	thousand,	thousand,	thousand,	thousand,
thousand, million	hundred	hundred	hundred	hundred
and their	thousand,	thousand,	thousand,	thousand,
application	million	million	million	million
	correctly. with	correctly. with	correctly. with	correctly. with
	80% accuracy or	70%–79%	60%–69%	less than 60%
	higher.	accuracy	accuracy.	accuracy.

Mathematics (M14101)

Content: Addition and Subtraction greater than 100,000

Time: 13 hours

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr4/7 estimated results of **addition subtract**, **multiplied**, division from various situations reasonably.

M1.1 Gr4/8 Find the value of the unknown in mathematical statement showing addition and mathematical statement showing subtract of cardinal numbers more than 100,000 and 0

Learning Objective

Students will be taught to :

- 1. Perform addition of numbers.
- 2. Perform subtraction of numbers.
- 3. Perform computations involving addition and subtraction to solve word problems.

Learning Outcomes

Students will be able to:

- 1. Add up two numbers.
- 2. Add up three numbers.
- 3. List the properties of addition.
- 4. Subtract two numbers.
- 5. Subtract three numbers.
- 6. Solve word problems involving addition and subtraction.

7. Solve problems and word problems involving combined (addition and subtraction) operations.

Learning Areas

- Addition
- Subtraction
- Combined operations

Teaching and Learning Activities

1. Guide students to add two numbers using the standard written method. Remind them to align the digits of same place values vertically and add up them up beginning from the digits in ones. Regroup when necessary.

2. Guide students to add up three numbers. They can either add up all the three numbers at once or add up two numbers first before adding the third number.

3. Write three numbers on the boards and have students add them up.

4. There are two properties of addition that students should know – the commutative property of addition and the associative property of addition.

5. Guide students to subtract two numbers using the standard written method. Remind them to align the digits of same place values vertically and subtract them beginning from the digits in ones. Regroup when necessary.

6. Guide students to subtract three numbers. Emphasize that for subtraction of three numbers, we subtract the second number from the first number. Then, we subtract the third number from the initial answer to get the final answer.

7. Explain the meaning of combined operations.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Adding two numbers	Adding numbers greater than	Study of Addition of 2
greater than 100,000	100,000	Numbers
		More than 100,000
2. Subtraction of numbers	Subtracting numbers greater than	Study of deletion of numbers
greater than 100,000	100,000	more than 100,000
2 numbers		2 numbers
3. Finding the sum by	Finding the sum and the minus by	Study of positive and
approximation	using the nearest ten, hundred, or	negative effects
	thousand values.	By using estimates
4. Calculations using a	Basic use of a calculator	Study of calculations using a
calculator		calculator to find addition,
		subtraction, multiplication
		and division results.

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
5. Finding the Value of	Finding the unknown value	Study of finding the value of
Unknowns from	with a plus sign	unknowns from addition
Symbolic Addition		symbolic sentences
Sentences		
6. Finding the value of an	Finding the unknown value	Study of finding the value of
unknown from	with a minus sign	unknowns from subtraction
Subtraction symbolic		symbolic sentences
sentences		
7. Using the solution of	Applying knowledge about finding	Study of the application of
problems to find the value	unknown values to problem	knowledge on finding
of unknowns from the	solving	unknown values to solve
symbolic sentences of		problems
addition and subtraction		
8. Analysis of problems	Addition and subtraction	Study of the analysis of
involving addition and	problems	problems involving addition
subtraction of whole		and subtraction of whole
numbers		numbers
9. Creating addition and	- Creating a problem from a given	- Study of problem solving
subtraction word problems	symbolic sentence	Addition and subtraction of
	- Creating problem sets from	whole numbers
	given situations	

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1. Adding two numbers greater than 100,000	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 80% accuracy or higher.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 70%–79% accuracy.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with 60%–69% accuracy.	Students can correctly write and read Hindu- Arabic numerals, Thai numerals and letters representing numbers greater than 100,000. with less than 60% accuracy.
2. Subtraction of numbers greaterthan 100,0002 numbers	Students can correctly find the negative integers greater than 100,000. with 80% accuracy or higher.	Students can correctly find the negative integers greater than 100,000. with 70%–79% accuracy.	Students can correctly find the negative integers greater than 100,000. with 60%–69% accuracy.	Students can correctly find the negative integers greater than 100,000. with less than 60% accuracy.
3. Finding the sum by approximation	Students can find the sum by using approximation correctly. with 80% accuracy or higher.	Students can find the sum by using approximation correctly. with 70%–79% accuracy.	Students can find the sum by using approximation correctly. with 60%–69% accuracy.	Students can find the sum by using approximation correctly. with less than 60% accuracy.

		Assessme	ent Criteria	
Accessment Itom	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
4. Calculations using a calculator	Students can find negative results using correct approximation.	Students can find negative results using correct approximation.	Students can find negative results using correct approximation.	Students can find negative results using correct approximation.
	with 80% accuracy or higher.	with 70%–79% accuracy.	with 60%–69% accuracy.	with less than 60% accuracy.
5. Finding the Value of Unknowns from Symbolic Addition Sentences	Students can use a calculator to find addition, subtraction, multiplication and division correctly. with 80% accuracy or higher.	Students can use a calculator to find addition, subtraction, multiplication and division correctly. with 70%–79% accuracy.	Students can use a calculator to find addition, subtraction, multiplication and division correctly. with 60%–69% accuracy.	Students can use a calculator to find addition, subtraction, multiplication and division correctly. with less than 60% accuracy.
6. Finding the value of an unknown from Subtraction symbolic sentences	Students can correctly find the value of unknowns in addition sentences. with 80% accuracy or higher.	Students can correctly find the value of unknowns in addition sentences. with 70%–79% accuracy.	Students can correctly find the value of unknowns in addition sentences. with 60%–69% accuracy.	Students can correctly find the value of unknowns in addition sentences. with less than 60% accuracy.
7. Using the solution of problems to find the value of unknowns from the symbolic	Students can correctly find the value of the unknown in a subtraction symbolic	Students can correctly find the value of the unknown in a subtraction symbolic	Students can correctly find the value of the unknown in a subtraction symbolic	Students can correctly find the value of the unknown in a subtraction symbolic

		Assessme	ent Criteria	
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
addition and	with 80%	with 70%–79%	with 60%–69%	with less than
subtraction	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
8. Analysis of	Students can			
problems involving	apply their	Students can	Students can	Students can
addition and	knowledge	apply their	apply their	apply their
subtraction of	about	knowledge about	knowledge about	knowledge about
whole numbers	finding the	finding the value	finding the value	finding the value
	value of	of	of	of
	unknowns to	unknowns to	unknowns to	unknowns to
	solve problems	solve problems	solve problems	solve problems
	correctly.	correctly.	correctly.	correctly.
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
9. Creating addition	Students can	Students can	Students can	Students can
and subtraction	analyze and	students can	analyze and	
word problems	solve			anatyze and
	addition and	addition and	addition and	addition and
	subtraction	subtraction	subtraction	subtraction
	problems	problems	problems	problems
	correctly.	problems	correctly	problems
	with 80%	with 70% 70%	with 60% 60%	with loss than
	accuracy or			
	higher.	accuracy.	accuracy.	00% accuracy.
10. Creating	Students can	Students can	Students can	Students can
Addition and	correctly create		correctly create	
subtraction	addition and	addition and	addition and	addition and
problems	subtraction	subtraction	subtraction	subtraction
	problems.	problems	problems	problems
	with 80%	with 7006 7006	with 6006 6006	with loss than
	accuracy or			60% accuracy
	higher.	accuracy.	accuracy.	0070 accuracy.

226

Mathematics (M14101)

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr4/7 estimated results of **addition subtract**, **multiplied**, division from various situations reasonably.

M1.1 Gr4/9 Find the value of the unknown in the mathematical statement showing multiplied multiples digit b Number with product not exceeding 6 value and mathematical statementshowing dividend not exceeding 6

Learning Objective

Students will be taught to :

- 1. Understand properties of multiplication.
- 2. Multiply of any two numbers.
- 3. Solve word problems involving multiplication.

Learning Outcomes

Students will be able to:

- 1. List the properties of multiplication.
- 2. Multiply 1-digit numbers by multiple-digit numbers.
- 3. Multiply 2-digit numbers by 3-digit numbers.
- 4. Multiply 3-digit numbers by 3-digit numbers.
- 5. Multiply of multiple-digit numbers.
- 6. Use multiplication to solve word problems.

Learning Areas

- Properties of multiplication
- Multiplication of 1-digit numbers by multiple-digit numbers
- Multiplication of 2-digit numbers by 3-digit numbers
- Multiplication of 3-digit numbers by 3-digit numbers
- Multiplication of multiple-digit numbers
- Using multiplication to solve word problems

Teaching and Learning Activities

1. There are a few properties of multiplication – commutative property, associative property, distributive property, multiplication by 1 and multiplication 0.

2. When multiplying numbers, write them in the standard written method. Start to multiply from the digit in the ones place. Regroup when necessary.

3. Guide students on how to multiply 3-digit numbers by 20, 30, ..., 90. Just multiply the 3digit numbers by 2, 3, ..., 9 before multiplying the result by 10.

4. When multiplying 2-digit numbers by 100, just add two zeros at the right end of the 2-digit numbers.

5. When multiplying 2-digit numbers by 200, 300, 400, ..., 900, multiply the 2-digit numbers with 2, 3,, 9 and add two zeros at the right end of the products.

6. When multiplying a 2-digit number by a 3-digit number, write them in the standard written method. First multiply the ones, then multiply the tens and add up the products.

7. When multiplying a 3-digit number by a 3-digit number, write them in the standard written method. First multiply the ones, then the tens, follow by the hundreds and add up the products.

8. This goes the same for multiplication of multiple-digit numbers.

9. Sometimes in word problems, we need to use multiplication to solve them.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Multiplication	- Multiplication of numbers	- Study multiplication of 1-
1-digit and 4-digit numbers	- Considering rationality	digit numbers with 4-digit
		numbers
2. Multiplication	- Multiplication of whole numbers	- Study the multiplication of
2-digit numbers and	- Consider the rationality	2-digit numbers with numbers
more than 2-digit numbers		greater than 2 digits.
3. Multiplication	- Multiplication of numbers	- Study of multiplication of
Numbers greater than 2	- Considering rationality	numbers
digits		more than 2 digits with
With numbers greater than		numbers
2 digits		more than 2 digits
4. Division where the	- Division of whole numbers (long	- Study of division where the
dividend is more than 4	division)	dividend
digits and the divisor is 1		is more than 4 digits and the
digit		divisor
		is 1 digit.
5. Division	- Division of whole numbers	- Study of division where the
Where the dividend is more	(short division)	dividend is more than 4 digits
than 4 digits		and the divisor is 1 digit.
The divisor has 1 digit		
6. Division where	- Division of whole numbers (long	- Study of division with 2
Divisor has 2 digits	division)	digits of divisor
7. Division where	- Division of whole numbers (long	- Study of division with 3
The divisor has 3 digits	division)	digits of divisor

Workpiece / Task	Assessment Criteria (Indicators	Learning Activities	
Responsibility	Assessment Criteria / Indicators	Learning Activities	
8. Finding the value of	- The product of any two	Study of finding the value of	
Unknown	numbers when divided by any	unknowns in the symbolic	
(symbolic sentence	one of the two numbers, the	sentence	
with x)	resulting quotient is equal to the	marked with X	
	other number.		
9. Finding the value of	- The product of any two	- Study of finding the value of	
Unknown	numbers when divided by any	unknowns in symbolic	
(Symbolic sentence	one of the two numbers, the	sentences	
With ÷ sign)	resulting quotient	with ÷ symbol	
	is equal to the other number.		
10. Patterns of	- Multiplication and division of	- Study of the patterns of	
Multiplication and division	numbers	multiplication and division.	
11. Problem solving	- Solving problems involving	- Study of multiplication and	
Multiplication and division	multiplication and division of	division problems.	
	whole numbers		
12. Creating	- Creating problems involving	- Study of problem solving	
Multiplication and division	multiplication and division of		
problems	whole numbers		

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

	Assessment Criteria			
Assessment Items	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1. Multiplication 1-digit and 4-digit numbers	Students can find the product of 1-digit and 4- digit numbers correctly. with 80% accuracy or higher.	Students can find the product of 1-digit and 4- digit numbers correctly. with 70%–79% accuracy.	Students can find the product of 1-digit and 4- digit numbers correctly. with 60%–69% accuracy.	Students can find the product of 1-digit and 4- digit numbers correctly. with less than 60% accuracy.
2. Multiplication 2-digit numbers and more than 2-digit numbers	Students can correctly multiply the product of 2- digit numbers with more than 2-digit numbers. with 80% accuracy or higher.	Students can correctly multiply the product of 2-digit numbers with more than 2-digit numbers. with 70%–79% accuracy.	Students can correctly multiply the product of 2-digit numbers with more than 2-digit numbers. with 60%–69% accuracy.	Students can correctly multiply the product of 2-digit numbers with more than 2-digit numbers. with less than 60% accuracy.
3. Multiplication Numbers greater than 2 digits With numbers greater than 2 digits	Students can correctly multiply the product of a two-digit number by a two-digit number.	Students can correctly multiply the product of a two-digit number by a two-digit number. with 70%–79% accuracy.	Students can correctly multiply the product of a two-digit number by a two-digit number. with 60%–69% accuracy.	Students can correctly multiply the product of a two-digit number by a two-digit number. with less than 60% accuracy.

Assessment Criteria

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
	with 80%			
	accuracy or			
	higher.			
4. Division by the	Students can	Students can	Students can	Students can
dividend is more	correctly			
than 4 digits and	calculate	calculate	calculate	calculate
the divisor is 1 digit	quotients with a	quotients with a	quotients with a	quotients with a
	digit greater	digit greater than	digit greater than	digit greater than
	than 4 and a	4 and a digit	4 and a digit	4 and a digit
	digit divisor.	divisor.	divisor.	divisor.
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.	,		,
5. Division by	Students can	Students can	Students can	Students can
Divisor has 2 digits	correctly find	correctly find the	correctly find the	correctly find the
	the quotient	quotient with 2	quotient with 2	quotient with 2
	with 2 digits as	digits as the	digits as the	digits as the
	the divisor.	divisor.	divisor.	divisor.
	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	nigner.			
6. Division by	Students can	Students can	Students can	Students can
digite	the quetient	correctly find the	correctly find the	correctly find the
algits	with 3 digits as	quotient with 3	quotient with 3	quotient with 3
	the divisor	digits as the	digits as the	digits as the
		divisor.	divisor.	divisor.
		with 70%–79%	with 60%–69%	with less than
	higher.	accuracy.	accuracy.	60% accuracy.
7. Finding the	Chudents	Students can find	Students can find	Students can find
value of	Students can	the correct value	the correct value	the correct value
Unknown	und the correct	of unknowns.	of unknowns.	of unknowns.
(symbolic sentence		with 70%–79%	with 60%–69%	with less than
with x)	unknowns.	accuracy.	accuracy.	60% accuracy.

		Assessme	ent Criteria	
Accorrect Itom	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
	with 80%			
	accuracy or			
	higher.			
8. Finding the	Students can			
value of	find the correct	Students can find	Students can find	Students can find
Unknown	value of	the correct value	the correct value	the correct value
(Symbolic sentence	unknowns.	of unknowns.	of unknowns.	of unknowns.
With ÷ sign)	with 80%	with 70%–79%	with 60%–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
9. Patterns of Multiplication and division	Students can find the correct multiplication and division patterns. with 80% accuracy or higher.	Students can find the correct multiplication and division patterns. with 70%–79% accuracy.	Students can find the correct multiplication and division patterns. with 60%–69% accuracy.	Students can find the correct multiplication and division patterns. with less than 60% accuracy.
10. Problem solving Multiplication and division	Students can solve multiplication and division problems correctly. with 80% accuracy or higher.	Students can solve multiplication and division problems correctly. with 70%–79% accuracy.	Students can solve multiplication and division problems correctly. with 60%–69% accuracy.	Students can solve multiplication and division problems correctly. with less than 60% accuracy.
11. Creating Multiplication and division problems	Students can Create multiplication and division problems correctly.	Students can Create multiplication and division problems correctly. with 70%–79% accuracy.	Students can Create multiplication and division problems correctly. with 60%–69% accuracy.	Students can Create multiplication and division problems correctly. with less than 60% accuracy.

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
	with 80%			
	accuracy or			
	higher.			

Mathematics (M14101)

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

- M1.1 Gr4/10 find result addition, subtract, multiplied, mix addition of cardinal numbers and 0
- M1.1 Gr4/11 showing how to find answers of word problems 2 steps of cardinal numbers greater than 100,000 and 0
- M1.1 Gr4/12 creating word problems 2 steps of cardinal numbers and 0 with find answers

Learning Objective

Students will be taught to :

- 1. Understand properties of multiplication.
- 2. Multiply of any two numbers.
- 3. Solve word problems involving multiplication.

Learning Outcomes

Students will be able to:

- 1. List the properties of multiplication.
- 2. Multiply 1-digit numbers by multiple-digit numbers.
- 3. Multiply 2-digit numbers by 3-digit numbers.
- 4. Multiply 3-digit numbers by 3-digit numbers.
- 5. Multiply of multiple-digit numbers.
- 6. Use multiplication to solve word problems.

Learning Areas

- Properties of multiplication
- Multiplication of 1-digit numbers by multiple-digit numbers
- Multiplication of 2-digit numbers by 3-digit numbers
- Multiplication of 3-digit numbers by 3-digit numbers
- Multiplication of multiple-digit numbers
- Using multiplication to solve word problems

Teaching and Learning Activities

1. There are a few properties of multiplication – commutative property, associative property, distributive property, multiplication by 1 and multiplication 0.

2. When multiplying numbers, write them in the standard written method. Start to multiply from the digit in the ones place. Regroup when necessary.

3. Guide students on how to multiply 3-digit numbers by 20, 30, ..., 90. Just multiply the 3digit numbers by 2, 3, ..., 9 before multiplying the result by 10.

4. When multiplying 2-digit numbers by 100, just add two zeros at the right end of the 2-digit numbers.

5. When multiplying 2-digit numbers by 200, 300, 400, ..., 900, multiply the 2-digit numbers with 2, 3,, 9 and add two zeros at the right end of the products.

6. When multiplying a 2-digit number by a 3-digit number, write them in the standard written method. First multiply the ones, then multiply the tens and add up the products.

7. When multiplying a 3-digit number by a 3-digit number, write them in the standard written method. First multiply the ones, then the tens, follow by the hundreds and add up the products.

8. This goes the same for multiplication of multiple-digit numbers.

9. Sometimes in word problems, we need to use multiplication to solve them.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Mixed addition,	- Addition, subtraction,	- Study of addition,
subtraction, multiplication	multiplication and division mixed	subtraction, multiplication
and division	with parentheses	and division with
with parentheses		parentheses.
2. Mixed addition,	- Mixed addition, subtraction,	- Study of addition,
subtraction, multiplication,	multiplication and division	subtraction, multiplication
and division	Without parentheses	and division without
No parentheses		parentheses.
3. Addition, subtraction,	- Mixed addition, subtraction,	- Study of addition,
multiplication and division	multiplication and division	subtraction, multiplication
with and		and division with and without
without parentheses		parentheses.
4. โจทย์ปัญหาการบวก ลบ คูณ	- Solving mixed addition,	- Study of problem solving
และหารระคน	subtraction, multiplication, and	Mixed addition, subtraction,
	division problems	multiplication and division
5. Creating mixed addition,	- Creating mixed addition,	- Study of problem creation:
subtraction, multiplication	subtraction, multiplication and	Addition, subtraction,
and division problems.	division problems and finding the	multiplication and division
	answers.	

Assessment Includes

- 1. Knowledge: Students must score at least 60 percent.
- 2. Mathematical Skills and Processes: Must achieve Level 2 or above.
- 3. Desirable Characteristics: Must achieve Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assassment Itom	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
 Mixed addition, subtraction, multiplication and division with parentheses 	Students can correctly find the results of addition, subtraction, multiplication and division in parentheses. with 80% accuracy or higher.	Students can correctly find the results of addition, subtraction, multiplication and division in parentheses. with 70%–79% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division in parentheses. with 60%–69% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division in parentheses. with less than 60% accuracy.
2. Mixed addition, subtraction, multiplication, and division No parentheses	Students can correctly find the results of addition, subtraction, multiplication and division without parentheses. with 80% accuracy or higher.	Students can correctly find the results of addition, subtraction, multiplication and division without parentheses. with 70%–79% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division without parentheses. with 60%–69% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division without parentheses. with less than 60% accuracy.
3. Addition, subtraction, multiplication and division with and without parentheses	Students can correctly find the results of addition, subtraction, multiplication and division with and without parentheses.	Students can correctly find the results of addition, subtraction, multiplication and division with and without parentheses. with 70%–79% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division with and without parentheses. with 60%–69% accuracy.	Students can correctly find the results of addition, subtraction, multiplication and division with and without parentheses. with less than 60% accuracy.

	Assessment Criteria			
Assessment Itom	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
	with 80% accuracy or higher.			
4. Mixed Operations Word Problems (Addition, Subtraction, Multiplication, and Division)	Students can correctly solve mixed addition, subtraction, multiplication and division problems. with 80% accuracy or higher.	Students can correctly solve mixed addition, subtraction, multiplication and division problems. with 70%–79% accuracy.	Students can correctly solve mixed addition, subtraction, multiplication and division problems. with 60%–69% accuracy.	Students can correctly solve mixed addition, subtraction, multiplication and division problems. with less than 60% accuracy.
5. Creating mixed addition, subtraction, multiplication and division problems.	Students can create mixed addition, subtraction, multiplication and division problems correctly. with 80% accuracy or higher.	Students can create mixed addition, subtraction, multiplication and division problems correctly. with 70%–79% accuracy.	Students can create mixed addition, subtraction, multiplication and division problems correctly. with 60%–69% accuracy.	Students can create mixed addition, subtraction, multiplication and division problems correctly. with less than 60% accuracy.

Mathematics (M14101)

Content: Time

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr4/1 Write and read Hindu-Arabic and Thai numerals and written forms showing cardinal numbers, 0, fractions, and one-place decimals.

Learning Objective

Students will be taught to :

- 1. Read time from clocks.
- 2. Tell duration of time.
- 3. Read and extract data from timetables, programs and calendars.
- 4. Prepare schedules.
- 5. Understand the relationships between units of time.
- 6. Solve word problems involving time.

Learning Outcomes

Students will be able to:

- 1. Read time according to the 24-hour system and 12-hour system.
- 2. Calculate the duration of time.
- 3. Analyze and extract data from timetables.
- 4. Analyze and extract data from programs. 5. Analyze and extract data from calendars.
- 5. Know the relationships between units of time.
- 6. Convert between units of time.
- 7. Solve word problems involving time.

Learning Areas

- Time
- Duration of time
- Schedule (timetable)
- Schedule (program)
- Calendar
- Relationships between units of time
- Solving word problems involving time

Teaching and Learning Activities

1. Show students an analogue clock. Ask them for the names of the hands on the clock. Show them a time and ask them to read the time.

- 2. Explain that we can read time using two systems 24-hour system and 12-hour system.
- 3. Explain what 24-hour system is.
- 4. Explain what 12-hour system is. Explain also a.m. and p.m., and how we use them.

5. Show a few times on an analogue clock and ask them to read out the times using the 12hour system.

6. We can calculate the duration of time between two times. We can draw two clocks to show the times and count difference in time.

7. We can see programs when there are events such as a celebration, a festival and a trip. We should learn how to read and extract information from these programs.

8. We use calendars. Calendars give information of time in a larger scale

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Mathematics (M14101)

Content: Fraction

Time: 23 hours

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

- M1.1 Gr4/3 Describe, read and write fractions, mixed numbers, showing quantity and showing things according fractions, mixed numbers assigned.
- M1.1 Gr4/4 Compare, arrange fractions and mixed numbers, one denominator is multiple of another.
- M1.1 Gr4/13 Find sum, quotient of fraction and mixed numbers that a denominator is multiple of each another.
- M1.1 Gr4/14 Showing how to find answers of word problems addition subtracts fraction and mixed numbers that a denominator is multiple of each another.

Learning Objective

Students will be taught to :

- 1. Understand fraction.
- 2. Compare and order fractions.
- 3. Understand equivalent fractions.
- 4. Add and subtract fractions.
- 5. Solve word problems involving fractions.

Learning Outcomes

Students will be able to:

- 1. Identify equal parts and non-equal parts.
- 2. Identify pictures that have parts shaded correctly to represent fractions.
- 3. Read and write fractions.
- 4. Compare fractions with the same denominator.
- 5. Compare fractions with the same numerator.
- 6. Arrange fractions in ascending and descending orders.
- 7. Determine equivalent fractions.
- 8. Add fractions with the same denominator.
- 9. Subtract fractions with the same denominator.
- 10. Solve word problems involving fractions.

Learning Areas

- Reading and writing fractions
- Comparing fractions
- Ordering fractions
- Equivalent fractions
- Operations involving fractions
- Solving word problems involving fractions

Teaching and Learning Activities

1. Make students understand equal parts and non-equal parts.

2. Draw a few shapes with parts in them. Ask students to identify if the shapes are divided into equal parts.

3. Guide students how to read and write fraction.

4. Write a few fractions on the board and a few circles. Ask students to shade the circles correctly to represent.

5. When comparing fractions with the same denominator, we should compare the numerators. The fraction with greater numerator has greater value.

6. Remind students of the signs used in comparison.

7. Write a few fractions with the same denominator and ask students to identify the smallest fraction.

8. When comparing the fractions with the same numerator, we should compare the denominators. The fraction with greater denominator has smaller value.

9. Remind students the meaning of ascending and descending.

10. Explain what equivalent fractions are. Write two fractions on the board and ask students to determine if they are equivalent fractions. Use diagrams to explain the fractions when necessary.

12. When adding fractions with the same denominator, we just add up the numerators and maintain the denominator.

13. Write a few addition problems for students to solve. Use diagrams to explain when necessary.

14. When subtracting fractions with the same denominator, we just subtract the numerators and maintain the denominator.

15. Write a few subtraction problems from students to solve. Use diagrams to explain when necessary.

16. Guide students to solve word problems involving fractions.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet: Telling Time	- Telling time	- Studying how to tell time in
in Minutes and Seconds		minutes and seconds
2. Worksheet: Telling Time	- Telling time	- Studying how to tell time in
in Minutes, Hours, and Days		minutes, hours, and days
3. Worksheet: Telling Time	- Telling time	- Studying how to tell time in
in Seconds, Minutes, Hours,		seconds, minutes, hours,
Days, Weeks, Months, and		days, weeks, months, and
Years		years
4. Worksheet: Comparing	- Comparing time	- Studying how to compare
Time		time durations
5. Worksheet: Reading	- Reading timetables	- Studying how to read
Timetables		timetables
6. Worksheet: Time Word	- Time word problems	- Studying how to solve time-
Problems		related word problems

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Telling Time in	Student can	Student can	Student can	Student can
Minutes and	accurately tell	accurately tell	accurately tell	accurately tell
Seconds	time in minutes	time in minutes	time in minutes	time in minutes
	and seconds ≥	and seconds	and seconds 60-	and seconds <
	80%	70–79%	69%	60%

Assessment		Quality	' Rating	
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
2. Telling Time in	Student can	Student can	Student can	Student can
Minutes, Hours,	accurately tell	accurately tell	accurately tell	accurately tell
and Days	time in minutes,	time in	time in minutes,	time in
	hours, and days \geq	minutes, hours,	hours, and days	minutes, hours,
	80%	and days 70–	60–69%	and days <
		79%		60%
3. Telling Time in	Student	Student	Student	Student
Seconds,	completes	completes	completes	completes
Minutes, Hours,	exercises or tests	exercises or	exercises or tests	exercises or
Days, Weeks,	with ≥ 80%	tests with 70–	with 60–69%	tests with< 60%
Months, and		79%		
Years				
4. Comparing	Student can	Student can	Student can	Student can
Time	accurately	accurately	accurately	accurately
	compare time	compare time	compare time	compare time
	durations ≥ 80%	durations 70–	durations 60–69%	durations <
		79%		60%
5. Reading	Student can	Student can	Student can	Student can
Timetables	accurately read	accurately read	accurately read	accurately read
	timetables ≥ 80%	timetables 70–	timetables 60–	timetables Less
		79%	69%	than 60%
				accuracy
6. Time Word	Student can	Student can	Student can	Student can
Problems	accurately solve	accurately	accurately solve	accurately
	time-related	solve time-	time-related	solve time-
	word problem ≥	related word	word problem	related word
	80%	problem 70–	60–69%	problem < 60%
		79%		

Mathematics (M14101)

Content: Decimals

Strand 1: Numbers and Operations

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

Grade level indicators

M1.1 Gr4/5 read and writes decimal less than 3 positions Showing quantity of things and showing things according decimal to assign.

- M1.1 Gr4/6 Compare and arrange decimal less than 3 positions from various situations.
- M1.1 Gr4/15 Find sum, subtract of fraction not exceeding 3 positions.
- M1.1 Gr4/16 Showing how to find Answers of word problems addition, subtract 2 steps of word problems not exceeding 3 positions.

Learning Objective

Students will be taught to :

- 1. Understand decimals.
- 2. Comparing and ordering decimals.

Learning Outcomes

Students will be able to:

- 1. Know the meaning of fractions.
- 2. Write and read fractions to one decimal place.
- 3. Identify place values and digit values in decimals.
- 4. Compare and order decimals.

Learning Areas

- Writing and naming decimals
- Place values and digit values in decimals
- Comparing and ordering decimals

Teaching and Learning Activities

- 1. Explain the relationship between fractions with 10 as the denominator and decimals.
- 2. Guide students on how to read decimals.
- 3. Explain what mixed decimals mean. Explain also the parts of a decimal.
- 4. Explain that the digit in the fractional part has the place value of tenths.

5. When comparing decimals, we compare the whole numbers first. The decimal with greater whole number has greater value.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Work/Assignment	Assessment Criteria	Learning Activities
1. Worksheet on Reading	- Able to read and write decimals	- Students study and learn
and Writing Decimals to	to one decimal place correctly	how to read and write
One Decimal Place	according to the specified criteria	decimals to one decimal place
2. Worksheet on Reading	- Able to read and write decimals	- Students study and learn
and Writing Decimals to	to two decimal places correctly	how to read and write
Two Decimal Places	according to the specified criteria	decimals to two decimal
		places
3. Worksheet on Reading	- Able to read and write decimals	- Students study and learn
and Writing Decimals to	up to three decimal places	how to read and write
Three Decimal Places	correctly according to the	decimals to three decimal
	specified criteria	places
4. Worksheet on	- Able to compare and order	- Students study and learn
Comparing and Ordering	decimals up to three decimal	how to compare and order
Decimals	places correctly according to the	decimals
	specified criteria	
5. Worksheet on Addition	- Able to add decimals up to three	- Students study and learn
of Decimals up to Three	decimal places correctly according	how to add decimals up to
Decimal Places	to the specified criteria	three decimal places
6. Worksheet on	- Able to subtract decimals up to	- Students study and learn
Subtraction of Decimals	three decimal places correctly	how to subtract decimals up
up to Three Decimal	according to the specified criteria	to three decimal places
Places		

Workpiece and Task Responsibilities

Work/Assignment	Assessment Criteria	Learning Activities
7. Worksheet on Two-	- Able to perform two-step	- Students study and learn
Step Addition and	addition and subtraction of	how to perform two-step
Subtraction of Decimals	decimals up to three decimal	addition and subtraction of
up to Three Decimal	places correctly according to the	decimals up to three decimal
Places	specified criteria	places
8. Worksheet on Word	- Able to show steps to solve	- Students analyze word
Problems Involving	word problems involving addition	problems together and
Addition and Subtraction	and subtraction of decimals	demonstrate the solution
of Decimals	correctly according to the	steps for solving word
	specified criteria	problems involving addition
		and subtraction of decimals

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment Criteria

Evaluation Topic	Quality Rating			
	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Reading and	Students can	Students can	Students can	Students can
Writing Decimals	read and write	read and write	read and write	read and write
to One Decimal	decimals to one	decimals to	decimals to one	decimals to
Place	decimal place	one decimal	decimal place	one decimal
	correctly at 80%	place correctly	correctly with	place correctly
	or above.	with 70%–79%	60%–69%	with less than
		accuracy	accuracy	60% accuracy
2. Reading and	Students can	Students can	Students can	Students can
Writing Decimals	read and write	read and write	read and write	read and write
to Two Decimal	decimals to two	decimals to	decimals to two	decimals to
Places	decimal places	two decimal	decimal places	two decimal
	correctly at 80%	places correctly	correctly at 60%–	places correctly
	accuracy or	at 70%–79%	69% accuracy	at less than
	higher	accuracy		60% accuracy

Evaluation Topic		Quality	' Rating	
	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
3. Reading and	Students can	Students can	Students can	Students can
Writing Decimals	read and write	read and write	read and write	read and write
to Three Decimal	decimals to three	decimals to	decimals to three	decimals to
Places	decimal places	three decimal	decimal places	three decimal
	correctly at 80%	places correctly	correctly at60%–	places correctly
	accuracy or	at70%–79%	69% accuracy	at less than
	higher	accuracy		60% accuracy
4. Comparing and	Students can	Students can	Students can	Students can
Ordering	compare and	compare and	compare and	compare and
Decimals	order decimals	order decimals	order decimals	order decimals
	correctly at 80%	correctly at	correctly at 60%–	correctly at less
	accuracy or higher	70%–79%	69% accuracy	than 60%
		accuracy		accuracy
5. Adding	Students can add	Students can	Students can add	Students can
Decimals (up to	decimals (up to	add decimals	decimals (up to	add decimals
Three Decimal	three decimal	(up to three	three decimal	(up to three
Places)	places) correctly	decimal places)	places) correctly	decimal places)
	at 80% accuracy	correctly at	at 60%–69%	correctly at less
	or higher	70%–79%	accuracy	than 60%
		accuracy		accuracy
6. Subtracting	Students can	Students can	Students can	Students can
Decimals (up to	subtract decimals	subtract	subtract decimals	subtract
Three Decimal	(up to three	decimals (up to	(up to three	decimals (up to
Places)	decimal places)	three decimal	decimal places)	three decimal
	correctly at 80%	places)	correctly at 70%–	places)
	or above.	correctly at	79% accuracy	correctly at less
		70%–79%		than 60%
		accuracy		accuracy.
7. Two-Step	Students can	Students can	Students can	Students can
Addition and	perform two-step	perform two-	perform two-step	perform two-
Subtraction of	addition and	step addition	addition and	step addition
Decimals	subtraction of	and subtraction	subtraction of	and subtraction
	decimals	of decimals	decimals	of decimals
	correctly at 80%	correctly at	correctly at 60%–	correctly at less
	accuracy or higher		69% accuracy	

Evaluation Topic	Quality Rating			
	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
		70%–79%		than 60%
		accuracy		accuracy
8. Showing Steps	Students can	Students can	Students can	Students can
in Solving	correctly show	correctly show	correctly show	correctly show
Decimal Word	the steps to solve	the steps to	the steps to solve	the steps to
Problems	word problems	solve word	word problems	solve word
(Addition and	involving addition	problems	involving addition	problems
Subtraction, up	and subtraction	involving	and subtraction	involving
to Three Decimal	of decimals (up	addition and	of decimals (up	addition and
Places)	to three decimal	subtraction of	to three decimal	subtraction of
	places) at 80%	decimals (up to	places) at 60%–	decimals (up to
	accuracy or higher	three decimal	69% accuracy	three decimal
		places) at 70%–		places) at less
		79% accuracy		than 60%
				accuracy
Mathematics (M14101)

Content: Angles

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Grade level indicators

M2.1 Gr4/1 Tell the relationship between measuring units for length, weight, volume or capacity and time.

M2.1 Gr4/2 Find area of rectangle.

Learning Objective

Students will be taught to :

- 1. Understand the relationships between units of length, mass and volume.
- 2. Estimate length, mass and volume.
- 3. Solve problems involving length, mass and volume.

Learning Outcomes

Students will be able to:

- 1. State the relationships between units of length.
- 2. Convert between units of length.
- 3. Estimate the lengths of objects.
- 4. Solve word problems involving length.
- 5. State the relationships between units of mass.
- 6. Convert between units of mass.
- 7. Estimate the masses of objects.
- 8. Solve word problems involving mass.
- 9. State the relationships between units of volume.
- 10. Convert between units of volume.
- 11. Estimate the volumes and capacities of objects.
- 12. Solve word problems involving volume.

Learning Areas

- Length
- Mass
- Volume

Teaching and Learning Activities

1. Introduce the unit "kilometer" and "wah" and also their relationships with other units.

2. When we estimate length, we should use the suitable units. We can compare the lengths with known lengths.

3. Introduce the unit ton and also its relationships with other units.

4. Guide students on how to convert between units of mass.

5. When we estimate mass, we should use the suitable units. We can compare the masses with known mass.

6. Introduce the unit cubic meters and cubic centimeters and also their relationships with other units.

7. Guide students on how to convert between units of length.

8. When we estimate volume and capacity, we should use the suitable units.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet: Points, Lines,	- Able to correctly define points,	- Students study and learn the
Rays, and Line Segments	lines, rays, and line segments as	definitions of points, lines, rays,
	specified.	and line segments.
2. Worksheet: Parts of an	- Able to identify parts of an	- Students study and learn the
Angle and Naming Angles	angle and correctly name the	components and naming of
	angles.	angles.
3. Worksheet: Right, Acute,	- Able to define and specify the	- Students study and learn the
Straight, and Obtuse	size of right, acute, straight, and	meaning and size of right, acute,
Angles	obtuse angles correctly.	straight, and obtuse angles.
4. Worksheet: Measuring	- Able to measure angles and	- Students practice measuring
Angles and Classifying	classify angle types accurately.	angles and classifying them by
Types of Angles		type.

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
5. Worksheet: Constructing	- Able to construct acute angles	- Students practice constructing
Acute Angles	using a protractor accurately.	acute angles using a protractor.
6. Worksheet: Constructing	- Able to construct right angles	- Students practice constructing
Right Angles	using a protractor accurately.	right angles using a protractor.
7. Worksheet: Constructing	- Able to construct obtuse	- Students practice constructing
Obtuse Angles	angles using a protractor	obtuse angles using a protractor.
	accurately.	
8. Worksheet: Constructing	- Able to construct straight	- Students practice constructing
Straight Angles	angles using a protractor	straight angles using a protractor.
	accurately.	
9. Worksheet: Constructing	- Able to construct reflex angles	- Students practice constructing
Reflex Angles	using a protractor accurately.	reflex angles using a protractor.

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Understanding	Correctly explains	Correctly	Correctly explains	Correctly
of Points, Rays,	with ≥80%	explains with	with 60%–69%	explains with
Lines, and Line	accuracy	70%–79%	accuracy	less than 60%
Segments		accuracy		accuracy
2. Identifying and	Correctly explains	Correctly	Correctly explains	Correctly
Naming Angle	and names with	explains and	and names with	explains and
Components	≥80% accuracy	names with	60%–69%	names with less
		70%–79%	accuracy	than 60%
		accuracy		accuracy

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
3. Classifying	Accurately	Accurately	Accurately	Accurately
Angles by	classifies with	classifies with	classifies with	classifies with
Measured Size	≥80% accuracy	70%–79%	60%–69%	less than 60%
(acute, right,		accuracy	accuracy	accuracy
obtuse, straight)				
Measuring Angles	Measures and	Measures and	Measures and	Measures and
and Classifying	classifies	classifies	classifies	classifies
Types	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70%–79%	60%–69%	less than 60%
		accuracy	accuracy	accuracy
5. Constructing	Constructs	Constructs	Constructs	Constructs
Acute Angles	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70%–79%	60%–69%	less than 60%
		accuracy	accuracy	accuracy
6. Constructing	Constructs	Constructs	Constructs	Constructs
Right Angles	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70%–79%	60%–69%	less than 60%
		accuracy	accuracy	accuracy
7. Constructing	Constructs	Constructs	Constructs	Constructs
Obtuse Angles	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70–79%	60-69%	Less than 60%
8. Constructing	Constructs	Constructs	Constructs	Constructs
Straight Angles	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70–79%	60-69%	Less than 60%
9. Constructing	Constructs	Constructs	Constructs	Constructs
Reflex Angles	correctly with	correctly with	correctly with	correctly with
	≥80% accuracy	70–79%	60–69%	Less than 60%

Mathematics (M14101)

Content: rectangular

Strand 2: Measurement

Standard M2.1: Understanding the basics of measurement; ability to measure and estimate the size of objects to be measured

Standard M2.2: Solving measurement problems

Grade level indicators

- M2.1 Gr4/3 Measuring and making angles by using diagraph.
- M2.2 Gr4/2 Making rectangular when <u>assign</u>ed length of side.

Learning Objective

Students will be taught to :

- 1. Understand area.
- 2. Measure the area of a rectangle.
- 3. Solve word problems involving area.

Learning Outcomes

Students will be able to:

- 1. Understand concept of area.
- 2. Compare areas.
- 3. Measure areas by counting squares.
- 4. Measure areas in square centimeters.
- 5. Estimate areas.
- 6. Measure area of a rectangle by counting squares.
- 7. Measure area of a rectangle by calculation.
- 8. Solve word problems involving area.

Learning Areas

- Measuring area
- Measuring the area of a rectangle
- Solving word problems involving area

Teaching and Learning Activities

- 1. Explain to students what an area is.
- 2. How do we compare two areas? We can put one area on top of the other to compare.
- 3. Explain square unit. Cut out a few similar squares and use them to measure area.

4. Inform students that if the lengths of the squares are one centimeter, the squares have an area of 1 square centimeter. Cut out a square of 1 square centimeter. Let students have an idea how big a square centimeter is.

5. We can estimate an area of a shape using a 1-centimeter grid paper.

6. We can find areas of rectangles by dividing the rectangles into square centimeters and calculate the square centimeters.

7. We can calculate the areas of a rectangle by multiplying the length of the rectangle by the width of the rectangle.

8. There are word problems that involve areas.

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on Types	- Correctly identify types and	- Students study and learn to
and Properties of Right-	properties of right-angled	identify types and properties of
Angled Quadrilaterals	quadrilaterals according to the	right-angled quadrilaterals
	criteria	
2. Worksheet on Types	- Correctly identify types and	- Students study and learn to
and Properties of Squares	properties of squares and	identify types and properties of
and Rectangles	rectangles according to the	squares and rectangles.
	criteria	
3. Worksheet on	- Construct right-angled	- Students study and practice
Constructing Right-Angled	quadrilaterals correctly	constructing right-angled
Quadrilaterals Using a Set	according to the criteria.	quadrilaterals using a set square
Square		
4. Worksheet on	- Construct right-angled	- Students study and practice
Constructing Right-Angled	quadrilaterals correctly	constructing right-angled
Quadrilaterals Using a	according to the criteria	quadrilaterals using a protractor
Protractor		
5. Worksheet on Perimeter	- Correctly calculate the	- Students study the concept of
of Right-Angled	perimeter of right-angled	perimeter of right-angled
Quadrilaterals	quadrilaterals according to the	quadrilaterals
	criteria	

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
6. Worksheet on Perimeter	Correctly calculate the	- Students study the concept of
of Polygons	perimeter of polygons that can	perimeter of polygons that can
	be divided into right-angled	be decomposed into right-angled
	quadrilaterals according to the	quadrilaterals
	criteria	
7. Worksheet on Area of	- Correctly calculate the area of	- Students study the method of
Right-Angled Quadrilaterals	right-angled quadrilaterals	calculating the area of right-
	according to the criteria	angled quadrilaterals
8. Worksheet on Area of	- Correctly calculate the area of	- Students study the method of
Squares and Rectangles	squares and rectangles	calculating the area of squares
	according to the criteria	and rectangles
9. Worksheet on Word	- Correctly demonstrate	- Students collaboratively
Problems about the	problem-solving steps for word	analyze word problems and
Perimeter of Right-Angled	problems about the perimeter	demonstrate the problem-
Quadrilaterals	of right-angled quadrilaterals	solving process to find the
		perimeter
10. Worksheet on Word	- Correctly demonstrate	- Students collaboratively analyze
Problems about the Area	problem-solving steps for word	word problems and demonstrate
of Right-Angled	problems about the area of	the problem-solving process to
Quadrilaterals	right-angled quadrilaterals	find the area

Assessment Components

- 1. Knowledge: A minimum score of 60 percent.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or higher.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or higher.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Types and	The student	The student	The student	The student
Properties of	correctly	correctly	correctly	correctly
Right-Angled	identifies the	identifies the	identifies the	identifies the
Quadrilaterals	types and	types and	types and	types and
	properties of	properties of	properties of	properties of

Assessment		Quality	 Rating 	
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
	right-angled	right-angled	right-angled	right-angled
	quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals
	with at least 80%	with 70%–79%	with 60%–69%	with less than
	accuracy.	accuracy	accuracy	60% accuracy
2. Telling Time to	The student	The student	The student	The student
the Nearest 5	correctly	correctly	correctly	correctly
Minutes	identifies the	identifies the	identifies the	identifies the
	types and	types and	types and	types and
	properties of	properties of	properties of	properties of
	squares and	squares and	squares and	squares and
	rectangles with	rectangles with	rectangles with	rectangles with
	80% accuracy or	70%–79%	60%–69%	less than 60%
	higher	accuracy	accuracy	accuracy
3. Telling	The student	The student	The student	The student
Duration in Hours	constructs right-	constructs right-	constructs right-	constructs right-
and Minutes	angled	angled	angled	angled
	quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals
	using a set square	using a set	using a set square	using a set
	with 80%	square with	with 60%–69%	square with less
	accuracy or	70%–79%	accuracy	than 60%
	higher	accuracy		accuracy
4. Comparing	The student	The student	The student	The student
Duration in Hours	constructs	constructs	constructs	constructs
and Minutes	squares using a	squares using a	squares using a	squares using a
	semicircular	semicircular	semicircular	semicircular
	protractor with	protractor with	protractor with	protractor with
	80% accuracy or	70%–79%	60%–69%	less than 60%
	higher	accuracy	accuracy	accuracy
5. Solving Time-	The student	The student	The student	The student
related Word	constructs	constructs	constructs	constructs
Problems	rectangles using a	rectangles using	rectangles using a	rectangles using
	set square with	a set square	set square with	a set square
	80% accuracy or	with 70%–79%	60%-69%	with less than
	higher	accuracy	accuracy	60% accuracy

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
6. Constructing	The student	The student	The student	The student
Right-Angled	constructs right-	constructs right-	constructs right-	constructs right-
Quadrilaterals	angled	angled	angled	angled
Using a	quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals
Semicircular	using a	using a	using a	using a
Protractor	semicircular	semicircular	semicircular	semicircular
	protractor with at	protractor with	protractor with at	protractor with
	least 80%	at least 70%–	60%–69%	at less than
	accuracy.	79% accuracy.	accuracy.	60% accuracy.
7. Calculating the	The student	The student	The student	The student
Perimeter of	constructs right-	constructs right-	constructs right-	constructs right-
Right-Angled	angled	angled	angled	angled
Quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals
	using a	using a	using a	using a
	semicircular	semicircular	semicircular	semicircular
	protractor with at	protractor with	protractor with at	protractor with
	least 80%	at least 70%–	60%–69%	at less than
	accuracy.	79% accuracy.	accuracy.	60% accuracy.
8. Calculating the	The student	The student	The student	The student
Perimeter of	accurately	accurately	accurately	accurately
Polygons	calculates the	calculates the	calculates the	calculates the
	perimeter of	perimeter of	perimeter of	perimeter of
	polygons with at	polygons with	polygons with at	polygons with
	least 80%	at least 70%–	60%–69%	at less than
	accuracy.	79% accuracy.	accuracy.	60% accuracy.
9. Calculating the	The student	The student	The student	The student
Area of Right-	accurately	accurately	accurately	accurately
Angled	calculates the	calculates the	calculates the	calculates the
Quadrilaterals	area of right-	area of right-	area of right-	area of right-
	angled	angled	angled	angled
	quadrilaterals	quadrilaterals	quadrilaterals	quadrilaterals
	with at least 80%	with at least	with at 60%–69%	with at less
	accuracy.	70%–79%	accuracy.	than 60%
		accuracy.		accuracy.

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
10. Calculating	The student	The student	The student	The student
the Area of	accurately	accurately	accurately	accurately
Squares and	calculates the	calculates the	calculates the	calculates the
Rectangles	area of squares	area of squares	area of squares	area of squares
	and rectangles	and rectangles	and rectangles	and rectangles
	with at least 80%	with at least	with at 60%–69%	with at less
	accuracy.	70%–79%	accuracy.	than 60%
		accuracy.		accuracy.
11. Problem	The student	The student	The student	The student
Solving:	accurately shows	accurately	accurately shows	accurately
Perimeter of	the method to	shows the	the method to	shows the
Right-Angled	solve perimeter-	method to	solve perimeter-	method to
Quadrilaterals	related word	solve	related word	solve
	problems	perimeter-	problems	perimeter-
	involving right-	related word	involving right-	related word
	angled	problems	angled	problems
	quadrilaterals	involving right-	quadrilaterals	involving right-
	with at least 80%	angled	with at 60%–69%	angled
	accuracy.	quadrilaterals	accuracy.	quadrilaterals
		with at least		with at less
		70%–79%		than 60%
		accuracy.		accuracy.
12. Problem	The student	The student	The student	The student
Solving: Area of	accurately shows	accurately	accurately shows	accurately
Right-Angled	the method to	shows the	the method to	shows the
Quadrilaterals	solve area-	method to	solve area-	method to
	related word	solve area-	related word	solve area-
	problems	related word	problems	related word
	involving right-	problems	involving right-	problems
	angled	involving right-	angled	involving right-
	quadrilaterals	angled	quadrilaterals	angled
	with at least 80%	quadrilaterals	with at 60%–69%	quadrilaterals
	accuracy.	with at with at	accuracy	with at less
		least 70%–79%		than 60%
		accuracy.		accuracy

Mathematics (M14101)

Content: Presentation of Information

Strand 3: Geometry

Standard M3.1: Ability to explain and analyse two-dimensional and three-dimensional geometric figures.

Grade level indicators

M3.1 Gr4/1 Identify kind, name and components of angles and write symbols.

Learning Objective

Students will be taught to :

A two-way table is a table that classifies data according to two characteristics. To read a twoway table, one must interpret the data by examining the relationship between the vertical and horizontal categories.

A bar graph is a type of data presentation that uses rectangular bars to represent the quantity of each category. Reading a bar graph involves comparing the height (or length) of each rectangular bar against the numerical scale.

The components of a bar graph include the title and the graph itself.

The title indicates the subject and the time period of the data presented.

The graph consists of the numerical scale, category labels, and rectangular bars representing the quantity of each category. Each bar must have equal width, start at the same baseline of zero, and have equal spacing between adjacent bars..

Learning Areas

- Angles
- Types of angles
- Quadrilaterals
- Diagonals
- Parallel lines
- Circles
- Symmetrical shapes
- Using geometric shapes to design and create
- Patterns

Teaching and Learning Activities

1. Guide students to identify parts of an angle and name types of angles.

2. There are a few types of angles – right angles, acute angles, obtuse angles and straight angle.

3. Explain what quadrilaterals are.

4. Explain the differences between rectangles and squares from other quadrilaterals. From the shapes drawn on the board, identify rectangles and squares.

- 5. Explain what diagonals are.
- 6. Explain what parallel lines are.
- 7. Explain also the symbols we use for parallel lines.
- 8. Explain the parts of a circle.
- 9. Guide students to identify symmetrical shapes.

10. Guide students to identify the repeating group of objects or shapes and predict the next object or shape

Emphasized Skills:

- 1. Thinking skill
- 2. Problem-solving skill
- 3. Analyzing skill

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria	Learning Activities
Responsibility		
1. Worksheet on Data	- Accurately collects and classifies	- Students study and
Collection and	data according to the specified criteria	practice data collection and
Classification		classification
2. Worksheet on Using	- Correctly uses data from two-way	- Students learn to use data
Two-Way Tables to Solve	tables to find solutions to problem	from two-way tables to
Problems	scenarios according to the criteria	solve problems
3. Worksheet on Using Bar	- Correctly uses data from bar graphs	- Students learn to use data
Graphs to Solve Problems	to find solutions to problem scenarios	from bar graphs to solve
	according to the criteria	problems
4. Worksheet on Drawing	- Accurately draws bar graphs	- Students study and
Bar Graphs	according to the specified criteria	practice drawing bar graphs

Assessment	Quality Rating			
Criteria	Excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
1. Data collection	The student	The student	The student	The student
and classification	collects and	collects and	collects and	collects and
	classifies data	classifies data	classifies data	classifies data
	correctly at 80%	correctly at	correctly at 60%	correctly below
	or above.	70% – 79%.	- 69%.	60%.
2. Using data	The student uses	The student	The student uses	The student
from two-way	data from two-	uses data from	data from two-	uses data from
tables to solve	way tables to	two-way tables	way tables to	two-way tables
problems	solve problems	to solve	solve problems	to solve
	correctly at 80%	problems	correctly at 60%	problems
	or above.	correctly at	- 69%.	correctly below
		70% – 79%.		60%.
3. Using data	The student uses	The student	The student uses	The student
from bar graphs	data from bar	uses data from	data from bar	uses data from
to solve	graphs to solve	bar graphs to	graphs to solve	bar graphs to
problems	problems	solve problems	problems	solve problems
	correctly at 80%	correctly at	correctly at 60%	correctly below
	or above.	70% – 79%.	- 69%.	60%.
4. Drawing bar	The student	The student	The student	The student
graphs	draws bar graphs	draws bar	draws bar graphs	draws bar
	correctly at 80%	graphs correctly	correctly at 60%	graphs correctly
	or above.	at 70% – 79%.	- 69%.	below 60%.

Grade 5 Unit Design

Framework

Mathematics (M15101)

Content: Fraction

Time 34 hours

Content and standard of learning

Strand 1: Number and Algebra

Standard M1.1: Understand the diversity of number representations, number systems, and operations on numbers, including their outcomes and properties, and apply this knowledge appropriately.

Grade level indicators

- M 1.1 Gr5/3 Find sums and differences of fractions and mixed numbers.
- M 1.1 Gr5/4 Find products and quotients of fractions and mixed numbers.
- M 1.1 Gr5/5 Demonstrate methods for solving two-step word problems involving addition, subtraction, multiplication, and division of fractions.

Learning Areas

- 1. Fractions and operations: addition, subtraction, multiplication, and division of fractions.
- 1.1 Comparison of fractions and mixed numbers.
- 1.2 Addition and subtraction of fractions and mixed numbers.
- 1.3 Multiplication and division of fractions and mixed numbers.
- 1.4 Combined operations involving addition, subtraction, multiplication, and division of fractions and mixed numbers.
- 1.5 Solving word problems involving fractions and mixed numbers.

Core Concepts

Comparing fractions with unlike denominators requires making the denominators equal before comparing numerators. The fraction with the greater numerator will be the larger fraction.

Comparing mixed numbers starts with comparing the whole numbers; if they are equal, then compare the fractional parts.

Ordering fractions and mixed numbers involves pairwise comparison and arranging them from greatest to least or vice versa.

Adding or subtracting fractions with unlike denominators requires converting to equivalent fractions with common denominators before performing operations on numerators.

Adding or subtracting mixed numbers can be done by converting mixed numbers to improper fractions.

Multiplying a whole number by a fraction is done by multiplying the whole number by the numerator while keeping the denominator unchanged.

Multiplying fractions is done by multiplying the numerators together and the denominators together.

Multiplying mixed numbers requires converting them to improper fractions first.

The product remains unchanged if two fractions are multiplied in any order.

Any fraction multiplied by its reciprocal equals 1.

Dividing fractions is performed by multiplying the dividend by the reciprocal of the divisor.

Dividing mixed numbers requires converting them to improper fractions and then applying the same rule as dividing fractions.

Solving one-step word problems involves understanding the problem, planning a solution, executing the plan, and checking the result.

For multi-step calculations, the convention is:

Step 1: Calculate expressions in parentheses.

Step 2: Multiply or divide from left to right.

Step 3: Add or subtract from left to right.

Solving two-step word problems involving fractions follows the same problem-solving steps: understand the problem, plan the solution, implement the plan, and verify the result.

Core Competencies

- 1. Communication skills
- 2. Critical thinking skills
- 3. Problem-solving skills

Desirable Attributes

- 1. Discipline
- 2. Love of learning
- 3. Determination and perseverance in completing tasks

Tasks and Assignments

Tasks / Learning Products	Criteria / Assessment Points	Learning Activities	
1. Worksheet: Comparing and	Able to compare and order	Study the concept of comparing	
Ordering Fractions and Mixed	fractions and mixed	fractions and mixed numbers	
Numbers	numbers correctly.	and demonstrate the method for	
		finding solutions.	
2. Worksheet: Finding the Sum of	Able to find the sum of	Learn how to add fractions and	
Fractions and Mixed Numbers	fractions and mixed	mixed numbers and show the	
	numbers correctly.	calculation process.	
3. Worksheet: Finding the	Able to find the difference	Study the subtraction of	
Difference of Fractions and Mixed	of fractions and mixed	fractions and mixed numbers	
Numbers	numbers correctly.	and demonstrate the solution.	

Tasks / Learning Products	Criteria / Assessment Points	Learning Activities
4. Worksheet: Finding the Product	Able to find the product of	Learn how to multiply fractions
of Fractions and Mixed Numbers	fractions and mixed	and mixed numbers and show
	numbers correctly.	the solution method.
5. Worksheet: Finding the	Able to find the quotient	Study division of fractions and
Quotient of Fractions and Mixed	of fractions and mixed	mixed numbers and present the
Numbers	numbers correctly.	solution method.
6. Worksheet: Solving One-Step	Able to demonstrate	Learn how to solve one-step
Fraction Word Problems	methods for solving one-	word problems involving
	step fraction problems.	addition, subtraction,
		multiplication, and division of
		fractions.
7. Worksheet: Solving Two-Step	Able to find solutions for	Study how to solve two-step
Fraction Problems	two-step fraction	fraction operations and present
	operations.	the solution.
8. Worksheet: Solving Two-Step	Able to demonstrate	Study and demonstrate methods
Fraction Word Problems	methods for solving two-	for solving two-step word
	step fraction word	problems involving fractions.
	problems.	

Assessment Components

- 1. Knowledge: Achieve at least 60% score
- 2. Mathematical skills and processes: Achieve level 2 or higher
- 3. Desirable characteristics: Achieve level 2 or higher

Assessment Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Comparing and	Students can	Students can	Students can	Students can
ordering fractions	compare and	compare and	compare and	compare and
and mixed numbers	order fractions	order fractions	order fractions	order fractions
	and mixed	and mixed	and mixed	and mixed
	numbers with	numbers with 70–	numbers with	numbers with
	80% accuracy or	79% accuracy.	60–69%	less than 60%
	higher.		accuracy.	accuracy.

				Needs
Assessment Criteria	Excellent (4)	Good (3)	Fair (2)	Improvement
				(1)
2. Finding the sum of	Students can find	Students can find	Students can	Students can find
fractions and mixed	the sum of	the sum of	find the sum of	the sum of
numbers	fractions and	fractions and	fractions and	fractions and
	mixed numbers	mixed numbers	mixed numbers	mixed numbers
	with 80%	with 70–79%	with 60–69%	with less than
	accuracy or	accuracy.	accuracy.	60% accuracy.
	higher.			
3. Finding the	Students can find	Students can find	Students can	Students can find
difference of	the difference of	the difference of	find the	the difference of
fractions and mixed	fractions and	fractions and	difference of	fractions and
numbers	mixed numbers	mixed numbers	fractions and	mixed numbers
	with 80%	with 70–79%	mixed numbers	with less than
	accuracy or	accuracy.	with 60–69%	60% accuracy.
	higher.		accuracy.	
4. Finding the	Students can find	Students can find	Students can	Students can find
product of fractions	the product of	the product of	find the	the product of
and mixed numbers	fractions and	fractions and	product of	fractions and
	mixed numbers	mixed numbers	fractions and	mixed numbers
	with 80%	with 70–79%	mixed numbers	with less than
	accuracy or	accuracy.	with 60–69%	60% accuracy.
	higher.		accuracy.	
5. Finding the	Students can find	Students can find	Students can	Students can find
quotient of fractions	the quotient of	the quotient of	find the	the quotient of
and mixed numbers	fractions and	fractions and	quotient of	fractions and
	mixed numbers	mixed numbers	fractions and	mixed numbers
	with 80%	with 70–79%	mixed numbers	with less than
	accuracy or	accuracy.	with 60–69%	60% accuracy.
	higher.		accuracy.	
6. Showing solution	Students can	Students can	Students can	Students can
steps for one-step	show the solution	show the solution	show the	show the
word problems	steps for one-step	steps for one-step	solution steps	solution steps for
involving addition,	word problems	word problems	for one-step	one-step word
subtraction,	involving addition,	involving addition,	word problems	problems
multiplication, or	subtraction,	subtraction,	involving	involving
division of fractions	multiplication, or	multiplication, or	addition,	addition,
	division of	division of	subtraction,	subtraction,

Assessment Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
	fractions with 80% accuracy or higher.	fractions with 70– 79% accuracy.	multiplication, or division of fractions with 60–69% accuracy.	multiplication, or division of fractions with less than 60% accuracy.
7. Solving two-step word problems involving addition, subtraction, multiplication, or division of fractions	Students can solve two-step word problems involving addition, subtraction, multiplication, or division of fractions with 80% accuracy or higher.	Students can solve two-step word problems involving addition, subtraction, multiplication, or division of fractions with 70– 79% accuracy.	Students can solve two-step word problems involving addition, subtraction, multiplication, or division of fractions with 60–69% accuracy.	Students can solve two-step word problems involving addition, subtraction, multiplication, or division of fractions with less than 60% accuracy.
8. Showing solution steps for two-step word problems involving addition, subtraction, multiplication, or division of fractions	Students can show the solution steps for two-step word problems involving addition, subtraction, multiplication, or division of fractions with 80% accuracy or higher.	Students can show the solution steps for two-step word problems involving addition, subtraction, multiplication, or division of fractions with 70– 79% accuracy.	Students can show the solution steps for two-step word problems involving addition, subtraction, multiplication, or division of fractions with 60–69% accuracy.	Students can show the solution steps for two-step word problems involving addition, subtraction, multiplication, or division of fractions with less than 60% accuracy.

Mathematics (M15101)

Content and standard of learning

Standard M 1.1

Understanding the various representations of numbers, number systems, operations on numbers, the results and properties of operations, and the application of these concepts.

Grade level indicators

M 1.1 P.5/1: Write fractions with denominators that are factors of 10, 100, or 1,000 in decimal form.

M 1.1 P.5/6: Find the product of decimal numbers resulting in decimals with no more than three decimal places.

M 1.1 P.5/7: Find the quotient where the dividend is a whole number or a decimal with up to three decimal places and the divisor is a whole number; the quotient should be a decimal with no more than three decimal places.

M 1.1 P.5/8: Show methods for solving two-step word problems involving addition, subtraction, multiplication, and division of decimals.

M 2.1 P.5/1: Demonstrate how to solve word problems involving length with unit conversions expressed in decimal form.

M 2.1 P.5/2: Demonstrate how to solve word problems involving weight with unit conversions expressed in decimal form.

Learning Areas

- Decimals
- Relationship between fractions and decimals.
- Estimating decimals up to three decimal places to the nearest whole number, one decimal place, or two decimal places, using the "≈" symbol.
- Multiplication and Division of Decimals
- Estimating results of addition, subtraction, multiplication, and division of decimals.
- Multiplication of decimals.
- Division of decimals.
- Solving word problems involving decimals.
- Length
- Relationships among units of length: centimeters and millimeters; meters and centimeters; kilometers and meters, using knowledge of decimals.
- Solving word problems involving length by applying unit conversions and decimals.

- Weight
- Relationships between units of weight: kilograms and grams, using knowledge of decimals.
- Solving word problems involving weight by applying unit conversions and decimals.

Core Concepts

Whole numbers that are exact divisors of 10, 100, or 1,000 are factors of these numbers respectively. Fractions with denominators of 10, 100, or 1,000 can be expressed as decimals with one, two, or three decimal places accordingly.

To approximate, consider the digit to the right of the desired decimal place: if it is less than 5, drop all digits to its right; if it is 5 or greater, round up by one unit in the desired decimal place (0.1 or 0.01 as appropriate).

Multiplication of a decimal by a whole number follows the same method as multiplying whole numbers by distributing according to place value and summing the partial products.

The product of a whole number and a decimal with one decimal place will have one decimal place; two decimal places will yield two, and three will yield three.

Multiplication of decimals by decimals uses the same method as multiplying whole numbers, with the product having decimal places equal to the sum of the decimal places in the factors.

Division of a decimal by a whole number uses the same method as dividing whole numbers, moving from left to right digit by digit.

Relationships among units of measurement:

- 1 centimeter = 10 millimeters
- 1 meter = 100 centimeters
- 1 kilometer = 1,000 meters
- 1 kilogram = 1,000 grams
- 1 metric ton = 1,000 kilograms

Such relationships can be used to express lengths or weights in decimal form.

Solving word problems involving decimals up to two steps requires understanding the problem, planning, carrying out the plan, and checking the solution.

Core Competencies

- 1. Communication skills
- 2. Critical thinking skills
- 3. Problem-solving skills

Desirable Attributes

- 1. Discipline
- 2. Eagerness to learn
- 3. Diligence in work

Tasks and Assignments

Assignment	Key Assessment Points	Learning Activities
1. Worksheet on converting	Ability to write fractions with	Study and practice
fractions with denominators that are	denominators that are factors	converting fractions to
factors of 10, 100, or 1,000 into	of 10, 100, or 1,000 in decimal	decimals, showing
decimals	form	calculation steps
2. Worksheet on estimating	Ability to estimate decimals to	Study estimation
decimals up to three places	whole numbers, one, or two	methods and
	decimal places	demonstrate calculation
		steps
3. Worksheet on finding products of	Ability to find such products	Study and practice the
decimals and whole numbers	accurately	method, showing steps
(resulting in decimals up to three		clearly
places)		
4. Worksheet on multiplying	Ability to find such products	Study and practice the
decimals by decimals (resulting in	accurately	method, showing steps
decimals up to three places)		clearly
5. Worksheet on dividing decimals	Ability to find quotients with	Study and practice the
(up to three decimal places) by	correct decimal places	method, showing steps
whole numbers		clearly
6. Worksheet on dividing whole	Ability to divide accurately	Study and practice,
numbers resulting in decimals (up	and express quotients	showing calculation steps
to three decimal places)	correctly	
7. Worksheet on expressing	Ability to explain unit	Study, memorize unit
relationships between units of	relationships using decimals	conversions, and apply
length and weight using decimals		decimals correctly
8. Worksheet on solving one-step	Ability to analyze and solve	Review problem-solving
word problems involving	such problems	steps, study, and show
multiplication and division of		solutions
decimals		
9. Worksheet on solving two-step	Ability to analyze and solve	Review one-step
word problems involving addition,	two-step problems	problem-solving, study,
subtraction, multiplication, and		and show solutions
division of decimals		

Assessment Components

- 1. Knowledge: Minimum score of 60%
- 2. Mathematical skills and processes: Minimum level 2 or above
- 3. Desirable characteristics: Minimum level 2 or above

Assessment Aspect	Excellent	Good (3)	Fair (2)	Needs
	(4)			Improvement
				(1)
1. Writing fractions with denominators	≥80%	70–79%	60–69%	<60% accuracy
that are factors of 10, 100, or 1,000 in	accuracy	accuracy	accuracy	
decimal form				
2. Estimating decimals up to three	≥80%	70–79%	60–69%	<60% accuracy
decimal places	accuracy	accuracy	accuracy	
3. Finding the product of decimals and	≥80%	70–79%	60–69%	<60% accuracy
whole numbers (up to three decimal	accuracy	accuracy	accuracy	
places)				
4. Finding the product of decimals by	≥80%	70–79%	60–69%	<60% accuracy
decimals (up to three decimal places)	accuracy	accuracy	accuracy	
5. Finding quotients where the dividend	≥80%	70–79%	60–69%	<60% accuracy
is a decimal (up to three decimal	accuracy	accuracy	accuracy	
places) and the divisor is a whole				
number				
6. Finding quotients where both	≥80%	70–79%	60–69%	<60% accuracy
dividend and divisor are whole	accuracy	accuracy	accuracy	
numbers, with a decimal quotient (up				
to three decimal places)				
7. Explaining the relationship between	≥80%	70–79%	60–69%	<60% accuracy
units of length and weight using	accuracy	accuracy	accuracy	
decimals				
8. Analyzing and solving one-step word	≥80%	70–79%	60–69%	<60% accuracy
problems involving multiplication and	accuracy	accuracy	accuracy	
division of decimals				
9. Analyzing and solving two-step word	≥80%	70–79%	60–69%	<60% accuracy
problems involving addition,	accuracy	accuracy	accuracy	
subtraction, multiplication, and division				
of decimals				

Mathematics (M15101)

Content: Presentation of Information

Content and standard of learning

Strand 3: Statistics and Probability

Standard M 3.1: Understand statistical processes and apply statistical knowledge to problemsolving.

Grade level indicators

GR. 3.1 P.5/1: Use data from line graphs to find solutions to word problems.

GR 3.1 P.5/2: Draw bar charts based on data expressed in whole numbers.

Learning Areas

- Data Presentation
 - Reading and drawing bar charts
 - Reading line graphs

Core Concepts

Abbreviating the scale on a number line is suitable for presenting data where each item has a large quantity or the quantities are approximately equal. A bar chart and a comparative bar chart are types of data presentation: a single bar chart presents one set of data, while a comparative bar chart presents two or more sets of data simultaneously.

When reading a bar chart with an abbreviated scale or a comparative bar chart, compare the end of each rectangle with the numbers on the scale. For comparative bar charts, also identify the symbols that differentiate each data set.

A line graph is another form of data presentation that uses straight lines to connect points, each representing a value of a particular item. Reading a line graph involves comparing the position of each point with the numbers on the scale. Line graphs are commonly used for data that changes continuously over time.

When drawing line graphs or bar charts, ensure equal spacing between data points. Solving problems using bar charts or line graphs may follow the problem-solving steps:

- 1. Understand the problem
- 2. Devise a plan
- 3. Carry out the plan
- 4. Review and check the result
- 5.

Assignments and Tasks

Assignment/Task	Evaluation Criteria	Learning Activities
1. Worksheet: Reading bar charts	Accurately read bar charts with	Study and practice reading
with abbreviated scales and	abbreviated scales and	these types of charts
comparative bar charts	comparative bar charts	
2. Worksheet: Drawing bar charts	Accurately draw bar charts with	Review and practice drawing
with abbreviated scales	abbreviated scales	such charts
3. Worksheet: Drawing	Accurately draw comparative	Study, practice, and draw
comparative bar charts	bar charts	based on given problems
4. Worksheet: Reading line	Accurately read line graphs	Study and practice reading
graphs		line graphs
5. Worksheet: Drawing line	Accurately draw line graphs	Study and practice drawing
graphs		line graphs
6. Worksheet: Using data from	Correctly use data to solve word	Study and practice using
bar charts and line graphs to	problems	data for problem-solving
solve word problems		

Assessment Components

- 1. Knowledge: Minimum score of 60%
- 2. Mathematical Skills and Processes: Minimum level 2
- 3. Desirable Characteristics: Minimum level 2

Evaluation	Excellent (4)	Good (3)	Fair (2)	Needs
Aspect				Improvement (1)
1. Reading bar	Students can	Students can	Students can	Students can read
charts with	read bar charts	read bar charts	read bar charts	bar charts with
abbreviated	with abbreviated	with abbreviated	with abbreviated	abbreviated scales
scales and	scales and	scales and	scales and	and comparative
comparative	comparative bar	comparative bar	comparative bar	bar charts with an
bar charts	charts with an	charts with an	charts with an	accuracy of less
	accuracy of 80%	accuracy of 70–	accuracy of 60–	than 60%.
	and above.	79%.	69%.	
2. Drawing bar	Students can	Students can	Students can	Students can draw
charts with	draw bar charts	draw bar charts	draw bar charts	bar charts with
abbreviated	with abbreviated	with abbreviated	with abbreviated	abbreviated scales
scales	scales with an	scales with an	scales with an	with an accuracy of
				less than 60%.

Evaluation	Excellent (4)	Good (3)	Fair (2)	Needs
Aspect				Improvement (1)
	accuracy of 80%	accuracy of 70–	accuracy of 60–	
	and above.	79%.	69%.	
3. Drawing	Students can	Students can	Students can	Students can draw
comparative	draw comparative	draw	draw	comparative bar
bar charts	bar charts with an	comparative bar	comparative bar	charts with an
	accuracy of 80%	charts with an	charts with an	accuracy of less
	and above.	accuracy of 70–	accuracy of 60–	than 60%.
		79%.	69%.	
4. Reading line	Students can	Students can	Students can	Students can read
graphs	read line graphs	read line graphs	read line graphs	line graphs with an
	with an accuracy	with an accuracy	with an accuracy	accuracy of less
	of 80% and	of 70–79%.	of 60–69%.	than 60%.
	above.			
5. Drawing line	Students can	Students can	Students can	Students can draw
graphs	draw line graphs	draw line graphs	draw line graphs	line graphs with an
	with an accuracy	with an accuracy	with an accuracy	accuracy of less
	of 80% and	of 70–79%.	of 60–69%.	than 60%.
	above.			
6. Using data	Students can use	Students can use	Students can use	Students can use
from bar charts	data from bar	data from bar	data from bar	data from bar
and line graphs	charts and line	charts and line	charts and line	charts and line
to solve word	graphs to solve	graphs to solve	graphs to solve	graphs to solve
problems	word problems	word problems	word problems	word problems
	with an accuracy	with an accuracy	with an accuracy	with an accuracy of
	of 80% and	of 70–79%.	of 60–69%.	less than 60%.
	above.			

Chapter 4	1
-----------	---

Mathematics (M15101)

Content and standard of learning

Strand 1: Number and Algebra

Standard K 1.1:

Understand the diversity of number representations, number systems, numerical operations, results of operations, properties of operations, and their applications.

Grade level indicators

K 1.1 Grade 5/2: Demonstrate methods for solving word problems using the Rule of Three.

Learning Areas

- Natural numbers and zero; addition, subtraction, multiplication, and division
 - Solving word problems using the Rule of Three

Core Concepts

- Multiplication and division word problems express relationships between the quantities of two different items, each with two corresponding values.
- In problems where three quantities are given two corresponding to one item and one corresponding to the other it is possible to find the fourth quantity using the Rule of Three.
- Solving problems using the Rule of Three begins with understanding the problem, planning the solution, executing the plan, and verifying the result.
- The method for presenting solution steps using the Rule of Three may be:
 - Line 1: Write the relationship between the quantities of the two items as given in the problem, placing the unknown quantity on the right side.
 - Line 2: Find the value on the right side when the corresponding value on the left is set as one unit.
 - Line 3: Calculate the required value on the right side according to the problem's conditions.

Core Competencies

- Communication skills
- Critical thinking skills
- Problem-solving skills

Desirable Attributes

- Eagerness to learn
- Commitment to work

Assignment / Task	Criteria / Evaluation Points	Learning Activities
1. Worksheet on	- Able to analyze and	- Study the meaning, interpretation,
solving word problems	demonstrate methods to solve	and notation of percentages derived
using the Rule of Three	problems using the Rule of	from fractions denominated by 100.
	Three accurately	- Study and discuss converting
		fractions with denominators that are
		multiples of 100 to percentages.
		- Study and analyze word problems
		involving multiplication and division
		(Rule of Three) and demonstrate
		solution methods.

Assignments and Tasks

Assessment Components

- 1. Knowledge: Achieve at least 60% score
- 2. Mathematical skills and processes: Achieve evaluation level 2 or higher
- 3. Desired attributes: Achieve evaluation level 2 or higher

Evaluation	Excellent (4)	Good (3)	Fair (2)	Needs Improvement
Aspect				(1)
1. Analyzing	Students can	Students can	Students can	Students can analyze
and presenting	analyze and	analyze and	analyze and	and present the
the method for	present the	present the	present the	method for solving
solving word	method for	method for	method for	word problems using
problems using	solving word	solving word	solving word	the Rule of Three
the Rule of	problems using	problems using	problems using	with an accuracy of
Three	the Rule of	the Rule of	the Rule of	less than 60%.
	Three with an	Three with an	Three with an	
	accuracy of 80%	accuracy of 70-	accuracy of 60–	
	and above.	79%.	69%.	

Mathematics (M15101)

Content: percentTime 17 hours

Content and standard of learning

Strand 1: Number and Algebra

Standard K 1.1:

Understand the diversity of number representations, number systems, numerical operations, resulting values, properties of operations, and their applications.

Grade level indicators

K 1.1 Grade 5/9: Demonstrate methods to solve percentage problems involving no more than two steps.

Learning Area

- Percentages
 - Reading and writing percentages
 - Solving percentage-related problems

Core Concepts

- Fractions having 100 as the denominator can be expressed in percentage form.
- A percentage can be represented as a fraction with denominator 100.
- To find the percentage of a natural number, express the percentage as a fraction over 100 and multiply by the number.
- Solving percentage problems begins by understanding the problem, planning the solution, executing the plan, and verifying the answer.
- Answers to percentage problems can be found by writing the percentage as a fraction or by using the rule of three.
- A price reduction expressed as a percentage represents the discount relative to the original price of 100 baht.
- Profit or loss expressed as a percentage represents the difference between a capital cost of 100 baht and the selling price.
- If the selling price exceeds the capital cost, there is a profit calculated as: Selling Price Capital Cost.
- If the selling price is less than the capital cost, there is a loss calculated as: Capital Cost Selling Price.
- If the selling price equals the capital cost, it is considered a break-even point.

Desirable Attributes

- Discipline
- Eagerness to learn
- Commitment to work

Assignments and Tasks

Assignment / Task	Criteria / Evaluation Points	Learning Activities
1. Worksheet on expressing	- Ability to express	- Review converting fractions with
quantities in percentage	quantities as percentages	denominator 100 into percentages.
form	accurately.	- Study and learn to express
		quantities as percentages.
2. Worksheet on calculating	- Ability to calculate	- Study and practice calculating
percentages of natural	percentages of natural	percentages of natural numbers,
numbers	numbers.	including explanation of
		procedures.
3. Worksheet on analyzing	- Ability to analyze and	- Study and learn the steps to
and demonstrating solutions	demonstrate solution	analyze percentage problems and
to percentage problems	processes for percentage	demonstrate solution methods
	problems.	systematically.

Assessment Components

- 1. Knowledge: Achieve a score of at least 60%.
- 2. Mathematical skills and processes: Obtain evaluation results at Level 2 or higher.
- 3. Desired attributes: Obtain evaluation results at Level 2 or higher.

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs
				Improvement (1)
1. Expressing	Student can	Student can	Student can	Student can
quantities as	express	express quantities	express	express quantities
percentages	quantities as	as percentages	quantities as	as percentages
	percentages at	between 70-	percentages	below 60%.
	80% or above.	79%.	between 60–	
			69%.	
2. Calculating	Student can	Student can	Student can	Student can
percentages of	calculate	calculate	calculate	calculate
natural numbers	percentages of	percentages	percentages	percentages below
	natural numbers	between 70-	between 60-	60%.
	at 80% or above.	79%.	69%.	
3. Analyzing and	Student can	Student	Student shows	Student has below
demonstrating	analyze and	demonstrates	satisfactory	60% competency
solutions to	demonstrate	solution process	solution process	in analysis and
percentage	solution	competence	competence	demonstration of
problems	processes at	between 70-	60–69%.	solutions.
	80% or above.	79%.		

Mathematics (M15101)

Content: Parallel lines

Content and standard of learning

Strand 2: Measurement and Geometry

Standard K 2.2:

Understand and analyze geometric shapes, properties of geometric figures, relationships among geometric shapes, and geometric theorems, and apply them.

Grade level indicators

K 2.2 Grade 5/1: Construct a line or line segment parallel to a given line or line segment.

Learning Areas

- Geometric Figures
 - Perpendicular lines and their notation
 - Parallel lines and their notation
 - Construction of parallel lines, alternate angles, interior and exterior angles on the same side of a transversal line

Core Concepts

- Two lines in the same plane are parallel if they remain equidistant at all points.
- When a transversal line cuts two lines, if the alternate interior angles are equal, then the two lines are parallel.
- When a transversal cuts two lines, if the sum of interior angles on the same side of the transversal equals 180°, the two lines are parallel.
- To construct parallel lines with a specified distance apart, follow these steps:
 - 1. Draw one straight line.
 - 2. Mark two points on the line, and erect perpendiculars at these points of the given length.
 - 3. Draw a line passing through the endpoints of the two perpendiculars; this line will be parallel to the original line with the specified distance between them.
- To construct a line parallel to a given line passing through a point not on the line, there are three methods:

•

Method 1: Constructing with equal distance

- 1. Measure the shortest distance from the given point to the given line.
- 2. On the given line, select a point and erect a perpendicular at it with length equal to the measured distance, on the same side as the given point.
- 3. Draw a line through the given point and the endpoint of the perpendicular; this line is parallel to the given line.

Method 2: Constructing with equal alternate angles

- 4. Draw a line through the given point that intersects the given line.
- 5. At the given point (vertex), construct an alternate interior angle equal to the corresponding angle on the given line.
- 6. Draw another line through the given point along the arm of the constructed angle parallel to the original line.

Method 3: Constructing with interior angles on the same side summing to 180°

- 7. Draw a line through the given point intersecting the given line.
- 8. At the given point (vertex), construct interior angles on the same side of the transversal that sum to 180°.
- 9. Draw a line through the point along the arm of the angle parallel to the original line.

10.

Core Competencies

- Communication skills
- Reasoning skills
- •

Desirable Attributes

- Discipline
- Eagerness to learn
- Commitment to work

Assignments and Tasks

Assignment / Task Criteria / Evaluation		Learning Activities
	Points	
1. Worksheet on	- Identify pairs of parallel	- Study and learn how to construct
perpendicular and	lines based on the	perpendicular and parallel lines using a
parallel lines	distance between lines.	protractor.
2. Worksheet on angles	- Verify parallel lines by	- Study and learn about transversals,
formed by a transversal	examining the equality of	angles formed by transversals including
intersecting a pair of	alternate interior angles.	alternate interior and exterior angles used
lines		to verify parallelism based on alternate
		angles.
3. Worksheet on	- Verify parallelism by	- Study and learn methods to verify
properties of parallel	examining the sum of	parallel lines by measuring the sum of
lines	interior angles on the	interior angles on the same side of a
	same side of a	transversal using a protractor and a strip
	transversal.	of paper.

Assignment / Task	Criteria / Evaluation	Learning Activities	
	Points		
4. Worksheet on	- Construct parallel lines	- Study methods to construct parallel	
constructing parallel	with specified distance	lines by the two methods, using a set	
lines at a specified	and through specified	square or protractor in combination with	
distance	points.	measurement tools.	

Assessment Components

- 1. Knowledge: Achieve a score of at least 60%.
- 2. Mathematical skills and processes: Achieve level 2 or higher.
- 3. Desired attributes: Achieve level 2 or higher.

Evaluation Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs
				Improvement
				(1)
1. Identify pairs of	Students correctly	Students	Students	Students identify
lines that are parallel	identify pairs of	identify pairs	identify pairs of	pairs of parallel
by considering the	parallel lines by	of parallel	parallel lines	lines below 60%.
distance between the	considering	lines	between 60-	
lines	distance between	between 70–	69%.	
	lines at or above	79%.		
	80%.			
2. Verify parallel lines	Students correctly	Students	Students verify	Students verify
by consideration of	verify parallel lines	verify	parallel lines	parallel lines
alternate interior	by considering	parallel lines	between 60-	below 60%.
angles	alternate interior	between 70–	69%.	
	angles at or above	79%.		
	80%.			
3. Verify parallel lines	Students correctly	Students	Students verify	Students verify
by considering the	verify parallel lines	verify	parallel lines	parallel lines
sum of interior angles	according to the	parallel lines	between 60-	below 60%.
on the same side of	angle sum	between 70–	69%.	
the transversal	procedure at or	79%.		
according to	above 80%.			
procedure				
4. Construct parallel	Students construct	Students	Students	Students
lines with specified	parallel lines with	construct	construct	construct parallel
	specified distance	parallel lines	parallel lines	

Evaluation Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs
				Improvement
				(1)
distance and passing	and through	between 70-	between 60–	lines below 60%
through given points	specified points	79%	69% accuracy.	accuracy.
	with at least 80%	accuracy.		
	accuracy.			

Mathematics (M15101)

Content: Quadrilateral

Content and standard of learning

Strand 2: Measurement and Geometry

Standard K 2.1:

Understand the fundamentals of measurement; measure and estimate quantities and apply them.

Standard K 2.2:

Understand and analyze geometric shapes, properties of two-dimensional figures, relationships among geometric figures, and geometric theorems, and apply such knowledge.

Grade level indicators

- K 2.1 Grade 5/4: Demonstrate methods to solve problems related to the perimeter of quadrilaterals and the area of parallelograms and rhombuses.
- K 2.2 Grade 5/2: Classify quadrilaterals based on their properties.
- K 2.2 Grade 5/3: Construct various types of quadrilaterals when given side lengths and angles, or when given diagonal lengths.

•

Learning Areas

- Two-dimensional Geometry
 - Types and properties of quadrilaterals
 - Constructing quadrilaterals
- Perimeter and Area
 - Perimeter of quadrilaterals
 - Area of parallelograms and rhombuses
 - Solving problems involving the perimeter and area of parallelograms and rhombuses

Core Concepts

- **Square:** A quadrilateral with four right angles, all sides equal in length, pairs of opposite sides parallel, diagonals equal in length, bisecting each other at right angles.
- **Rectangle:** A quadrilateral with four right angles, opposite sides equal and parallel, adjacent sides unequal, diagonals equal in length and bisecting each other.
- **Rhombus:** A quadrilateral with no right angles, opposite angles equal, all sides equal in length, opposite sides parallel, diagonals bisecting each other perpendicularly.
- **Parallelogram:** A quadrilateral with opposite angles equal, opposite sides equal and parallel, diagonals bisecting each other.
- Trapezoid: A quadrilateral with exactly one pair of parallel sides.
- **Kite:** A quadrilateral with one pair of equal opposite angles, two pairs of adjacent equal sides, perpendicular diagonals, and only one diagonal bisected by the other.

- Constructing quadrilaterals requires understanding these properties, along with skills in measuring lengths and angles using tools such as protractors and compasses.
- Area formulas:
 - Area of parallelogram = base × height
 - Area of rhombus = base × height
- Problem solving involving perimeter and area is undertaken by following these steps:
 - Understand the problem
 - Plan a solution
 - Execute the plan
 - Verify the results

Core Competencies

- Communication skills
- Thinking skills
- Problem-solving skills

Desired Attributes

- Enthusiasm for learning
- Perseverance and dedication

Assignments and Tasks

Assignment / Task Evaluation Criteria		Learning Activities
1. Worksheet on	- Accurately identify pairs of	- Study and practice constructing
perpendicular and parallel	parallel lines based on	perpendicular and parallel lines using a
lines	distance between them.	protractor.
2. Worksheet on angles	- Verify parallelism by	- Study and learn about transversals and
formed by a transversal	analyzing alternate interior	the angles they form (alternate interior,
intersecting one pair of	angles.	alternate exterior) that are used to verify
lines		parallelism.
3. Worksheet on	- Verify parallelism by	- Study and learn to verify parallel lines
properties of parallel lines	analyzing the sum of	by measuring angle sums using
	interior angles on the same	protractors and paper strips.
	side of a transversal.	
4. Worksheet on	- Construct parallel lines at	- Learn construction methods for
constructing parallel lines	given distances and through	parallel lines using set squares or
with specified distances	specified points accurately.	protractors along with measuring tools.
Assessment Components

- Knowledge: Score at least 60%
- Mathematical skills and processes: Assessment at level 2 or higher
- Desired attributes: Assessment at level 2 or higher

Criterion	Excellent (4)	Good (3)	Satisfactory (2)	Needs
				Improvement (1)
1. Identify pairs of	Students identify	Students	Students identify	Students identify
parallel lines by	pairs of parallel	identify pairs	pairs of parallel	pairs of parallel
considering	lines correctly at	of parallel	lines at 60–69%	lines below 60%
distance between	≥ 80% accuracy.	lines at 70–	accuracy.	accuracy.
lines		79% accuracy.		
2. Verify parallel	Students verify	Students verify	Students verify at	Students verify
lines by analyzing	parallel lines by	at 70–79%.	60–69%.	below 60%.
alternate interior	alternate interior			
angles	angles correctly			
	at ≥ 80%.			
3. Verify	Students verify	Students verify	Students verify at	Students verify
parallelism by	based on angle	at 70–79%.	60–69%.	below 60%.
analyzing sum of	sums ≥ 80%.			
interior angles on				
the same side				
4. Construct	Students	Students	Students	Students construct
parallel lines at	construct	construct at	construct at 60–	below 60%.
given distances	accurately at ≥	70–79%.	69%.	
and through given	80%.			
points				

Mathematics (M15101)

Content: The volume and capacity of the rectangle

Time 17 hours

Content and standard of learning

Strand 2: Measurement and Geometry

Standard K 2.1:

Understand the fundamentals of measurement; measure and estimate sizes of objects and apply this knowledge.

Standard K 2.2:

Understand and analyze geometric shapes, properties of geometric figures, relationships among geometric shapes, and geometric theorems, and apply such knowledge.

Grade level indicators

- K 2.1 Grade 5/3: Demonstrate methods to solve problems relating to the volume of rectangular prisms and the capacity of rectangular containers.
- K 2.2 Grade 5/4: Describe the characteristics of prisms.

•

Learning Area

- Volume and Capacity
 - Volume of rectangular prisms and capacity of rectangular containers
 - Relationships among milliliters, liters, cubic centimeters, and cubic meters
 - Problem solving involving volume of rectangular prisms and capacity of rectangular containers
- Three-dimensional Geometry
 - Characteristics and parts of prisms

Core Concepts

- A prism is a solid three-dimensional geometric figure with two parallel and congruent polygonal bases. The lateral faces are parallelograms.
- Prisms are classified according to the shape of their bases.
- A rectangular prism is a prism all of whose faces are rectangles.
- A cube is a rectangular prism whose faces are all squares.
- A cube with side length 1 unit has a volume of 1 cubic unit.
- A cube with sides of 1 centimeter has a volume of 1 cubic centimeter.
- A cube with sides of 1 meter has a volume of 1 cubic meter.
- The volume of a rectangular prism can be calculated by:
- The capacity of a rectangular container corresponds to the volume of the space it encloses.
- Unit relationships:
 - 1 liter = 1,000 milliliters

287

- 1 liter = 1,000 cubic centimeters
- 1 cubic centimeter = 1 milliliter
- 1 cubic meter = 1,000 liters
- Problem solving involving volume and capacity should begin by understanding the problem, planning, executing, and verifying the solution.

Core Competencies

- Communication skills
- Critical thinking skills
- Problem-solving skills
- •

Desired Attributes

- Discipline
- Eagerness to learn
- Perseverance and dedication

Assignments and Tasks

Assignment / Task	Criteria / Assessment	Learning Activities	
	Points		
1. Worksheet on	- Ability to describe the	- Review two-dimensional and	
characteristics and parts of	characteristics and parts of	three-dimensional geometric	
prisms	prisms accurately	figures.	
		- Study the characteristics and parts	
		of prisms.	
		- Practice paper folding to create	
		various three-dimensional shapes.	
2. Worksheet on calculating	- Ability to calculate	- Study the formulas for volume	
volume and capacity of	volume and capacity of	and capacity of rectangular prisms.	
rectangular prisms	rectangular prisms correctly	- Practice calculating volume and	
		capacity with demonstration of	
		solution methods.	
3. Worksheet on	- Ability to describe	- Study and learn unit conversions	
relationships among volume	relationships among units	and relationships between volume	
and capacity units	of volume and capacity	and capacity units.	
4. Worksheet on solving	- Ability to solve volume	- Study and practice solving word	
problems involving volume	and capacity problems for	problems related to volume and	
and capacity of rectangular	rectangular prisms correctly	capacity with systematic solution	
prisms		explanations.	

Assessment Components

- 1. Knowledge: Achieve a minimum score of 60%.
- 2. Mathematical skills and processes: Achieve evaluation level 2 or higher.
- 3. Desired attributes: Achieve evaluation level 2 or higher.

Evaluation Criterion	Excellent (4)	Good (3)	Satisfactory	Needs
			(2)	Improvement
				(1)
1. Describe	Student accurately	Student	Student	Student
characteristics and	describes	adequately	minimally	describes less
parts of prisms	characteristics and	describes at	describes at	than 60%
	parts of prisms ≥	70–79%	60–69%	
	80%			
2. Calculate volume	Student correctly	Student	Student	Student
and capacity of	calculates ≥ 80%	calculates at	calculates at	calculates less
rectangular prisms		70–79%	60–69%	than 60%
3. Describe	Student correctly	Student	Student	Student
relationships among	describes	describes at	describes at	describes less
units of	relationships ≥ 80%	70–79%	60–69%	than 60%
volume/capacity				
4. Solve problems on	Student correctly	Student	Student solves	Student solves
volume and capacity	solves problems ≥	solves	problems at	problems less
of rectangular prisms	80%	problems at	60–69%	than 60%
		70–79%		

Grade 6 Unit Design

Framework

Mathematics (M16101)Content: Greatest common divisor and Least common multipleTime: 19 hours

Strand 1: Numbers and Algebra

Standard M1.1: Understand various representations of numbers, number systems, operations on numbers, the results and properties of operations, and apply them appropriately.

Grade level indicators

M1.1 Gr6/4 Find GCD greatest common divisor numbers not exceeding 3

M1.1 Gr6/5 Find LCM least common multiple numbers not exceeding 3

M1.1 Gr6/6 Analyse and show method of finding answers to problems G.C.D. And L.C.M

Learning Objective

Students will be taught to :

1. Factors, Prime Numbers, Prime Factors and Factorization.

- 2. G.C.D. greatest common divisor and L.C.M. least common multiple
 - 3. Analyse and show method of finding answers to problems G.C.D. And L.C.M

<u>Content</u>

- The greatest common factor (LCM) of two or more numbers is the largest number that divides those numbers exactly.
- The least common multiple (LCM) of two or more numbers is the smallest number that is exactly divisible by those numbers.
- Solving problems using knowledge about LCM and GCF starts with understanding the problem, planning a solution, implementing the plan, and checking.

-

Key competencies of learners

- Thinking ability
- Problem solving ability

Desirable Characteristics:

- Eager to learn
- Committed to work

291

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Finding Factors and Factorization	- Find the factors of a whole number. Prime numbers, prime factors and factorization correctly	- Study and learn to find the factors of prime numbers
	according to the specified criteria.	Factorization
2. Worksheet on Finding The Greatest Common Factor (GCD)	- Find the greatest common factor (GCD) of no more than 3 whole numbers correctly according to the specified criteria.	- Study and learn to find the lowest common factor (GCD) by finding the common factor by factoring and by dividing
3. Worksheet on finding the least common multiple (LCM)	- Find the least common factor (LCM) of no more than 3 whole numbers according to the specified criteria.	- Study and learn to find the least common multiple by finding the common product by factoring and by dividing
4. Worksheet on problems on finding the greatest common divisor (GCD) and finding the least common multiple (LCM)	- Show how to find the answer to the problem using knowledge about the greatest common factor (GCD) and the least common multiple (LCM) correctly according to the specified criteria.	- Study and learn to find the answer to the problem of finding the greatest common divisor (GCD) and finding the least common multiple (LCM).

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assessment	excellent (4)	Good (3)	Fair (2)	Needs
ltem				Improvement
				(1)
1. Find the	Students can be	Students can be	Students can be	Students can be
factors of a	able find factors	able find factors	able find factors	able find factors
whole number	of whole	of whole	of whole	of whole
Prime numbers	numbers, prime	numbers, prime	numbers, prime	numbers, prime
Prime factors	numbers, prime	numbers, prime	numbers, prime	numbers, prime
and factorization	factors, and	factors, and	factors, and	factors, and
	factorization at	factorization at	factorization at	factorization less
	80% or more.	70-79%	60-69%	than 60%
2. Finding the	Students can be	Students can be	Students can be	Students can be
greatest common	able to find the	able to find the	able to find the	able to find the
factor (GCD) of	greatest common	greatest common	greatest common	greatest common
no more than 3	factor (LCM) of	factor (LCM) of	factor (LCM) of	factor (LCM) of
integers	no more than 3	no more than 3	no more than 3	no more than 3
	whole numbers	whole numbers	whole numbers	whole numbers
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
3. Finding the	Students can be	Students can be	Students can be	Students can be
least common	able to find the	able to find the	able to find the	able to find the
factor (LCM) of	least common	least common	least common	least common
no more than 3	factor (LCM) of	factor (LCM) of	factor (LCM) of	factor (LCM) of
whole numbers	no more than 3	no more than 3	no more than 3	no more than 3
	whole numbers	whole numbers	whole numbers	whole numbers
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
4. Shows how to	Students can be	Students can be	Students can be	Students can be
find the answer	able to find the	able to find the	able to find the	able to find the
to a problem	answer to a	answer to a	answer to a	answer to a
using knowledge	problem using	problem using	problem using	problem using
about greatest	knowledge about	knowledge about	knowledge about	knowledge about
common divisor	greatest common	greatest common	greatest common	greatest common
(GCD) and least	divisor (GCD) and	divisor (GCD) and	divisor (GCD) and	divisor (GCD) and
common	least common	least common	least common	least common
multiple (LCM).	multiple (LCM) at	multiple (LCM)	multiple (LCM)	multiple (LCM)
	80% or more.	at70-79%	at60-69%	less than 60%.

Mathematics (M16101)

Content: Fraction

Time: 17 hours

Strand 1: Numbers and Algebra

Standard M1.1: Understand various representations of numbers, number systems, operations on numbers, the results and properties of operations, and apply them appropriately.

Grade level indicators

M1.1 Gr6/1 Compare and order fractions and mixed numbers from different situations.

M1.1 Gr6/7 Find the results of mixed addition, subtraction, multiplication and division of fractions and mixed numbers.

M1.1 Gr6/8 Shows how to find the answer to fraction and mixed number problems in 2-3 steps.

Learning Objective

Students will be taught to :

- 1. Comparing and ordering fractions and mixed numbers using knowledge of least common multiples.
- 2. Adding and subtracting fractions and mixed numbers using knowledge of least common multiples.
- 3. Mixed addition, subtraction, multiplication and division of fractions and mixed numbers

<u>Content</u>

- Ccomparing fractions with different denominators, you must first make the denominators the same, perhaps by making them equal to the least common multiple of the denominators, and then compare them.
- Comparing mixed numbers, first compare the whole numbers of the mixed numbers. If the whole numbers are equal, then compare the fractions.
- Comparing fractions to mixed numbers, you can either write the mixed numbers as improper fractions or write the improper fractions as mixed numbers and then compare them.
- Adding or subtract fractions with different denominators, you must first make the denominators the same, perhaps by making the least common multiple of the denominators equal, and then find the sum or difference.
- Adding mixed numbers can be done by adding whole numbers to whole numbers and fractions to fractions. If the sum of the fractions is an improper fraction, make it a mixed number and then add the whole numbers of the mixed number to the sum of the whole numbers.
- Mixing numbers can be subtracted by subtracting whole numbers from whole numbers, and fractions from fractions. If the minuend is smaller than the subtracted fraction,

distribute the difference of the whole numbers by 1, write it as a fraction, add the minuend to the minuend, and then find the difference.

- Adding and subtracting mixed numbers. Mixed numbers can be written as improper fractions and then the sum or subtraction is found. Conventions on the order of computations with more than one step.

Step 1: Calculate in parentheses (if any).

Step 2: Multiply or divide, calculating from left to right.

Step 3: Add or subtract, calculating from left to right.

Solving problems involving addition, subtraction, multiplication, and division of fractions and mixed numbers in 2-3 steps: Start by understanding the problem, planning a solution, following the plan, and checking.

Key competencies of learners

- Thinking ability
- Problem solving ability

Desirable Characteristics:

- Disciplined
- Eager to learn

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Comparing	- Compare and sort fractions and	- Brainstorming, finding ways
and Ordering Fractions	mixed numbers from different	summary of methods for
	situations correctly according to	comparing and ordering
	the specified criteria.	fractions
2. Worksheet on Addition	- Find the sum and difference of	- Study and learn by doing
Subtraction of fractions and	fractions and mixed numbers	addition, subtraction,
Mixed numbers	correctly according to the	fractions and mixed numbers
	specified criteria.	from the diagram.
3. Worksheet on mixed	- Find the results of the mixed	- Study, learn, discuss
addition, subtraction,	addition, subtraction,	together Add, subtract,
multiplication and division	multiplication and division of	multiply, and divide mixed
of fractions and mixed	fractions and mixed numbers	fractions and mixed numbers
numbers	correctly according to the	
	specified criteria	
4. Worksheet on Addition,	- Shows how to find the answer	- Collaborative analysis of
Subtraction, Multiplication	to fraction and mixed number	problems and demonstrating
	problems in 2-3 steps	

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
Division and Mixed Addition,	Correctly according to the	how to solve them to find
Subtraction, Multiplication	specified criteria	the answers
and Division of Fractions		of problems involving
and Mixed Numbers		addition, subtraction,
		multiplication, division, and
		mixed addition, subtraction,
		multiplication, and division of
		fractions and mixed numbers

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria			
Assessment	excellent (4)	Good (3)	Fair (2)	Needs
ltem				Improvement
				(1)
1. Comparing and	Students can be	Students can be	Students can be	Students can be
sort fractions and	able to	able to	able to	able to
mixed numbers	comparing and	comparing and	comparing and	comparing and
in different	sort fractions and	sort fractions and	sort fractions and	sort fractions and
situations.	mixed numbers	mixed numbers	mixed numbers	mixed numbers
	in different	in different	in different	in different
	situations at 80%	situations at 70-	situations at 60-	situations less
	or more.	79%	69%	than 60%
2. Finding the	Students can be	Students can be	Students can be	Students can be
sum and	able to find the	able to find the	able to find the	able to find the
difference of	sum and	sum and	sum and	sum and
fractions and	difference of	difference of	difference of	difference of
mixed numbers	fractions and	fractions and	fractions and	fractions and
	mixed numbers	mixed numbers	mixed numbers	mixed numbers
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
3. Finding the	Students can be	Students can be	Students can be	Students can be
results of mixed	able to find the	able to find the	able to find the	able to find the
addition,	results of mixed	results of mixed	results of mixed	results of mixed

	Assessment Criteria			
Assessment	excellent (4)	Good (3)	Fair (2)	Needs
ltem				Improvement
				(1)
subtraction,	addition,	addition,	addition,	addition,
multiplication,	subtraction,	subtraction,	subtraction,	subtraction,
and division of	multiplication,	multiplication,	multiplication,	multiplication,
fractions and	and division of	and division of	and division of	and division of
mixed numbers	fractions and	fractions and	fractions and	fractions and
	mixed numbers	mixed numbers	mixed numbers	mixed numbers
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
4.Show how to	Students can be	Students can be	Students can be	Students can be
find the answer	able to Show	able to Show	able to Show	able to Show
to fraction and	how to find the	how to find the	how to find the	how to find the
mixed number	answer to	answer to	answer to	answer to
problems	fraction and	fraction and	fraction and	fraction and
2 – 3 steps	mixed number	mixed number	mixed number	mixed number
	problems	problems	problems	problems
	2 – 3 steps at	2 – 3 steps at70-	2 – 3 steps at60-	2 – 3 steps less
	80% or more.	79%	69%	than 60%.

Content: Decimal

Strand 1: Numbers and Algebra

Standard M1.1: Understand various representations of numbers, number systems, operations on numbers, the results and properties of operations, and apply them appropriately.

Grade level indicators

M1.1 Gr6/9 Find the quotient of decimals where the divisor and quotient are not more than 3 decimal places.

M1.1 Gr6/10 Shows how to find the answer to a three-step problem involving addition, subtraction, multiplication and division of decimals.

Learning Objective

Students will be taught to :

- 1. Find the relationship between fractions and decimals
- 2. Show the division of decimals
- 3. Solve problems involving decimals (including foreign exchange)

<u>Content</u>

- Division of decimals or whole numbers by decimals with no more than 3 decimal places can be done by writing the decimal as a fraction and finding the quotient, then writing the quotient as a decimal, making the divisor a whole number by multiplying both the numerator and the divisor by 10, 100 or 1,000, and then finding the quotient
- Solving problems involving addition, subtraction, multiplication, and division of decimals in 3 steps: Start by understanding the problem, planning a solution, executing the plan, and checking.

Key competencies of learners

- Thinking ability
- Problem solving ability

Desirable Characteristics:

- Disciplined
- Eager to learn

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria /	Learning Activities
Responsibility	Indicators	
1. Worksheet on writing	- Write decimals as fractions and	- Writing decimals as fractions
fractions in decimal form.	Write fractions as decimals	and writing fractions as
	correctly according to the	decimals
	specified criteria.	
2. Worksheet on dividing	- Find the quotient of decimals	- Division of fractions by
decimals	where the divisor and quotient	fractions division of whole
	are not more than 3 decimal	numbers by fractions and
	places correctly according to the	division of decimals by whole
	specified criteria.	numbers
3. Worksheet on currency	- Able to exchange currency	- Applying knowledge of
exchange	in accordance with the specified	multiplication and
	criteria	division of decimals to real
		life. Consider currency
		exchange. Insert related
		words in currency exchange.
		And introduce other popular
		currencies.
4. Worksheet on Decimal	- Shows how to find the answer	- Analyze the given decimal
Division Problems	to a three-step problem involving	problem and the generated
	addition, subtraction,	decimal problem. Write a
	multiplication, and division of	symbolic sentence.
	decimals, correctly according to	Show the solution to find the
	the specified criteria.	answer and be aware of the
		reasonableness of the
		answer obtained.

Assessment Includes:

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1. Writing decimals as	Students can be	Students can be	Students can be	Students can be
fractions and writing	able to Write	able to Write	able to Write	able to Write
fractions in decimal	decimals as	decimals as	decimals as	decimals as
form.	fractions and	fractions and	fractions and	fractions and
	writing fractions	writing fractions	writing fractions	writing fractions
	in decimal form	in decimal form	in decimal form	in decimal form
	at 80% or more.	at 70-79%	at 60-69%	less than 60%
2. Finding the	Students can be	Students can be	Students can be	Students can be
quotient of decimals	able to find	able to find	able to find	able to find
where the divisor and	the quotient of	the quotient of	the quotient of	the quotient of
quotient are decimals	decimals where	decimals where	decimals where	decimals where
with no more than 3	the divisor and	the divisor and	the divisor and	the divisor and
decimal places	quotient are	quotient are	quotient are	quotient are
	decimals with	decimals with	decimals with	decimals with
	no more than 3	no more than 3	no more than 3	no more than 3
	decimal places	decimal places	decimal places	decimal places
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
3. Currency exchange	Students can be	Students can be	Students can be	Students can be
	able to	able to	able to	able to
	exchange	exchange	exchange	exchange
	Currency	Currency	Currency	Currency
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
4. Shows how to find	Students can be	Students can be	Students can be	Students can be
the answer to a three-	able to Shows	able to Shows	able to Shows	able to Shows
step problem	how to find the	how to find the	how to find the	how to find the
involving addition,	answer to a	answer to a	answer to a	answer to a
subtraction,	three-step	three-step	three-step	three-step
multiplication, and	problem	problem	problem	problem
division of decimals.	involving	involving	involving	involving
	addition,	addition,	addition,	addition,
	subtraction,	subtraction,	subtraction,	subtraction,
	multiplication,	multiplication,	multiplication,	multiplication,
	and division of	and division of	and division of	and division of

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
	decimals. at	decimals at70-	decimals at60-	decimals less
	80% or more.	79%	69%	than 60%.

Mathematics (M16101)	
Content: Percentage and ratio	Time: 20 hours

Strand 1: Numbers and Algebra

Standard M1.1: Understand various representations of numbers, number systems, operations on numbers, the results and properties of operations, and apply them appropriately.

Grade level indicators

M1.1 Gr6/2 Write a ratio to compare two quantities from a text or situation, where each quantity is a counting number.

M1.1 Gr6/3 Find the ratio that is equal to the given ratio.

M1.1 Gr6/11 Show how to find the answer to a ratio problem.

M1.1 Gr6/12 Shows how to find the answer to a percentage problem in 2 - 3 steps.

Learning Objective

Students will be taught to :

- 1. Write Ratio, Equivalent Ratio, and Scale
- 2. Solve Ratio and Scale Problems
- 3. Solve Percentage Problems

<u>Content</u>

- Solving percentage problems starts with understanding the problem, planning the solution, implementing the plan, and checking.
- A relationship that shows a comparison of two or more quantities, which may have the same or different units, is called a ratio.
- Writing a comparison of quantities in the form of a ratio, if the units are the same, it is not common to write the units. If the units are different, the units will be written.
- Finding a ratio that is equal to a given ratio, either multiply each number in the ratio by the same number greater than 1 or divide each number in the ratio by the same number greater than 1.
- Solving problems about ratios and scales starts with understanding the problem, planning the solution, implementing the plan and checking.

Key competencies of learners

- Thinking ability
- Ability to use life skills
- Communication skills

Desirable Characteristics:

- Eager to learn
- Be honest
- Committed to work

302

Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Problems	- Solve percentage problems in	- Review knowledge about
with percentages	2-3 steps correctly	finding percentages or
	according to the specified criteria.	percentages. Teach problem
		solving. Percentage or
		percentage 1 Step Analyze
		the problem. Understand
		what the problem is asking
		and what the problem says
		to connect to finding the
		answer using the rule of
		three.
		- Teach percentage problems
		or percentages 2-3 steps,
		analyze the problem,
		understand what the
		problem is asking and what
		the problem says to connect
		to finding the answer using
		the rule of three.
2. Worksheet on Ratio	- Write a ratio to compare two	- Use short real-life situations
and Scale	quantities and find the ratio	to introduce the conversation
	that is equal to the specified ratio	to learn about ratios,
	correctly according to the	comparing two quantities,
	specified criteria.	and finding the ratio that is
		equal to a given ratio.
3. Worksheet on Problems	- Solve ratio and scale problems	Review ratios that are equal
about ratios and scales	correctly according to the	to the given ratios. Use
	specified criteria.	problem situations about
		ratios and scales.

Workpiece and Task Responsibilities

Workpiece / Task

Assessment Criteria / Indicators

To train students to think

of decimals to real life.

Use the relationship between multiplication and division to get the same ratios. division

systematically.

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
		Consider currency exchange.
		Insert related words
		in currency exchange. And
		introduce other popular
		currencies.

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
Assessment item				Improvement
				(1)
1 Solving Percentage	Students can	Students can	Students can	Students can be
Problems in 2-3 Steps	be able to	be able to	be able to	able to solving
	solving	solving	solving	Percentage
	Percentage	Percentage	Percentage	Problems in 2-3
	Problems in 2-3	Problems in 2-3	Problems in 2-3	Steps less than
	Steps at 80% or	Steps at 70-	Steps at 60-	60%
	more.	79%	69%	
2. Write a ratio to	Students can	Students can	Students can	Students can be
compare	be able to write	be able to write	be able to write	able to write a
2 quantities	a ratio to	a ratio to	a ratio to	ratio to compare
and find the ratio that	compare 2	compare 2	compare 2	2 quantities
is equal to the given	quantities	quantities	quantities	and find the
ratio.	and find the	and find the	and find the	ratio that is
	ratio that is	ratio that is	ratio that is	equal to the
	equal to the	equal to the	equal to the	given ratio
	given ratio at	given ratio at	given ratio	less than 60%.
	80% or more.	70-79%	at 60-69%	
3. Solve problems	Students can	Students can	Students can	Students can be
involving ratios and	be able to	be able to	be able to	able to solve
scales.	solve problems	solve problems	solve problems	problems
		involving ratios	involving ratios	

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs
				Improvement
				(1)
	involving ratios	and scales at	and scales at	involving ratios
	and scales	70-79%	60-69%	and scales
	at 80% or			less than 60%.
	more.			

Strand 1: Numbers and Algebra

Standard M1.2: Understand and analyze patterns, relations, functions, sequences, and series, and apply them.

Grade level indicators

M1.2 Gr6/1 Show how to think and find answers to problems about patterns.

Learning Objective

Students will be taught to :

1. Solve problems with patterns

Content

- A pattern is a relationship that shows common characteristics of a set of numbers, geometric shapes, or other things.
- Solving problems with patterns Start by understanding the problem. Find the numbers or things that are related to each other in the pattern. Consider the relationships in the pattern to lead to what the problem requires.

Key competencies of learners

- Ability to use life skills
- Communication skills

Desirable Characteristics:

- Disciplined
- Eager to learn
- Committed to work

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	
1. Worksheet on Patterns	- Tell the relationship of numbers	- Finding the relationship of
and relationships	or geometric shapes in the form	numbers in the pattern
	correctly according to the	Consider the Fibonacci
	specified criteria.	numbers.

Workpiece / Task	Assessment Criteria /	Loorning Activities
Responsibility	Indicators	Learning Activities
		Consider together how to
		arrange the glasses. It is
		recommended to write the
		numbers to show the
		numbers to help observe the
		relationships that occur.
2. Worksheet on Solving	- Solve problems with the form	- Consider the problem
problems with patterns	correctly according to the	situation together by drawing
	specified criteria.	illustrations to help identify
		the relationship more easily.
		- Analyze the relationship
		between the numbers that
		occur in relation to the
		pattern.

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

Assessment Item	Assessment Criteria			
	excellent	Good	Fair	Needs
	(4)	(3)	(2)	Improvement
				(1)
1 Tell the relationship	Students can	Students can	Students can	Students can be
of numbers or	be able to tell	be able to tell	be able to tell	able to Tell the
geometric shapes in a	the relationship	the relationship	the relationship	relationship of
diagram	of numbers or	of numbers or	of numbers or	numbers or
	geometric	geometric	geometric	geometric
	shapes in a	shapes in a	shapes in a	shapes in a
	diagram at 80%	diagram at 70-	diagram at 60-	diagram less
	or more.	79%	69%	than 60%
2. Solving problems	Students can	Students can	Students can	Students can be
with patterns	be able to	be able to	be able to	able to Solve
	Solve problems	Solve problems	Solve problems	problems with
	with patterns at	with patterns at	with patterns at	patterns less
	80% or more.	70-79%	60-69%	than 60%.

Mathematics (M16101)

Strand 2: Measurement and Geometry

Standard M2.2: Understand and analyze geometric figures, their properties, relationships among.

Grade level indicators

M2.2 Gr6/1 Classify triangles based on their properties.

M2.2 Gr6/2 Construct a triangle given the length of the sides and the measure of the angles.

Learning Objective

Students will be taught to :

- 1. Know types and properties of triangles.
- 2. Know interior angles of a polygon.
- 3. Make triangle formation.
- 4. Write perimeter and area of polygons.
- 5. Solve problems about the perimeter and area of polygons.

Content

- Types of triangles classified by the size of the angles are acute triangles, right triangles, and obtuse triangles. A triangle with all the angles being acute is called a right triangle. A triangle with 1 obtuse angle is called an obtuse triangle.
- Types of triangles are classified according to the length of the sides into equilateral triangles, isosceles triangles and equilateral triangles. A triangle that has all sides of equal length is called an equilateral triangle. A triangle that has two sides of equal length is called an equilateral triangle. A triangle with sides of different lengths is called an isosceles triangle, and a triangle with sides of different lengths is called an isosceles triangle.
- Triangle construction is the construction of a triangle based on the characteristics or properties of each type of triangle, which requires skills in measuring length, measuring angles, and constructing angles using geometric tools.
- Solving problems about the perimeter and area of a triangle can use the following
 - Step 1 Understand the problem
 - Step 2 Plan a solution
 - Step 3 Execute the plan

Step 4 Check

Key competencies of learners

- Communication ability
- Ability to use life skills
- Ability to use technology

308

Desirable Characteristics:

- Disciplined
- Live simply
- Committed to work

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
1. Worksheet on Types and	- Tell the type and properties of	- Review the characteristics of
properties of triangles	triangles correctly according to	triangles, introduce the
	the specified criteria.	definition and naming of
		triangles.
		- Classification of triangles
		based on the size of their
		angles.
		- Classification of triangles
		based on side lengths
2. Worksheet on Parts of a	- State the parts of a triangle	- Introduce the base, base
triangle	correctly according to the	angle, vertex angle and the
	specified criteria	sides supplementing the
		vertex angle of a triangle
		using a piece of paper cut
		into a triangle to illustrate the
		explanation.
3. Worksheet on Creation	- Create a triangle according to	- Review the characteristics of
Triangle	the specifications	each type of triangle and
	Correctly	how to use a compass.
		- Analyze what the problem
		requires and
		What the problem specifies,
		draw a rough shape
		according to the
		requirements, then plan and
		organize the steps to create
		a triangle together.
4. Worksheet on the	- Find the perimeter of	- Review finding the
circumference of triangles	a triangle correctly according to	perimeter of a quadrilateral,
	the specified criteria.	then consider finding the

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
		perimeter of a triangle
		together.
5. Worksheet on Area of	- Find the area of a triangle	- Review finding the area of a
Triangles	correctly according to the	parallelogram, then do an
	specified criteria.	activity finding the area of a
		triangle.
6. Worksheet on Triangle	- Shows how to find the answer	- tell what the question asks
Problems	to problems about the area and	and what the question says
	perimeter of a triangle.	from the situation of the
		problem about the area and
		the perimeter of a triangle to
		lead to planning and
		finding the answer.

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

		Assessme	nt Criteria	
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Tell the types and	Students can be	Students can be	Students can be	Students can be
properties of	able to Tell the	able to Tell the	able to Tell the	able to Tell the
triangles	types and	types and	types and	types and
	properties of	properties of	properties of	properties of
	triangles at 80%	triangles at 70-	triangles a at	triangles less
	or more.	79%	60-69%	than 60%
2. State the parts of	Students can be	Students can be	Students can be	Students can be
a triangle.	able to State the	able to state	able to state	able to state
	parts of a	the parts of a	the parts of a	the parts of a
	triangle at 80%	triangle at 70-	triangle at 60-	triangle less
	or more.	79%	69%	than 60%.

	Assessment Criteria			
Assessment Item	excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
3. Create a triangle	Students can be	Students can be	Students can be	Students can be
according to the	able to Create a	able to Create a	able to Create a	able to Create a
specifications.	triangle	triangle	triangle	triangle
	according to the	according to the	according to the	according to the
	specifications at	specifications at	specifications at	specifications
	80% or more.	70-79%	60-69%	less than 60%.
4. Find the perimeter	Students can be	Students can be	Students can be	Students can be
of a triangle.	able to find the	able to find the	able to find the	able to find the
	perimeter of a	perimeter of a	perimeter of a	perimeter of a
	triangle at 80%	triangle at 70-	triangle at 60-	triangle less
	or more.	79%	69%	than 60%.
5. Find the area of a	Students can be	Students can be	Students can be	Students can be
triangle.	able to find the	able to find the	able to find the	able to find the
	area of a triangle	area of a	area of a	area of a
	at 80% or more.	triangle at 70-	triangle at 60-	triangle less
		79%	69%	than 60%.
6. Shows how to find	Students can be	Students can be	Students can be	Students can be
the answer to	able to shows	able to shows	able to shows	able to shows
problems about the	how to find the	how to find the	how to find the	how to find the
area and perimeter	answer to	answer to	answer to	answer to
of a triangle.	problems about	problems about	problems about	problems about
	the area and	the area and	the area and	the area and
	perimeter of a	perimeter of a	perimeter of a	perimeter of a
	triangle at 80%	triangle at 70-	triangle at 60-	triangle less
	or more.	79%	69%	than 60%.

Content: Polygon

Strand 2: Measurement and Geometry

Standard M2.1: Understand measurement fundamentals; measure and estimate the size of objects, and apply such knowledge.

Grade level indicators

M2.1 Gr6/2 Shows how to find the answer to a problem about the perimeter and area of a polygon.

Learning Objective

Students will be taught to :

- 1. Know Interior angles of a polygon.
- 2. Know Perimeter and area of polygons.
- 3. Solve problems about the perimeter and area of polygons Write perimeter and area of polygons.

Content

- A polygon is a closed figure on a plane, with all sides being line segments. Classification of polygons based on the number of sides of the figure.
- A regular polygon is a polygon in which all sides are of equal length and all angles are of equal measure.
- To find the sum of the interior angles of a polygon, add the measures of all the interior angles or divide the polygon into non-overlapping triangles and multiply the number of triangles divided by 180
- To find the area of a polygon, divide the polygon into triangles and squares, find the area of each, and then add up the total area.
- Solving problems about perimeter and area of polygons starts with understanding the problem, planning the solution, executing the plan and checking.

Key competencies of learners

- Communication ability
- Ability to use life skills
- Ability to use technology

Desirable Characteristics:

- Disciplined
- Live simply
- Committed to work

312

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities	
1. Worksheet on	- Describe the characteristics of	- Review the differences	
Characteristics of polygons	polygons correctly and	between closed and open	
	completely	shapes by drawing a diagram.	
		Description Then, consider	
		the characteristics of	
		polygons together.	
2. Worksheet on Interior	- Find the sum of the measures	- Find the sum of the	
angles of a polygon	of the interior angles of a polygon	measures of the interior	
	according to the specified criteria.	angles of a polygon using a	
		protractor. Measure the	
		measures of all the angles	
		and add them together.	
3. Worksheet on Perimeter	- Show how to find the perimeter	- Shows how to find the	
of a polygon	of a polygon correctly.	perimeter of a polygon by	
		adding together the lengths	
		of all its sides.	
4. Worksheet on Area of	- Shows how to correctly find the	- Review the characteristics of	
Polygon	area of a polygon.	trapezoids, introduce parallel	
		sides and heights, and	
		demonstrate together how to	
		find the area of a polygon.	
5. Worksheet on Polygon	- Show how to find the correct	- Consider and plan together	
Problems	answer to problems about the	to solve problems about the	
	perimeter of a polygon and the	perimeter of a polygon and	
	area of a polygon.	find the area of a polygon	
		and draw a rough sketch	
		to support the planning.	

Workpiece and Task Responsibilities

Assessment Includes:

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria			
Assessment	excellent Good Fair		Needs	
ltem	(4)	(3)	(2)	Improvement
				(1)
1. Describe the	Students can	Students can	Students can	Students can be
characteristics	be able to	be able to	be able to	able to describe
of polygons.	describe the	describe the	.describe the	thecharacteristics
	characteristics	characteristics	characteristics	of polygons less
	of polygons at	of polygons at	of polygons at	than 60%
	80% or more.	70-79%	60-69%	
2. Find the	Students can	Students can	Students can	Students can be
sum of the	be able to find	be able to find	be able to find	able to find the
measures of	the sum of the	the sum of the	the sum of the	sum of the
the interior	measures of the	measures of the	measures of the	measures of the
angles of a	interior angles	interior angles	interior angles	interior angles of
polygon.	of a polygon at	of a polygon at	of a polygon at	a polygon less
	80% or more.	70-79%	60-69%	than 60%.
3. Shows how	Students can	Students can	Students can	Students can be
to find the	be able to	be able to	be able to	able to shows
perimeter of a	shows how to	shows how to	shows how to	how to find the
polygon.	find the	find the	find the	perimeter of a
	perimeter of a	perimeter of a	perimeter of a	polygon less
	polygon at 80%	polygon at 70-	polygon at 60-	than 60%.
	or more.	79%	69%	
4. Shows how	Students can	Students can	Students can	Students can be
to find the	be able to	be able to	be able to	able to shows
area of a	shows how to	shows how to	shows how to	how to find the
polygon.	find the area of	find the area of	find the area of	area of a
	a polygon at	a polygon at 70-	a polygon at 60-	polygon less
	80% or more.	79%	69%	than 60%.
5. Show how	Students can	Students can	Students can	Students can be
to find the	be able show	be able show	be able show	able show how
answer to	how to find the	how to find the	how to find the	to find the
problems	answer to	answer to	answer to	answer to
about	problems about	problems about	problems about	problems about

	Assessment Criteria			
Assessment	excellent	Good	Fair	Needs
ltem	(4)	(3)	(2)	Improvement
				(1)
the perimeter	the perimeter	the perimeter	the perimeter	the perimeter of
of a polygon	of a polygon	of a polygon	of a polygon	a polygon and
and the area of	and the area of	and the area of	and the area of	the area of
a polygon	a polygon at	a polygon at	a polygon at	a polygon less
	80% or more.	70-79%	60-69%	than 60%.

Content: Circle

Standard M2.1: Understand measurement fundamentals; measure and estimate the size of objects, and apply such knowledge.

Grade level indicators

M2.1 Gr6/3 Shows how to find the answer to problems about the circumference and area of a circle.

Learning Objective

Students will be taught to :

- 1. Know parts of a circle Know Perimeter and area of polygons.
- 2. Create a circle.
- 3. Know circumference and area of a circle.
- 4. Solve problems about circumference and area of circles.

Content

- A circle is a closed figure in a plane in which every point on the curve is the same distance from a fixed point. This point is the center of the circle. The closed curve that forms the edge of the circle is called the circumference.
- A line segment that passes through the center and has two endpoints on the circumference is called the diameter.
- The distance between the center and any point on the circumference is called the radius in a circle, there can be many diameters, each of equal length.
- To construct a circle using a compass, we must define the center and the radius of the circle. When we divide the circumference by the diameter of the same circle, we get a constant value of approximately 3.14. Replace this constant with π.
- Area of a circle = π "r" ^"2" where r represents the length of the radius solving problems about the circumference and area of a circle starts with understanding the problem, planning how to solve it, implementing the plan and checking.

Key competencies of learners

- Communication ability
- Ability to use life skills
- Ability to use technology

Desirable Characteristics:

- Disciplined
- Live simply
- Committed to work

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria (Indicatore	Loorning Activities	
Responsibility	Assessment Criteria / Indicators	Learning Activities	
1. Worksheet on Parts of a	- Correctly identify the parts of a	- Activity to learn about parts	
circle	circle.	of a circle by drawing a curve	
		around the edge of an object	
		that has a circle as a	
		component on paper. Then	
		explore the length and	
		number of radii of the circle.	
2. Worksheet on creating a	- Create a circle as specified.	- Creating circles with paper	
circle		strips and creating circles	
		using a compass.	
3. Worksheet on Length of	- Find the correct length of the	- Finding the circumference	
circumference	circumference.	length and analyzing the	
		relationship between the	
		circumference length and the	
		diameter length.	
4. Worksheet on area of	- Find the correct area of the	- Find the area of a circle and	
circle	circle.	consider the relationship	
		between the area of a circle	
		and the area of a rectangle,	
		and the relationship between	
		the length of the radius of	
		the circle and the width of	
		the rectangle, and the length	
		of the circumference and the	
		length of the rectangle.	
5. Worksheet on Problems	- Shows how to find the correct	- Shows how to find the	
about the length of	answer to problems about the	answer to a problem about	
circumference and area of	circumference and area of a	the circumference	
circles	circle.	and area of a circle in a given	
		situation.	

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria			
Assessment Item	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
1. Tell the parts of a	Students can be	Students can be	Students can be	Students can be
circle	able to tell the	able to tell the	able to tell the	able to tell the
	parts of a circle	parts of a circle	parts of a circle	parts of a circle
	at 80% or more.	at 70-79%	at 60-69%	less than 60%
2. Creating a circle	Students can be	Students can be	Students can be	Students can be
	able to create a	able to create a	able to create	able to create
	circle at 80% or	circle at 70-79%	at 60-69%	less than 60%.
	more.			
3. Find the length	Students can be	Students can be	Students can be	Students can be
of circumference	able to find the	able to find the	able to find the	able to find the
	length of	length of	length of	length of
	circumference	circumference	circumference	circumference
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.
4. Find the area of	Students can be	Students can be	Students can be	Students can be
circle	able to find the	able to find the	able to find the	able to find the
	area of circle at	area of circle at	area of circle at	area of circle
	80% or more.	70-79%	60-69%	less than 60%.
5. Solve problems	Students can be	Students can be	Students can be	Students can be
about the length of	able to solve	able to solve	able to solve	able to solve
circumference and	problems about	problems about	problems about	problems about
area of circles	the length of	the length of	the length of	the length of
	circumference	circumference	circumference	circumference
	and area of	and area of	and area of	and area of
	circles at 80%	circles at 70-	circles at 60-	circles less than
	or more.	79%	69%	60%.

Mathematics (M16101)

Content: 3 Dimensional geometric figure T

Strand 2: Measurement and Geometry

Standard M2.1: Understand measurement fundamentals; measure and estimate the size of objects, and apply such knowledge.

Standard M2.2 Understand and analyze geometric figures, their properties, relationships among figures, geometric theorems, and apply them

Grade level indicators

- M2.1 Gr6/1 Shows how to find the answer to a problem about the volume of a threedimensional geometric figure consisting of a rectangular prism
- M2.2 Gr6/3 Describe the characteristics of different types of three-dimensional geometric shapes.
- M2.2 Gr6/4 Identify three-dimensional geometric figures composed of nets and identify nets of three-dimensional geometric figures.

Learning Objective

Students will be taught to :

- 1. Know sphere, cylinder, cone, pyramid.
- 2. Net of cylinder, cone, prism, pyramid
- 3. The volume of a three-dimensional geometric figure composed of right-angled rectangles.
- 4. Solving problems on the volume of three-dimensional geometric shapes consisting of rectangular prisms

Content

- A prism is a three-dimensional solid geometric figure with two bases, which are equal polygons and lie in parallel planes. The sides are parallelograms. Types of prisms classified by the polygon that is the cross-section or base. The number of sides of a prism is equal to the number of sides of the polygon that is the cross-section or base. The total number of faces of a prism is equal to the number of cross-sections or bases plus the number of sides.
- A pyramid is a three-dimensional solid geometric shape with a polygonal base, a vertex that is not in the same plane as the base, and triangular sides. Types of pyramids classified by the base polygon, the number of sides of the pyramid is equal to the number of sides of the base polygon. The total number of faces of the pyramid is equal to the number of bases plus the number of sides.
- Solving problems about the volume or capacity of three-dimensional geometric shapes consisting of right rectangles, starting from understanding the problem, planning a solution, executing the plan, and checking.

Time: 13 hours

Key competencies of learners

- Communication ability
- Ability to use life skills
- Ability to use technology

Desirable Characteristics:

- Disciplined
- Live simply
- Committed to work

Workpiece and Task Responsibilities

Workpiece / Task Responsibility	Assessment Criteria / Indicators Learning Activitie	
1. Worksheet on	- Correctly describe the	- Review the types of 3D
Characteristics and parts of	characteristics and parts of 3D	geometric shapes using
three-dimensional	geometric shapes.	models of 3D geometric
geometric shapes		shapes and give examples of
		things around you that have
		3D geometric shapes.
2. Worksheet on Net of	- Identify the net of three-	- Introduce the characteristics
3D geometric shapes	dimensional geometric shapes	and total number of faces of
	and three-dimensional geometric	each type of 3D geometric
	shapes	shape.
	that are composed of nets	- State the characteristics of
	correctly.	each face of the model of
		each type of 3D geometric
		shape and draw illustrations
		to illustrate the explanation.
3. Worksheet on Volume	- Find the volume and capacity	- Review the formulas for
and capacity of geometric	of three-dimensional geometric	finding the volume and
shapes Three-dimensional	shapes consisting of	capacity of rectangular
	right-angled rectangles correctly.	prisms.
		Then, together, tell how to
		find the volume of
		the given shapes, and draw a
		diagram to show
		Finding the volume and
		capacity.

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities	
		of three-dimensional	
		geometric shapes.	
4. Worksheet on Three-	- Correctly solve problems on the	- Together, tell what the	
dimensional geometric	volume or capacity of three-	question asks and what the	
problem solving	dimensional geometric shapes	question tells from the given	
	consisting of right-angled	situation to lead to planning	
	rectangles	and finding the answer to	
		solve the problem of volume	
		or capacity of three -	
		dimensional geometric	
		shapes consisting of right-	
		angled rectangles.	

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

	Assessment Criteria			
Assessment	Excellent	Good	Fair	Needs
ltem	(4)	(3)	(2)	Improvement
				(1)
1.Tell	Students can be	Students can be	Students can be	Students can be
characteristics	able to tell	able to tell	able to tell	able to tell
and parts of	characteristics	characteristics	characteristics	characteristics
three-	and parts of	and parts of	and parts of	and parts of
dimensional	three-	three-	three-	three-
geometric	dimensional	dimensional	dimensional	dimensional
shapes	geometric	geometric	geometric	geometric
	shapes at 80%	shapes at at 70-	shapes at at 60-	shapes at less
	or more.	79%	69%	than 60%
2. Create Net	Students can be	Students can be	Students can be	Students can be
of3D geometric	able to Create	able to Create	able to Create	able to Create
shapes	Net of3D	Net of3D	Net of3D	Net of3D
	geometric		geometric	geometric
	Assessment Criteria			
---------------------	---------------------	-----------------	-----------------	------------------
Assessment	Excellent	Good	Fair	Needs
ltem	(4)	(3)	(2)	Improvement
				(1)
	shapes at 80%	geometric	shapes at 60-	shapes less than
	or more.	shapes 70-79%	69%	60%.
3. Know the	Students can be	Students can be	Students can be	Students can be
volume and	able know the	able know the	able know the	able know the
capacity of	volume and	volume and	volume and	volume and
geometric	capacity of	capacity of	capacity of	capacity of
shapes Three-	geometric	geometric	geometric	geometric
dimensional	shapes Three-	shapes Three-	shapes Three-	shapes Three-
	dimensional at	dimensional at	dimensional at	dimensional less
	80% or more.	70-79%	60-69%	than 60%.
4. Solve Three-	Students can be	Students can be	Students can be	Students can be
dimensional	able to solve	able to solve	able to solve	able to solve
geometric Three-		Three-	Three-	Three-
problem dimensional		dimensional	dimensional	dimensional
solving	solving geometric		geometric	geometric
	problem solving	problem solving	problem solving	problem solving
	at 80% or more.	at 70-79%	at 60-69%	less than 60%.

Chapter 10

Mathematics (M16101)

Content: Presentation of information

Strand 3: Statistics and Probability

Standard M3.1: Understand statistical processes and use statistical knowledge to solve problems.

Grade level indicators

M3.1 Gr6/1 Use the information from the pie chart to find the answer to the problem.

Learning Objective

Students will be taught to :

1. Read a circle Chart Net of cylinder, cone, prism, pyramid

Content

- A pie chart is a form of data presentation in which the area of a circle is divided into sections based on the amount of each piece of data. It is usually expressed as a percentage, or percent, with the sum of all the pieces of data being 100%.
- Solving problems with circle charts starts with understanding the problem, planning the solution, implementing the plan and checking it.

Key competencies of learners

- Communication ability
- Ability to use life skills
- Ability to use technology

Desirable Characteristics:

- Disciplined
- Live simply
- Committed to work

Workpiece and Task Responsibilities

Workpiece / Task	Assessment Criteria /	Learning Activities	
Responsibility	Indicators		
1. Worksheet on Reading a	- Read circle charts correctly	- Consider reading a circle	
Circle Chart		chart together. Explain the	
		characteristics of a circle	
		chart, which is a way to	
		present data using circles.	
2. Worksheet on Solving	- Use the data from the pie chart	- Consider the given problem	
Pie Chart Problems	to find the correct answer to the	situation and then jointly state	
	problem.	what the problem asks, what	
		the problem says, and how to	

Workpiece / Task Responsibility	Assessment Criteria / Indicators	Learning Activities
		find the answer from the given situation.

Assessment Includes:

- 1. Knowledge: Students must score at least 60 percent up.
- 2. Mathematical Skills and Processes: Assessment result must be at Level 2 or above.
- 3. Desirable Characteristics: Assessment result must be at Level 2 or above.

Assessment Criteria

	Assessment Criteria			
Assessment	Excellent	Good	Fair	Needs
ltem	(4)	(3)	(2)	Improvement
				(1)
1. Reading a	Students can	Students can	Students can	Students can be
Circle Chart	be able reading	be able reading	be able reading	able reading a
	a Circle Chart at	a Circle Chart at	a Circle Chart at	Circle Chart at
	80% or more.	70-79%	60-69%	less than 60%
2. Solving	Students can	Students can	Students can	Students can be
Pie Chart	be able to	be able to	be able to	able to solving
Problems	solving	solving	solving	Pie Chart
	Pie Chart	Pie Chart	Pie Chart	Problems less
	Problems at	Problems 70-	Problems at 60-	than 60%.
	80% or more.	79%	69%	

Assessment and Evaluation of Learning Outcomes

Baansankamphaeng School has established criteria for assessing and evaluating students' learning outcomes in Mathematics, under the Mathematics subject group. The assessment covers three main aspects: knowledge, skills/processes, and desirable characteristics, in accordance with the Basic Education Core Curriculum B.E. 2551 (2008). The purposes of assessment and evaluation are to:

Promote student development

Determine academic achievement

The school has defined the following guidelines for assessment and evaluation:

- 1. Forms of Assessment and Evaluation
 - 1.1 Pre-Assessment

Assessment of students' readiness and prior knowledge

Evaluation of students' understanding of topics prior to instruction

1.2 Formative Assessment (During Instruction)

Individual communication-based assessment

Performance-based assessment

Authentic assessment

Portfolio assessment

1.3 Summative Assessment (Post-Instruction)

End-of-lesson assessment

End-of-year assessment

Learning outcome evaluations are conducted based on learning indicators, with a ratio of coursework to final exam scores set at 70:30.

2. Methods of Assessment and Evaluation

To accurately reflect students' competencies and actual characteristics, a variety of methods and tools are used, including:

2.1 Testing

This method evaluates students' knowledge, thinking abilities, and progress in learning. Various test formats are used, such as multiple-choice, short-answer, essay, fill-in-the-blank, true/false, and matching.

2.2 Observation

Observation is used to assess students' behaviors, emotions, interactions, group work relationships, cooperation, planning, perseverance, problem-solving methods, working skills, and use of tools and equipment during learning and activities. Teachers may conduct observations at any time, either formally—with predetermined times and target individuals—or informally as general observations. Observation tools are developed by analyzing the components to be observed, setting criteria and indicators for observation, and using instruments such as checklists and rating scales.

2.3 Interviewing

Interviewing involves conversation and questioning to gather information that may not be clearly visible through students' behaviors in project work, group activities, or daily routines. Informants in the interview may include the student, peers, or even parents. Interviews can be conducted formally—with scheduled date, time, and specific topics—or informally through general, spontaneous conversation. Informal interviews can help build good rapport and often yield more accurate, realistic information. Teachers should prepare guiding questions in advance to ensure focused discussions.

2.4 Performance Assessment

Performance assessment involves evaluating students' actions and execution of tasks, such as the creation of projects or products, demonstrations, or displays of skills and abilities reflected in the students' work. Teachers must prepare assessment tools including assessment criteria, components, and instruments such as scoring rubrics, rating scales, and checklists.

2.5 Scoring Rubric

A scoring rubric is used to analyze the components and assessment criteria in order to describe the quality of student work or actions in levels—whether qualitative, quantitative, or skill-based. Rubrics serve as a guide for evaluation and provide important information to teachers, parents, and other stakeholders about what the student has learned, how well they perform, and the quality of their work. The assessment can be done as a holistic score or by evaluating individual components. 2.6 Portfolio Assessment

Portfolio assessment evaluates students' ability to produce work by integrating knowledge, experiences, efforts, feelings, and personal opinions. It involves the collection, selection, reflection, and evaluation of student work. This type of assessment reflects management skills, creativity, and evidence of students' learning achievements and potential within the subject area.

3. Assessment and Evaluation of Tasks / Student Work

Tools used include:

Activity sheets Worksheets / Tests

4. Instruments for Assessing Tasks / Student Work

Observation forms	Interview forms /	Questionnaires

Activity sheets	Worksheets /	Tests
-----------------	--------------	-------

5. Evaluators

Subject teachers	Students themselves

Peers Parents

6. Assessment Criteria for the Mathematics Learning Area

Assessment results in the Mathematics Learning Area must combine scores from three aspects: knowledge, skills/processes, and desirable characteristics. The final achievement is classified into the following grade levels:

Level 4	= Score 80 - 100
Level 3.5	= Score 75 – 79
Level 3	= Score 70 – 74
Level 2.5	= Score 65 - 69
Level 2	= Score 60 - 64
Level 1.5	= Score 55 - 59
Level 1	= Score 50 - 54
Level 0	= Score 0 - 49

7. Pass Criteria for the Mathematics Learning Area

7.1 Students must attend at least 80% of the total instructional time.

7.2 Students must pass at least 65% of the learning indicators, with a minimum score of 50% for each indicator.

7.3 Students must receive a minimum achievement level of 1 or higher in the Mathematics Learning Area.

7.4 Students must achieve a pass level in the assessment of reading, analytical thinking, and writing within the Mathematics Learning Area.

7.5 Students must achieve a pass level in the assessment of desirable characteristics within the Mathematics Learning Area.

Glossary

Glossary

Probability distribution

A probability distribution describes a random variable by showing all possible values and the probabilities of each value occurring.

Approximation

An approximation is a value that is not exact but sufficiently accurate for practical use. For example, approximating 25.20 as 25, 178 as 180, or 18.45 as 20 to simplify calculations. The resulting value is called an approximated value.

Estimation

Estimation is the process of calculating an approximate result by first approximating each number involved in a problem and then performing the necessary operations. Rounding may or may not be used depending on the context or appropriateness of the situation.

Geometric transformation

Geometric transformation refers to changes in a figure's position or size. Transformations that preserve shape and size include translation, reflection, and rotation. Transformations that change the size while keeping a similar shape are called dilatations (enlargement or reduction).

Exploration, Investigation, and Conjecture of Geometric Properties

This process encourages learners to construct knowledge independently through geometry-based activities. Teachers should provide tasks where students apply their prior knowledge to explore, observe patterns, and make conjectures about geometric properties. Students should then verify the correctness of their conjectures, possibly through further study or comparison with known geometric theorems. Assessment can be based on students' participation in these activities.

Demonstrating Problem-Solving Methods

This involves expressing the ideas, methods, or steps used to solve a problem. It may include drawing diagrams, writing simple explanations, or providing detailed step-by-step solutions.

Solving Mixed Operations (Addition, Subtraction, Multiplication, Division) This refers to solving problems involving more than one operation, such as:

$$(4 + 7) - 3 = \bullet$$

 $(18 \div 2) + 9 = \bullet$
 $(4 \times 25) - (3 \times 20) = \bullet$

The above are examples of problems with mixed operations. The term does not apply to single-operation problems.

 $(4 + 7) - 3 = \bullet$

This is a two-step addition problem.

 $(4 \times 25) - (3 \times 20) = \bullet$

This is a three-step multiplication problem.

Spatial Reasoning

Spatial reasoning refers to the use of knowledge and understanding of the properties of geometric shapes and the relationships between them to reason, explain phenomena, or solve geometric problems.

Data

Data refers to facts or accepted information about a particular topic, gathered through collection. It may consist of textual or numerical information.

Number Sense

Number sense is an intuitive understanding of numbers, including: Understanding numbers as quantities (e.g., 5 pencils) and as ordinals (e.g., fifth place in a race).

Recognizing multiple relationships between numbers (e.g., 8 is one more than 7 but two less than 10).

Understanding the magnitude or value of a number compared to others (e.g., 8 is close to 4 but much less than 100).

Understanding the effects of operations on numbers (e.g., 65 + 42 should be more than 100 because 60 + 40 = 100).

Using prior experience to evaluate the reasonableness of a number (e.g., A report stating that a first-grade student is 250 cm tall is likely inaccurate).

Part–Whole Relationship

The part–whole relationship refers to representing a number as a combination of two or more parts whose sum equals the original number. For example, 8 can be written as:

2 and 6 3 and 5 0 and 8 1, 2, and 5 Number

"Number" is an undefined term (a primitive concept) used to represent quantities. There are many types of numbers, such as counting numbers, integers, fractions, and decimals.

Missing Number or Missing Shape

A missing number or shape is a value or figure that, when placed into the blank in a pattern, maintains the relationship or rule of the pattern.

Example:

3 5 7 9 11 \longrightarrow The missing number is

13

 \rightarrow The missing shape is the one that completes the visual pattern Unknown Value (Variable)

An unknown value is a symbol used to represent a quantity that is not yet known in a symbolic statement. The unknown can appear in any part of the statement.

At the primary school level, the value of an unknown can often be found using the relationships of addition and subtraction or multiplication and division. Examples:

+ 333 = 999 $18 \times n = 54$ 120 = A ÷ 9789 - 156 = •

Numeral

A numeral is a symbol used to represent a number.

Examples:

The number of mangosteens can be written in different numeral systems:

Thai numeral: ๗

Hindu-Arabic numeral: 7

Roman numeral: VII

All the numerals represent the same quantity, though the symbols are different.

One-Way Table

A one-way table is a table that categorizes data based on a single characteristic. Example: Number of students by grade level at a school

Grade Level	Number of Students
Grade 1	65
Grade 2	70
Grade 3	69
Grade 4	62
Grade 5	72
Grade 6	60
Total	398

Problem Solving

Problem solving is a process that students should learn, practice, and develop into a skill in order to construct new knowledge. It enables students to think in diverse ways, apply and adapt different problem-solving methods appropriately, verify and reflect on their processes, and cultivate habits such as being proactive, persistent, and confident in dealing with problems both inside and outside the classroom.

Moreover, problem solving is a fundamental skill that students can apply in real-life situations. To effectively promote students' learning in problem solving, teachers should present stimulating and engaging mathematical situations or problems that encourage the application of mathematical knowledge, problemsolving steps and processes, and a variety of strategies.

Mathematical Communication and Representation

Communication is the exchange of ideas and the creation of understanding between individuals through various means such as listening, speaking, reading, writing, observing, and using gestures.

Mathematical communication involves not only regular communication channels but also the use of mathematical symbols, variables, tables, graphs, equations, inequalities, functions, or models to convey meaning.

Mathematical communication and representation are essential skills and processes that help students clearly and effectively express their understanding, mathematical ideas, and thought processes to others. Participation in discussions, writing to share knowledge and opinions, and exchanging experiences while being open to others' perspectives helps students learn mathematics more meaningfully, understand more deeply, and retain knowledge longer.

Connections in Mathematics

Making connections in mathematics is a process that requires critical thinking, analysis, and creativity. It involves relating mathematical knowledge, content, and principles in a logical way to skills and processes across mathematical topics and to real-world applications. This helps in solving problems and learning more complex or complete concepts.

Connecting mathematical knowledge allows for solving problems in multiple and more efficient ways, giving more meaning to students' mathematical learning.

Connecting mathematics with other disciplines involves relating mathematical knowledge, skills, and processes with content and concepts in other subjects such as science, astronomy, genetics, psychology, and economics. This makes learning mathematics more engaging, meaningful, and allows students to see the importance of mathematics in real life.

When students recognize these connections, they can see the relationships between mathematical content and between mathematics and other disciplines, leading to deeper understanding, better retention, and a clearer perception of mathematics as valuable, interesting, and useful in everyday life.

Reasoning

Reasoning is a mathematical thinking process that involves analysis and creativity in gathering facts, statements, concepts, and mathematical situations, then identifying patterns, relationships, or connections to develop new conclusions or understandings.

Reasoning

Pattern

A pattern is a relationship that shows common characteristics among a set of numbers, geometric figures, or other objects. Examples:

(1)	1,	3,	5,	7,	9,	11
(2)	1/2,	1/4,	1/8,	1/2,	1/4,	1/8
(3)						

Geometric Figure

A geometric figure is a shape consisting of points, straight lines, curves, planes, etc., at least one of these elements.

Examples of one-dimensional geometric figures include lines, line segments, and rays.

Examples of two-dimensional geometric figures include circles, triangles, and quadrilaterals.

Examples of three-dimensional geometric figures include spheres, cubes, prisms, and pyramids.

Digit

A digit is a basic symbol used to write numerals representing quantities. The most commonly used number system today is the decimal (base-10) system. To write any number in the decimal system, ten digits are used. Digits used in Hindu-Arabic numerals are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. Digits used in Thai numerals are also 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Straightedge

A straightedge is a tool or device used to draw straight lines, such as line segments and rays. Normally, a straightedge does not have measurement markings. However, in teaching, a ruler may be used as a substitute for a straightedge, with the assumption that it has no measurement marks.

Single Unit and Compound Unit

Quantities obtained from measurement may use a single unit, such as "an orange weighs 12 kilograms," or a compound unit, such as "a fish weighs 1 kilogram and 200 grams."

Unit

A standard unit is a measurement unit generally accepted by everyone. For example, kilometer, meter, and centimeter are standard units for length measurement. Kilogram, gram, and milligram are standard units for weight measurement.

Ratio

A ratio is a relationship that compares two quantities, which may have the same or different units. The ratio of quantity a to quantity b is written as a : b.

Producers

Ms. Phitchaphak	Saisanongyod		
Ms. Pareena	Pongthammachat		
Ms. Suchanan	Srijai		
Ms. Kotchakorn	Chairawang		
Ms. Daraporn	Kattiya		
Ms. Patcharaporn	Satasarn		
Ms. Cheeranan	Thananwatmaythee		
Ms. Krittaporn	Khiawham		
Ms. Yaowapa	Jailuang		
Ms. Jittiporn	Suwannachart		
Mrs.Souwakon	Sanvilai		
Mrs. Angkanaruk	Chanthong		
Ms. Saowaphak	Jaitikha		
Ms. Phetcharin	Lungta		
Ms. Kanyarat	Phonrob		
Ms. Paveena	Phomchai		
Ms. Chariya	Srisem		
Ms. Nantiya	Sarannapat		
Ms. Sujittar	Thianthongmongkol		
Ms. Kamonchanok	Khamla		
Mr.Songkran	Kamkaew		
Ms. Nitchakan	Pokrai		
Ms. Kantika	Pachsee		
Ms. Nutthanicha	Thurakit		
Mr. Rene Decot Dance	el Jr.		
Ms. Yee Mon Oo			
Mr. Moises I Edano			
Mr. Jon Gabriel L. Batinga			
Mr. Saw Victor Gay Htoo			
Ms. Vrenille Avy Villanueva			
Ms. Melanie S.Valdez			
Ms. Monera Distrajo			
Ms. Khin Myint Myat Maw			
Ms. Mary Cris A. Bagas			
Mr. Saad Shah			