



Mathematics

Matthayom 1-3 (EP)

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Printed by Khroo Chang Publishing
542 Moo 1, Srinakharin Rd, Bangkaew, Bangplee,
Samut Prakan, Thailand. 10540.

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Advisory Board: Andrew Biggs
Om Huvanandana, DBA.
Utsapaporn Pipattanavilai
Carl Prince

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I. Introduction

The Importance of Mathematics

The study of mathematics equips students with knowledge and critical thinking skills that are important for successful and rewarding participation in society. In many studies, mathematics has been proven to encourage creativity and problem solving skills. It creates order, and from this come many disciplines. Students need classroom experiences that will help them develop mathematical understanding, learn important facts and procedures, develop the ability to apply the processes of mathematics, and acquire a positive attitude toward learning mathematics.

The Andrew Biggs Academy English Program Mathematics Curriculum for Matthayom 1 to Matthayom 3 (Grade/Year 7 – 9) provides the framework to meet these objectives. Learning mathematics equips students with a concise and powerful means of communication. Mathematical structures, operations, processes and language provide students with a structure and tools for reasoning, justifying and solving critical problems.

Through practical mathematical activities, students develop mathematical understanding, problem solving skills, and related technological skills that they can apply in their daily lives.

Principles Underlying Andrew Biggs Academy Mathematics Program

Andrew Biggs Academy Curriculum is based on the Thai Ministry of Education (The Basic Education Core Curriculum 2008). This curriculum recognizes the diversity that exists among students who study mathematics in English Program. It is based on the belief that all students can learn mathematics and deserve the opportunity to do so.

This curriculum is designed to help students build a solid foundation in mathematics that will enable them to apply their knowledge and advance their learning successfully. Andrew Biggs Academy believes that students are learning most effectively when they are given the chance to investigate ideas and solve problems and then carefully guided to an understanding of the basic principles in mathematics.

It is also part of this philosophy that students must be enjoying themselves, or at the very least interested, in learning the subject. For this reason, many of the activities have an amusing aspect to them in order to maintain interest in this sometimes-difficult subject. For more than 10 years, Andrew Biggs Academy has been developing curricula in the field of English. The Mathematics curriculum is a relatively-new one based on the textbook and philosophy of Andrew Biggs Academy towards learning.

The Basic Education Core Curriculum aims to instill the following five key competencies among students: communication skills, thinking skills, problem-solving skills, life skills, and technological application skills.

Curriculum Overview

The Andrew Biggs Academy Curriculum, M1 – M3 (Grades 7 to 9) in Mathematics identifies the goals and objectives for each level and illustrates the knowledge and skills that students are expected to acquire, learn, demonstrate and apply in their class work, tests and in various activities to assess their achievements. The overall expectations describe the general knowledge and skills that students are expected to achieve at the end of each level.

The specific expectations describe the detailed knowledge and skills that students are expected to demonstrate at the end of each chapter.

Overall and specific expectations in mathematics are organized into six (6) strands, which are the six major areas of knowledge and skills in the mathematics curriculum of Basic Core Curriculum (B.E. 2551) from the Thai Ministry of Education.

The program in Matthayom 1 to Matthayom 3 is specifically designed to ensure that students build a solid foundation in mathematics. To support this learning process, teachers will, whenever possible integrate concepts from the six strands and apply them to real life situations.

The learning strands in the study of mathematics are designed to facilitate students in gaining an understanding and acquiring mathematical skills and knowledge based on their highest level and enables students to acquire mathematical skills and knowledge according to their utmost potential. The learning strands are:

Strand 1: 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.

Strand 2: 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

Strand 3: Geometry

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

Strand 4: Algebra

Pattern; relationship; function; sets and their operations; reasoning; expression; equation; equation system; inequality; graph; arithmetic order; geometric order; arithmetic series; and geometric series.

Strand 5: Data Analysis 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

Strand 6: 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.

For common understanding and to establish clarity with regards to Andrew Biggs Curriculum, various codes have been used for Learning Standards and Grade Level Indicators. Below are the codes used for this curriculum:

MA1.1, GLI M1/1 M1/1	
MA	Subject Area of Mathematics
1.1	Standard 1, Learning Area 1
GLI	Grade Level Indicators
M1	Year
1	Indicator Number

MATHEMATICS

M1

Core Curriculum for Mathematics, M1

Strands, Learning Standards, and Grade Level Indicators: M1 Mathematics

Strand	Learning Standards		Grade Level Indicators (GLI)
1 Numbers and Operations	MA1.1	Understanding of diverse methods of presenting numbers and their application in real life.	<ol style="list-style-type: none"> 1. Specify or give examples and compare added integral numbers, subtracted integral numbers, 0, fractions and decimals. 2. Have concept of real numbers expressed in exponential notation with integer indices and write numbers in scientific notation.
	MA1.2	Understanding of results of operations of numbers, relationship of operations, and application of operations for problem solving.	<ol style="list-style-type: none"> 1. Add, subtract, multiply and divide fraction and decimal numbers for the purpose of problem solving; be aware of validity of the answer; explain the results obtained from the addition, subtraction, multiplication and division, and explain the relationship between addition and subtraction and between multiplication and division of integral numbers. 2. Add, subtract, multiply and divide integral numbers for the purpose of problem solving; be aware of validity of the answer; explain the results obtained from the addition, subtraction, multiplication and division, and explain the relationship between addition and subtraction and between multiplication and division of fractions and decimals. 3. Explain results of expression in exponential notation of integral numbers, ratios and decimals. 4. Multiply and divide real numbers in the form of exponents with the same
	MA1.3	Use of estimation in calculation and problem solving.	<ol style="list-style-type: none"> 1. Use estimation appropriately in various situations, as well as for considering validity of answers reached through calculation.
	MA1.4	Understanding of numerical system and application of numerical properties.	<ol style="list-style-type: none"> 1. Apply knowledge and properties of integers for problem solving.

Strand	Learning Standards		Grade Level Indicators (GLI)
2 Measurement	MA2.1	Not applicable for M1	
	MA2.2	Not applicable for M1	
3 Geometry	MA3.1	Ability to explain and analyse two dimensional and three-dimensional geometric figures.	<ol style="list-style-type: none"> 1. Construct and explain steps of basic geometric construction. 2. Construct two-dimensional geometric figures by using basic geometric construction, and explain steps of construction without emphasizing proof. 3. To investigate, observe and project geometric properties. 4. Explain characteristics of three-dimensional geometric 5. Identify two-dimensional images from front view and side view of a given three-dimensional geometric figure. 6. Draw or create a three-dimensional figure from a cube, when two-dimensional image from front view, side view and top view.
	MA3.2	Not applicable for M1	
4 Algebra	M4.1	Understanding and ability to analyse patterns, relations and functions.	1. Analyze and explain relations of a given pattern.
	M4.2	Ability to apply algebraic expressions, equations, inequality, graphs and other mathematical models to represent various situations as well as interpretation and application for problem solving.	<ol style="list-style-type: none"> 1. Solve simple linear equations with one variable. 2. Write linear equations with one variable from simple situations or problems. 3. Solve problems involving simple linear equations with one variable, as well as be aware of the validity of the answer. 4. Draw a graph on the plane of the rectangular coordinate system showing the relationship of the two sets of quantities given. 5. Read and interpret the meaning of the graph on the plane of the rectangular coordinate system given.
5 Data Analysis and Probability	MA5.1	Not applicable for M1	1. Can explain which, among events described are more likely to happen.
	MA5.2	Application of statistical methodology and knowledge of probability for valid estimation.	

Strand		Learning Standards	Grade Level Indicators (GLI)
6	Mathematical Skills and processes	M6.1 Problem solving through diverse methods; reasoning; communication; communication and presentation of mathematical concepts; linking mathematics with other disciplines; and attaining ability for creative thinking.	<ol style="list-style-type: none"> 1. Apply diverse methods for problem solving. 2. Appropriately apply mathematical and technological knowledge, skills and processes for problem solving in various situations. 3. Suitably provide reasoning for decision-making and appropriately present conclusions reached. 4. Accurately and succinctly use mathematical language and symbols for communication of concepts and presentation. 5. Link various bodies of mathematical knowledge and link mathematical knowledge, principles and processes with those of other disciplines. 6. Attain ability for creative thinking.

Course Description: Mathematics M1, Semester 1

Subject: Core Mathematics	Course Number : M21101	Level: M1
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 1st

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics:

Number Sequence and Integers

Number patterns and sequence, addition, subtraction, multiplication, division and combined operations of integers.

Fractions

Addition, subtraction, multiplication, division and combined operations of fractions.

Decimals

Addition, subtraction, multiplication, division and combined operations of decimals.

Indices

Multiplication and division of numbers in index notation, raising numbers and algebraic terms in index notation, computation involving laws of indices.

Exponential Notation

Addition, subtraction, multiplication, division and combined operations using exponential notation.

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators (GLI):

MA1.1, GLI M1/1	MA1.1, GLI M1/2	
MA1.2, GLI M1/1	MA1.2, GLI M1/2	MA1.2, GLI M1/3
MA1.3, GLI M1/1		
MA1.4, GLI M1/1	MA4.1, GLI M1/1	
MA5.2, GLI M1/1		
MA6.1, GLI M1/1	MA6.2, GLI M1/2	MA6.1, GLI M1/3
MA6.1, GLI M1/4	MA6.1, GLI M1/5	MA6.1, GLI M1/6

Total up to 15 Grade Level Indicators

Course Syllabus: Mathematics M1, Semester 1

Level: Matthayom 1

Credit: 1.5

Period: 60 hours

Semester: 1st Semester

Instruction Time: 3 periods/week

Focus Smart Mathematics 1, Unit 1: Number Sequence and Integers (15 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Number Patterns and Sequences	Students will be able to: <ul style="list-style-type: none"> Identify different patterns in sequences. Identify a rule for a given sequence. Know what natural numbers are. Know the greatest common divisor and the least common multiple. 	<ul style="list-style-type: none"> Explain what sequence number and term mean, SB p. 2-3. Use examples 1 and 2 of Student book p. 3-4. Explain the few common sequence numbers such as even numbers, odd numbers, square numbers, cube numbers, triangular numbers and Fibonacci numbers. Homework: Test Yourself, 1.1 p. 5. Answer worksheet p. 1-3. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests 	MA4.1, GLI M1/1 MA1.1, GLI M1/1 MA1.2, GLI M1/1 MA1.2, GLI M1/3 MA1.3, GLI M1/1 MA1.4, GLI M1/1 MA1.3, GLI M1/1
2	Integers	Students will be able to define the set of integers, positive numbers, negative numbers, opposites and signs.	<ul style="list-style-type: none"> Understanding whole numbers, SB p. 5. Represent integers using a number line, SB p. 6. Comparing two integers SB p. 7. 	Midterm and Final Exams	
3	Integers	Students will be able to: <ul style="list-style-type: none"> Differentiate between a positive integer and a negative integer. Recognize that a positive integer can be written with or without a sign. 	<ul style="list-style-type: none"> Arranging integers in order SB p. 6. Use of positive and negative numbers SB p. 68. Homework: Test Yourself 1.2, p. 10. Answer workbook exercise p. 4-5. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
4	Addition of Integers	Students will be able to add and subtract positive and negative integers together.	<ul style="list-style-type: none"> ■ Adding like signs or unlike signs SB p. 12. ■ Discuss cumulative and associative property of addition, SB p. 13. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA4.1, GLI M1/1</p> <p>MA1.1, GLI M1/1</p> <p>MA1.2, GLI M1/1</p> <p>MA1.2, GLI M1/3</p> <p>MA1.3, GLI M1/1</p> <p>MA1.4, GLI M1/1</p> <p>MA1.3, GLI M1/1</p>
5	Subtraction of Integers	Students will be able to discover the rules for adding and subtracting integers.	<ul style="list-style-type: none"> ■ Finding the difference of integers SB p. 14-15. <p>Homework: Test Yourself 1.3 p. 16-17.</p>		
6	Review Lesson's Concepts	Students will be able to answer all the exercises in the workbook on integers.	<ul style="list-style-type: none"> ■ Answer workbook p. 6-9. ■ Practice solving problems in real life situations involving additions, subtractions, multiplications and divisions. 		
7	Multiplication of Integers	Students will be able to: <ul style="list-style-type: none"> ■ Explain that the product of two integers with unlike signs is a negative integer. ■ Explain that the product of two integers with like signs is a positive integer. 	<ul style="list-style-type: none"> ■ Define the Properties of Multiplication. SB p. 19-20. ■ Perform multiplication of two integers with like signs. ■ Perform multiplication of two integers with unlike signs. 		
8	Division of Integers	Students will be able to: <ul style="list-style-type: none"> ■ Restate that the quotient of two integers with unlike signs is a negative integer. 	<ul style="list-style-type: none"> ■ Perform division of two integers with like signs, SB p. 20-21. ■ Perform division of two integers with unlike signs. ■ Describe the procedure for 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
		<ul style="list-style-type: none"> Restate that the quotient of two integers with like signs is a positive integer. 	<ul style="list-style-type: none"> dividing integers with like signs. Describe the procedure for dividing integers with unlike sign. Homework: Test Yourself 1.4 p. 21 – 22 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.1, GLI M1/1 MA1.1, GLI M1/1 MA1.2, GLI M1/1 MA1.2, GLI M1/3 MA1.3, GLI M1/1 MA1.4, GLI M1/1 MA1.3, GLI M1/1
9	Multiplication/ Division of Integers	Students will be able to review concepts learned in multiplication and division of integers.	<ul style="list-style-type: none"> Review and discuss the answers to homework given. Encourage students to ask questions and do board work. 		
10	Multiplication/ Division of integers (Continued)	Students will be able to review concepts learned in multiplication and division of integers.	<ul style="list-style-type: none"> Answer workbook p. 10 – 15. 		
11	Combined Operations	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none"> Introduce the MDAS Rule, p. 22–25. Perform the multiplication or division from left to right. Perform the addition or subtraction from left to right. Homework: Test Yourself 1.5 p. 25 of SB. 		
12	Combined Operations (Continued)	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none"> Discuss further the solution for mathematical operation to students and provide more of board exercises for students to understand. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
			<ul style="list-style-type: none"> ■ Discuss the answer to homework given. ■ Students will make a brief communication and presentation in class how to solve combined operations. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.1, GLI M1/1 MA1.1, GLI M1/1 MA1.2, GLI M1/1 MA1.2, GLI M1/3 MA1.3, GLI M1/1 MA1.4, GLI M1/1 MA1.3, GLI M1/1
13	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> ■ Explain the mistakes shown in the Common Mistakes column, SB p. 26. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column, SB p. 27. 		
14	Review Lesson's Concepts	Students will be able to understand number sequence and integers.	<ul style="list-style-type: none"> ■ Provide additional Worksheet for students. ■ Ask 2 students to work out the Spot the Errors on page 15 in the Workbook and discuss with them. ■ Answer Workbook p. 12-14. 		
15	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 28 -30 of Student's Book and Enrichment Exercises of Workbook pages 15 – 26			

Focus Smart Mathematics 1, Unit 2: Fractions (11 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
16	Comparing Fractions	<p>Students will be able to:</p> <ul style="list-style-type: none"> ■ Define fraction, numerator, denominator, fraction bar, unit fraction, and multiple. ■ Identify the number of shaded parts and the number of equal parts in a shape (circle, rectangle). ■ Identify a fraction by comparing the number of shaded parts to the number of equal parts. ■ Write a fraction using mathematical notation and using words. 	<ul style="list-style-type: none"> ■ Teach fractions, SB p. 31–33. ■ Teach proper and improper fractions. ■ Comparing mixed numbers. ■ Teach how to change mixed fraction to a proper fraction. ■ Homework: Test Yourself 2.1, SB p. 33. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M1/1</p> <p>MA1.2, GLI M1/2</p> <p>MA1.2, GLI M1/3</p> <p>MA1.3, GLI M1/1</p> <p>MA6.1, GLI M1/1</p> <p>MA6.1, GLI M1/2</p> <p>MA6.1, GLI M1/3</p> <p>MA6.1, GLI M1/4</p> <p>MA6.1, GLI M1/5</p> <p>MA6.1, GLI M1/6</p>
17	Addition of Fractions	<p>Students will be able to:</p> <ul style="list-style-type: none"> ■ Add fractions with the same denominators. ■ Add fractions with different denominators. 	<ul style="list-style-type: none"> ■ Describe procedures on how to add fractions with the same denominators p. 34–36 of SB. ■ Describe procedures how to add fractions with different denominators. ■ Explain how to change fractions to their lowest term. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
18	Subtraction of Fractions	Students will be able to: ■ Subtract fractions with the same denominators. ■ Subtract fractions with different denominators.	■ Use example 10 – 17, SB p. 37-41. ■ Homework: Test Yourself 2.2, SB p. 41-42.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests	MA1.1, GLI M1/1 MA1.2, GLI M1/2 MA1.2, GLI M1/3 MA1.3, GLI M1/1 MA6.1, GLI M1/1 MA6.1, GLI M1/2 MA6.1, GLI M1/3 MA6.1, GLI M1/4 MA6.1, GLI M1/5 MA6.1, GLI M1/6
19	Review Lesson's Concepts	Students will be able to answer problems in addition and subtraction of fractions.	■ Review and discuss the homework given. ■ Provide additional Worksheet for students. ■ Answer workbook p. 19-23.		
20	Multiplication of Fractions	Students will be able to: ■ Describe the procedures in multiplying fractions. ■ Define greatest common denominator (GCF), simplify, and lowest terms.	■ Teach students how to multiply fractions by using Examples 18 to 22, SB p. 43-45. ■ Discuss to students that numerator and denominator, denominator and denominator are multiplied.	Midterm and Final Exams	
21	Division of Fractions	Students will be able to describe the procedures in dividing fractions.	■ Teach students how to divide fractions by using Examples 23 to 28, SB p. 45-48. ■ Homework: Test Yourself 2.3, SB p. 48-49.		
22	Review Lesson's Concepts	Students will be able to answer problems in multiplication and division of fractions.	■ Review and discuss the homework given. ■ Provide additional Worksheet for students. ■ Answer workbook p. 19-23.		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
23	Combined Operations of Fractions	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none">■ Explain the process of combined operations, SB p. 50–52.■ Teach students the steps on how to perform combined operation.■ Homework: Test Yourself 2.4, SB p. 53.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework	MA1.1, GLI M1/1 MA1.2, GLI M1/2 MA1.2, GLI M1/3 MA1.3, GLI M1/1 MA6.1, GLI M1/1 MA6.1, GLI M1/2 MA6.1, GLI M1/3
24	Combined Operations (Continued)	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none">■ Discuss further the solution for mathematical operation to students and provide more of board exercises for students to understand.■ Discuss the answer to homework given.	Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1, GLI M1/4 MA6.1, GLI M1/5 MA6.1, GLI M1/6
25	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Explain the mistakes shown in the Common Mistake column, SB p. 54.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column on page 55.		
26	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 55 -58 of Student's Book and Enrichment Exercises of Workbook pages 34 – 35			
MIDTERM EXAMINATION					

Focus Smart Mathematics 1, Unit. 3: Decimals (11 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
27	Comparing Decimals	Students will be able to: <ul style="list-style-type: none"> Define decimal, mixed number, whole number, fraction, place value, expanded form, decimal digits and equivalent decimals. Identify the whole number and fractional parts of a decimal. Identify the purpose of using decimals. 	<ul style="list-style-type: none"> Recognize connections between decimal numbers and place value, SB p. 59–60. Write decimals in expanded form. Write whole numbers as decimals. Homework: Test Yourself 3.1, SB p. 60. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests 	MA1.1, GLI M1/1 MA1.2, GLI M1/2 MA1.3, GLI M1/3 MA1.3, GLI M1/1 MA6.1, GLI M1/1 MA6.1, GLI M1/2 MA6.1, GLI M1/3 MA6.1, GLI M1/4 MA6.1, GLI M1/5 MA6.1, GLI M1/6
28	Addition of Decimals	Students will be able to: <ul style="list-style-type: none"> Add two or more decimals. Use addition of decimals to solve application problems. 	<ul style="list-style-type: none"> Teach that decimal points must be lined up, SB p. 60–61. Identify place value in a decimal fraction. Adding decimals. Teach students how to identify, ones, tens, hundreds, thousands, etc. 	Midterm and Final Exams	
29	Subtraction of Decimals	Students will be able to: <ul style="list-style-type: none"> Subtract one decimal from another. Use subtraction of decimals to solve application problems. 	<ul style="list-style-type: none"> Teach that decimal points must be lined up (pages 61–62 of SB). Step of subtracting decimals. Demonstrate: line up the decimal point, and then subtract hundredths, tenths, ones, tens, etc. Homework: Test Yourself 3.2 p. 63 of SB. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
30	Review Lesson's Concepts	Students will be able to answer problems in comparing decimals, addition and subtraction of decimals.	■ Assign Workbook p. 38–41.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1, GLI M1/1 MA1.2, GLI M1/2 MA1.3, GLI M1/3 MA1.3, GLI M1/1 MA6.1, GLI M1/1 MA6.1, GLI M1/2 MA6.1, GLI M1/3 MA6.1, GLI M1/4 MA6.1, GLI M1/5 MA6.1, GLI M1/6
31	Multiplication of Decimals	Students will be able to: ■ Identify where to place the decimal point in the product. ■ Recognize, each time we multiply by a power of ten, the decimal point is moved one place to the right.	■ Describe the procedure for multiplying two decimals. SB p. 63–65. ■ Give examples of multiplication using 10's, 100's and 1000's. ■ Perform operation with two decimals. ■ Explain the steps in multiplying two decimals. ■ Demonstrate arranging the numbers in columns. ■ Multiply the numbers as if they were whole numbers. ■ Insert the decimal point in the product to obtain the answer.		
32	Division of Decimals	Students will be able to: ■ Recognize, each time we divide by a power of ten, the decimal point is moved one place to the left. ■ Perform division of a decimal by a whole number and then rounding the quotient.	■ Describe the procedure for dividing a decimal by a whole number, p. 66–69 of SB. ■ Examine detailed examples in which the divisor is greater than the dividend. ■ Homework: Test Yourself 3.3, SB p. 69–70.		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
33	Review and Summarize Concepts	Students will be able to answer problems in addition and subtraction of decimals.	<ul style="list-style-type: none"> Answer workbook p. 42–46. Students will work in pair and will be given a real life situation problem wherein they will budget the money and allocate their expenses for a week. This will help students ability to develop their critical thinking. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M1/1</p> <p>MA1.2, GLI M1/2</p> <p>MA1.3, GLI M1/3</p> <p>MA1.3, GLI M1/1</p> <p>MA6.1, GLI M1/1</p> <p>MA6.1, GLI M1/2</p> <p>MA6.1, GLI M1/3</p> <p>MA6.1, GLI M1/4</p> <p>MA6.1, GLI M1/5</p> <p>MA6.1, GLI M1/6</p>
34	Combined Operations of Decimals	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none"> Explain the process of combined operations. Work out the calculations within the bracket first. Then, perform the multiplication or division working from left to right. Lastly, perform the addition or subtraction working from left to right. Homework: Test Yourself, 3.4 p. 71–72 of SB. 		
35	Combined Operations Continued	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	<ul style="list-style-type: none"> Discuss further the solution for mathematical operation to students and provide more of board exercises for students to understand. Discuss the answer to homework given. 		
36	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> Explain the mistakes shown in the Common Mistakes column, SB p. 72. Ensure students understand the terms used in this 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
			chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column on page 73.		
37	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 74 -76 of Student's Book and Enrichment Exercises of Workbook pages 47 – 48			

Focus Smart Mathematics 1, Unit 4: Indices (12 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
38	Indices	Students will be able to understand the three main laws of indices, recognising the scenarios, in which we can add, subtract and multiply powers respectively.	<ul style="list-style-type: none"> Describe numbers written in 'index form' using terms such as 'base', 'power', 'index', 'exponent'. Use index notation to express powers of numbers (positive indices only). Evaluate numbers expressed as power of integers. Homework: Test Yourself 4.1, SB p. 79—80. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1 GLI M1/2</p> <p>MA1.2 GLI M1/4</p> <p>MA6.1 GLI M1/1</p> <p>MA6.1 GLI M1/2</p> <p>MA6.1 GLI M1/3</p> <p>MA6.1 GLI M1/4</p> <p>MA6.1 GLI M1/5</p> <p>MA6.1 GLI M1/6</p>
39	Multiplication of Numbers in Index Notation	Students will be able to multiply real numbers in the form of exponents with the same base and integral indices.	<ul style="list-style-type: none"> Teach how to multiply numbers and algebraic terms in index notation with the same base/ different base, SB p. 80-81. Homework: Test Yourself 4.2, SB p. 81-82. 		
40	Division of Numbers in Index Notation	Students will be able divide real numbers in the form of exponents with the same base and integral indices.	<ul style="list-style-type: none"> Teach how to divide numbers and algebraic terms in index notation with the same base SB p. 82. Homework: Test Yourself 4.3, SB p. 83. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
41	Raising Numbers and Algebraic Terms in Index Notation to a Power	Students will be able to raise numbers and algebraic terms in integer indices to a power.	<ul style="list-style-type: none"> ■ Use example 8 to show students how to simplify numbers and algebraic terms expressed in index notation raised to a power, SB p. 83. ■ Examples 9 to 10 to show students how to simplify multiplication and division of numbers and algebraic terms expressed in index notation raised to a power, SB p. 84. ■ Homework: Test Yourself 4.4, page 86 of SB. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	<p>MA1.1 GLI M1/2</p> <p>MA1.2 GLI M1/4</p> <p>MA6.1 GLI M1/1</p> <p>MA6.1 GLI M1/2</p> <p>MA6.1 GLI M1/3</p> <p>MA6.1 GLI M1/4</p> <p>MA6.1 GLI M1/5</p> <p>MA6.1 GLI M1/6</p>
42	Negative Integral Indices and Combined Operations	Students will be able to: <ul style="list-style-type: none"> ■ Understand negative integral indices. ■ Know how to do mixed operations involving negative indices and algebraic terms. 	<ul style="list-style-type: none"> ■ Use examples 13 and 14 to show how to state a $-n$ to $1/(an)$ and vice versa, SB p. 87-88. ■ Use examples 15 and 16 (p. 87 of SB), show students how to perform computation of combined operation involving negative indices on numbers and algebraic terms, SB p. 86-87. ■ Homework: Test Yourself 4.5, SB p. 88. 	<p>Midterm and Final Exams</p>	
43	Review Lesson's Concepts	Students will be able to solve problems in index notation.	<ul style="list-style-type: none"> ■ Discuss in class the answer for homework given. ■ Allow students to ask questions and encourage doing the answer on the board. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
44	Review Lesson's Concepts (Continued)	Students will be able to solve problems in index notation.	<ul style="list-style-type: none"> Provide additional worksheets for students. Answer workbook p. 50-55. Using online resources, students will investigate some useful situations that may be useful in daily life situations. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1 GLI M1/2</p> <p>MA1.2 GLI M1/4</p> <p>MA6.1 GLI M1/1</p> <p>MA6.1 GLI M1/2</p> <p>MA6.1 GLI M1/3</p> <p>MA6.1 GLI M1/4</p> <p>MA6.1 GLI M1/5</p> <p>MA6.1 GLI M1/6</p>
45	Fractional Indices/ Combined Operations Involving Fractional Indices and Algebraic Expressions	Students will be able to understand fractional indices.	<ul style="list-style-type: none"> Teach how to state $a^{1/n}$ as $n\sqrt{a}$ and vice versa, using Examples 17 and 18, SB p. 89. Show how to find the value of $a^{1/n}$ and state $a^{m/n}$. Use Example 19, SB p. 90. Homework: Test Yourself 4.6 page 92 of SB. 		
46	Review Lesson's Concepts	Students will be able to solve problems in indices.	<ul style="list-style-type: none"> Discuss homework given. Elicit questions and encourage demonstrating answers on the board. 		
47	Computation Involving Laws of Indices	Students will be able to perform computation involving combined operations of multiplication and division of integral indices.	<ul style="list-style-type: none"> Explain the laws of indices, SB p. 93. Teach students to perform multiplication, division and combined operations of numbers in index notation by using Examples 23 to 25, SB p. 94. Homework: Test Yourself 4.7, SB p. 95. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
48	Review and Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> Check student's homework. Explain the mistakes shown in the Common Mistake column SB p. 96. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column, SB p. 96. Answer workbook p. 55-58. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M1/2 MA1.2 GLI M1/4 MA6.1 GLI M1/1 MA6.1 GLI M1/2 MA6.1 GLI M1/3 MA6.1 GLI M1/4 MA6.1 GLI M1/5 MA6.1 GLI M1/6
49	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice page 97 of Student's Book and Enrichment Exercises of Workbook pages 59 – 60.			

Focus Smart Mathematics, Unit 5: Exponential Notation (11 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
50	Exponential Notation	Students should be able to: <ul style="list-style-type: none"> Understand the concept of exponential notation. Evaluate expressions containing exponents. Evaluate exponential notations with exponents of 0 and 1. Write an exponential expression involving negative exponents with positive exponents. 	<ul style="list-style-type: none"> Explain exponential notation, SB p. 99–100. Homework: Test Yourself 5.1, SB p. 100. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M1/2 MA1.2 GLI M1/3 MA1.2 GLI M1/4 MA6.1 GLI M1/1 MA6.1 GLI M1/2 MA6.1 GLI M1/3 M 6.1 GLI M1/4 MA6.1 GLI M1/5 MA6.1 GLI M1/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
51	Addition in Exponential Notation	Students should be able to perform computations involving addition, using exponential notation.	<ul style="list-style-type: none"> ■ Explain to students how to add numbers in exponent notation using Examples 4 and 5, SB p. 101–102. ■ Remind them that number in exponent notation that have the same power of base 10 can be added directly. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	MA1.1 GLI M1/2 MA1.2 GLI M1/3 MA1.2 GLI M1/4 MA6.1 GLI M1/1 MA6.1 GLI M1/2 MA6.1 GLI M1/3 M 6.1 GLI M1/4 MA6.1 GLI M1/5 MA6.1 GLI M1/6
52	Subtraction in Exponential Notation	Students should be able to perform computations involving subtraction using exponential notation.	<ul style="list-style-type: none"> ■ Explain to students how to subtract numbers in exponent notation using Examples 6 and 7, SP p. 103. ■ Remind them that numbers in exponent notation that have the same power of base 10 can be subtracted directly. ■ Homework: Test Yourself 5.2 page 104 as homework. 		
53	Review and Summarize Concepts	Students will be able to understand how to add and subtract number in exponent notation.	<ul style="list-style-type: none"> ■ Discuss the answer on the homework given. ■ Provide additional worksheet for multiplication and division in exponential notation. 		
54	Multiplication in Exponential Notations	Students will be able to perform computations involving multiplication, using exponential notation	<ul style="list-style-type: none"> ■ Explain to students how to multiply numbers in exponent notation using Examples 8, SB p. 105. ■ Using on-line resources, students will 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
			research and investigate the importance of exponential notations in the field of computer, science, economic and etc.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M1/2 MA1.2 GLI M1/3 MA1.2 GLI M1/4 MA6.1 GLI M1/1 MA6.1 GLI M1/2 MA6.1 GLI M1/3 M 6.1 GLI M1/4 MA6.1 GLI M1/5 MA6.1 GLI M1/6
55	Division in exponential notation	Students will be able to perform computations involving division using exponential notation.	■ Explain to students how to divide numbers in exponent notation using Example 9. SB p. 105. ■ Homework: Test Yourself 5.3, SB p. 104.		
56	Review and Summarize Concepts	Students will be able to solve problems in multiplication and division of exponential notations.	■ Discuss the answer on the homework given. ■ Provide additional worksheet for multiplication and division in exponential notation.		
57	Combined operations using exponential notation	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	■ Remind students the steps to perform computation involving combined operations. ■ Homework: Test Yourself 5.4 page 106.		
58	Combined Operations Continued	Students will be able to do mixed operations with addition, subtraction, multiplication and division.	■ Discuss further the solution for mathematical operation to students and provide more of board exercises for students to understand. ■ Discuss the answer to homework given.		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
59	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	<ul style="list-style-type: none"> ■ Explain the mistakes shown in the Common Mistakes column, SB p. 109. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column on page 110. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1 GLI M1/2</p> <p>MA1.2 GLI M1/3</p> <p>MA1.2 GLI M1/4</p> <p>MA6.1 GLI M1/1</p> <p>MA6.1 GLI M1/2</p> <p>MA6.1 GLI M1/3</p> <p>M 6.1 GLI M1/4</p> <p>MA6.1 GLI M1/5</p> <p>MA6.1 GLI M1/6</p>
60	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 110 -111 of Student's Book and Enrichment Exercises of Workbook page 68.			

FINAL EXAMINATION

Course Description: Mathematics M1, Semester 2

Subject: Core Mathematics	Course Number: M11102	Level: M1
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 2nd

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics: Geometrical Construction:

Solid Geometry: cubes and cuboids and plan, front elevation and side elevation 3-D Geometrical Shapes:

Linear Equations

Equality, linear equations in one unknown, solutions of linear equations in one unknown; Relations.

Coordinates and Line Graphs

Relations, coordinates, scales of the coordinate access, and line graphs.

Probability

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators (GLI):

MA3.1, GLI M1/1	MA3.1, GLI M1/2	MA3.1, GLI M1/4	MA3.1, GLI M1/5	MA3.1, GLI M1/6
MA4.2, GLI M1/1	MA4.2, GLI M1/2	MA4.2, GLI M1/3	MA4.2, GLI M1/4	MA4.2, GLI M1/5
MA5.2 GLI M1/1	MA6.1, GLI M1/1	MA6.1, GLI M1/2	MA6.1, GLI M1/3	MA6.1, GLI M1/4
MA6.1, GLI M1/5	MA6.1, GLI M1/6			

Total up to 17 Grade Level Indicators

Course Syllabus: M1 Mathematics, Semester 2

Level: Matthayom 1 Credit: 1.5 Period: 60 hours Semester: 2nd Semester Instruction Time: 3 periods/week

Focus Smart Mathematics, Unit 6: Geometrical Constructions (12 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Geometrical Constructions	Students will be able to: <ul style="list-style-type: none"> Construct and explain steps of basic geometric constructions. Understand the process of using tools in problem solving. 	<ul style="list-style-type: none"> Draw shapes, angles or lines accurately. Teach and guide students on how to construct line segments, triangles of given sides, perpendicular lines, angles and angle bisectors, triangles of given sides and angles, parallel lines. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 3.1 GLI M1/1 MA 3.1 GLI M1/2 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
2	Constructing Line Segments	Students will be able to understand geometric concepts and uses of measurements.	<ul style="list-style-type: none"> Use Example 1 of SB p. 113 on how to construct line segments. In group, students will make a brief presentation in the class the different geometrical figures. 		
3	Constructing triangles of given sides	Students will be able to understand different kinds of angles.	<ul style="list-style-type: none"> Use Example 2 of SB p. 114 on how to construct triangle of given sides. 		
4	Constructing Perpendicular Lines	Students will be able to identify perpendicular lines.	<ul style="list-style-type: none"> Use Examples 3 to 5 of SB p. 115—118 on how to construct triangle of given sides 		
5	Constructing Angles and Angles Bisectors	Students will be able to identify alternate angles and corresponding angles	<ul style="list-style-type: none"> Use Examples 6 to 9 of SB p. 119—122 on how to construct angles and angles bisectors. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
6	Constructing Triangles of Given Sides and Angles	Students will be able to conclude whether or not a triangle is formed and what type of it triangle would be.	<ul style="list-style-type: none"> ■ Use Examples 10 to 12 of SB p. 123—124 on how to construct triangles of given sides and angles. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 3.1 GLI M1/1 MA 3.1 GLI M1/2 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
7	Constructing Parallel Lines	Students will be able to identify parallel and perpendicular lines; know the sum of angles at a point.	<ul style="list-style-type: none"> ■ Use Examples 13 to 14 of SB p. 119—122 on how to construct angles and angles bisectors 		
8	Review Lesson's Concepts	Students will be able to solve problems on genetic construction.	<ul style="list-style-type: none"> ■ Homework: Test Yourself 6.1, SB p. 127–130. 		
9	Construction	Students will be able to construct/draw line segments, triangles of given sides, perpendicular lines, angles and angle bisectors, triangles of given sides and angles, parallel lines.	<ul style="list-style-type: none"> ■ Ask students to draw geometrical constructions (shapes, lines, angles and etc.) accurately. ■ Introduce the use of compass, pencil, protractor, ruler. 		
10	Review Lesson's Concepts (Continued)	Students will be able to solve problems on construction.	<ul style="list-style-type: none"> ■ Discuss the answer of the seatwork given to students. ■ Provide additional worksheet for students. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
11	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	<ul style="list-style-type: none"> ■ Explain the mistakes shown in the Common Mistakes column on p. 130–131 of SB. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column on page 131. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Examinations</p>	<p>MA 3.1 GLI M1/1</p> <p>MA 3.1 GLI M1/2</p> <p>MA 6.1 GLI M1/1</p> <p>MA 6.1 GLI M1/2</p> <p>MA 6.1 GLI M1/3</p> <p>MA 6.1 GLI M1/4</p> <p>MA 6.1 GLI M1/5</p> <p>MA 6.1 GLI M1/6</p>
12	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 131 -134 of Student's Book and Enrichment Exercises of Workbook page 68.			

Focus Smart Mathematics, Unit. 7: Solid Geometry (12 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
13	Geometric Solids	Students will be able to understand and explain the geometrical properties of cubes and cuboids.	<ul style="list-style-type: none"> Teach and distinguish (SB p. 136) Cube, cuboid, cylinder, pyramid, cone sphere. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA 3.1 GLI M1/4 MA 3.2 GLI M1/5 MA 3.2 GLI M1/6 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2
14	Cubes and Cuboids	Students will be able to: <ul style="list-style-type: none"> Explain the geometrical properties of cube and cuboids. Draw cubes and cuboids on square grids and blank paper. 	<ul style="list-style-type: none"> Teach the difference between a cuboid and a cube. Show students the characteristics of cubes and cuboids. Guide them on how to draw these figures. 	Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
15	Review Lesson's Concepts	Students will be able to solve problems on geometric solids.	<ul style="list-style-type: none"> Homework: Test Yourself 7.1, SB pages 137–139. In group, teacher will assign rooms for students to find the area of each room to gauge their ability for creative thinking. 		
16	3-D Geometrical Shapes	Students will be able to identify two-dimensional images from the top view, front elevation view and side view of a given three-dimensional geometrical shapes.	<ul style="list-style-type: none"> Using some 3-D block models, explain plan, front elevation and side elevation of the model Show students how 3-D geometrical shapes look when viewed from different points of view. Ask students to draw the views on paper. Use examples 1 to 3 of SB p. 141 to 142. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
17	3-D Geometrical Shapes (Continued)	Students will be able to draw 3-D shapes.	<ul style="list-style-type: none"> Ask students to draw 3-D shapes and line up its plan, front elevation and side elevation. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Examinations</p>	<p>MA 3.1 GLI M1/4</p> <p>MA 3.2 GLI M1/5</p> <p>MA 3.2 GLI M1/6</p> <p>MA 6.1 GLI M1/1</p> <p>MA 6.1 GLI M1/2</p> <p>MA 6.1 GLI M1/3</p> <p>MA 6.1 GLI M1/4</p> <p>MA 6.1 GLI M1/5</p> <p>MA 6.1 GLI M1/6</p>
18	Geometrical Shapes Composed of Cubes	Students will be able to identify three-dimensional geometrical shapes composed of cube from the two-dimensional images from the top view, front elevation view and side view of the given shapes.	<ul style="list-style-type: none"> Explain to students how a geometrical shapes can be composed of many smaller cubes of equal size Use example 4 of SB p. 141—142. 		
19	Geometrical Shapes Composed of Cubes (Continued)	Students will be able to draw geometric shapes that are composed of many similar cubes.	<ul style="list-style-type: none"> Ask students to draw geometrical shapes that are composed of many small similar cubes based on the given plan, front, elevation and side elevation. 		
20	Review Lesson's Concepts	Students will be able to solve problems on geometrical shapes.	<ul style="list-style-type: none"> Homework: Test Yourself 1.6, SB p. 152—155. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
21	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	<ul style="list-style-type: none">■ Explain the mistakes shown in the Common Mistakes column on page 150 of SB.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column on page 151.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests	MA 3.1 GLI M1/4 MA 3.2 GLI M1/5 MA 3.2 GLI M1/6 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
22	Review and Practice	Students will be able to solve problems of solid geometry.	<ul style="list-style-type: none">■ Ask students to answer workbook pages 69–72.	Midterm and Final Examinations	
23	Review and Practice	Students will be able to solve problems of solid geometry.	<ul style="list-style-type: none">■ Ask students to answer workbook pages 73—76.		
24	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 152 -155 of Student’s Book and Enrichment Exercises of Workbook page 77			
MIDTERM EXAMINATION					

Focus Smart Mathematics, Unit 8: Linear Equations (15 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
25	Equality	Students will be able to understand and state the relationship between two quantities using the symbol '=' or '≠'.	<ul style="list-style-type: none"> ■ Explain the meaning of equality using the symbol '=' and '≠' using Examples 1 and 2 of p. 157. ■ Homework: Test Yourself 8.1, SB p. 158–159. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA 4.1 GLI M1/1 MA 4.2 GLI M1/1 MA 4.2 GLI M1/2 MA 4.2 GLI M1/3 MA 6.1 GLI M1/1
26	Review Lesson's Concepts	Ensure that students understand the lesson very well.	<ul style="list-style-type: none"> ■ Provide additional worksheet about equality. ■ Answer workbook pages 89 on equality. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA 6.1 GLI M1/2 MA 6.1 GLI M1/3
27	Linear Equations in One Unknown	Students will be able to: <ul style="list-style-type: none"> ■ Understand and write linear equations in one unknown. ■ Determine algebraic terms, linear algebraic expressions and linear equations. 	<ul style="list-style-type: none"> ■ Guide students on how to write linear equations in one unknown for given statements and vice versa ■ Explain the meaning of linear algebraic term, linear algebraic expression, linear equation and linear equation in one unknown. ■ Use example 4 to 8. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
28	Review Lesson's Concepts	Review and summary of concepts. Students will be able to solve problems on linear equations.	<ul style="list-style-type: none"> ■ Assign: Test Yourself 8.2, SB p. 162–163. 	Midterm and Final Examinations	

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
29	Review Lesson's Concepts	Review and summary of concepts. Students will be able to solve problems on linear equations.	<ul style="list-style-type: none"> Provide more worksheet in solving linear equations in one unknown. Discuss the answer on Test Yourself 8.2 seatwork and encourage students to ask questions. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework 	MA 4.1 GLI M1/1 MA 4.2 GLI M1/1 MA 4.2 GLI M1/2 MA 4.2 GLI M1/3 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3
30	Solution of Linear Equation in One Unknown	Students will be able to: <ul style="list-style-type: none"> Perform the concept of linear equation in one unknown to solve problems. Be aware of the validity of the answers. 	<ul style="list-style-type: none"> Determine if a numerical value is a solution of a given linear equation in one unknown. Use example 10 of SB p. 163. Determining the solution of a linear equation in one unknown by trial and improvement method. Use example 11 of p. 164–165. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
31	Solution of Linear Equation in One Unknown (Continued)	Students will be able to solve problems on equations.	<ul style="list-style-type: none"> Solve equations in the form of a. $x + a = b$ b. $x - a = b$ c. $ax = b$ d. $x/a = b$ e. $ax + b = c$ Use examples 12–13 of SB p. 165–166 		
32	Solution of Linear Equation in One Unknown (Continued)	Students will be able to solve problems on equations.	<ul style="list-style-type: none"> Use example 14 – 18 of SB p. 167 – 168. Homework: Test Yourself 8.3 numbers 1 to 5. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
33	Solution of Linear Equation in One Unknown (Continued)	Students will be able to solve problems on equations.	<ul style="list-style-type: none"> Check and discuss student's homework and encourage students to ask questions and solve problem on the board. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Examinations</p>	<p>MA 4.1 GLI M1/1</p> <p>MA 4.2 GLI M1/1</p> <p>MA 4.2 GLI M1/2</p> <p>MA 4.2 GLI M1/3</p> <p>MA 6.1 GLI M1/1</p> <p>MA 6.1 GLI M1/2</p> <p>MA 6.1 GLI M1/3</p> <p>MA 6.1 GLI M1/4</p> <p>MA 6.1 GLI M1/5</p> <p>MA 6.1 GLI M1/6</p>
34	Review Lesson's Concepts	Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.	<ul style="list-style-type: none"> Homework: Test Yourself 8.3, SB p. 169–170 numbers 6 to 12. 		
35	Review Lesson's Concepts	Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.	<ul style="list-style-type: none"> Use p. 171–172 to have a quick revision. 		
36	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	<ul style="list-style-type: none"> Explain the mistakes shown in the Common Mistake column on page 171 of SB. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column on page 172. 		
37	Review and Practice	Students will be able to solve problems on linear equations.	<ul style="list-style-type: none"> Check students' knowledge by having them to work individually on workbook pages 89–91. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
38	Review and Practice	Students will be able to solve problems on linear equations.	<ul style="list-style-type: none"> Check students' knowledge by having them to work individually on workbook pages 93–95. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 4.1 GLI M1/1 MA 4.2 GLI M1/1 MA 4.2 GLI M1/2 MA 4.2 GLI M1/3 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
39	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 152 -155 of Student's Book and Enrichment Exercises of Workbook pages 96 – 97.			

Focus Smart Mathematics, Unit. 9: Relations, Coordinates and Line Graphs (14 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
40	Relations	Students will be able to: <ul style="list-style-type: none"> Understand set notation, arrow diagram, set of ordered pair and graph. Students will be able to understand, plotting and stating the coordinates on a Cartesian plane. 	<ul style="list-style-type: none"> Introduce set notation to students by using Example 1 of SB p. 176 Teach how a relation can be represented using an arrow diagram, a set of ordered pair and a graph. Use Example 2 of SB p. 176-177 for better explanation. Teach domain, co-domain, object, image and range of relation. Use example 3 of SB p. 178 for better understanding. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 4.2 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
41	Types of relation	Students will be able to identify types of domain.	<ul style="list-style-type: none">■ Teach p. 179–180 and use example 4 of SB pages 179–180.■ Homework: workbook pages 98–102.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 4.2 GLI M1/4
42	Review Lesson's Concepts	Students will be able to solve problems on relation.	<ul style="list-style-type: none">■ Homework: Test Yourself 9.1, SB pages 180–181.■ Students will record the temperature in seven (7) days and will represent the information gathers in a line graph.		MA 6.1 GLI M1/5
					MA 6.1 GLI M1/1
					MA 6.1 GLI M1/2
					MA 6.1 GLI M1/3
					MA 6.1 GLI M1/4
				MA 6.1 GLI M1/5	
				MA 6.1 GLI M1/6	
43	Coordinates	Students will be able to: <ul style="list-style-type: none">■ Understand the scales of the coordinate axes.■ Solve problems involving coordinates.	<ul style="list-style-type: none">■ Teach the axes in a Cartesian plane by using Example 5 of SB page 182.■ Guide students to plot points and state the coordinates of the points and state the distances of points from the axes in various situations. Use Examples 6 and 7 of SB 183 – 184 as examples.		
44	Coordinates (Continued)	Students will be able to: <ul style="list-style-type: none">■ Understand the scales of the coordinate axes.■ Solve problems involving coordinates.	<ul style="list-style-type: none">■ State the coordinates of points in a Cartesian plane. Use example 8 – 9 pages 185 – 186.■ Assign workbook p. 103–104.		
45	Review and Practice	Review and summary of concepts.	<ul style="list-style-type: none">■ Homework: Test Yourself 9.2, SB p. 186–187.		
46	Scales of the Coordinate Axes	Students will be able to plot points given the coordinates with reference to the scales given.	<ul style="list-style-type: none">■ Using Examples 10 to 12 of SB p. 187–189, guide students to mark the values on the axes and state the scales used.		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
47	Stating, Plotting and Solving Problems with Coordinates	Students will be able to solve problems involving coordinates.	<ul style="list-style-type: none">■ Using Examples 13 to 16 of SB p. 190-192, guide students to mark the values on the axes and state the scales used.■ Complete workbook p. 105—111.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 4.2 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3
48	Stating, Plotting and Solving Problems with Coordinates (Continued)	Students will be able to draw Cartesian plane with x-axis and y- axis and be able to plot points.	<ul style="list-style-type: none">■ Provide students with sample Cartesian plane and ask them to plot points.		MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
49	Review and Summary of Concepts	Review and summary of concepts.	<ul style="list-style-type: none">■ Assign Test Yourself 9.3, SB p. 192–194.		
50	Line Graphs	Students will be able to: <ul style="list-style-type: none">■ Construct line graphs.■ Read and interpret line graphs	<ul style="list-style-type: none">■ Construct line graphs 17 of SB pages 195. Read and interpret line graphs.■ Use Example 18 of SB p. 196 to explain better.■ Assign workbook pages 111–115.		
51	Line Graphs	Review and summary of concepts	<ul style="list-style-type: none">■ Assign Test Yourself 9.4, SB pages 197–198.		
52	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	<ul style="list-style-type: none">■ Explain the mistakes shown in the Common Mistake column on p. 198 of SB.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column on p. 199.		
52	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice pages 200 -201 of Student's Book and Enrichment Exercises of Workbook pages 116—117.			

Focus Smart Mathematics: Unit. 10, Probability (7 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
54	Probability	Students will be able to: ■ Explain the meaning of probability. ■ Use probability scales.	■ Use variety of situations to explain probability. Ask students for three other examples of events that are certain, have even chance and are impossible respectively. ■ Use example 1 of SB p. 205.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Examinations	MA 5.2 GLI M1/1 MA 6.1 GLI M1/2
55	Probability (Continued)	Students will be able to: ■ Explain the meaning of probability. ■ Use probability scales.	■ Assign Test Yourself 10.1, SB p. 207.		
56	Review Lesson's Concepts	Review and summary of concepts	■ Assign workbook p. 119—122. ■ Students will be given a recipe and decide how much ingredients they need to serve 30 people. This activity will practice their ability for creative thinking.		
57	Conclusion	Students will be able to identify mistakes and be aware of validities of answers to the operations.	■ Explain the mistakes shown in the Common Mistake column on p. 208 of SB. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column on page 208.		
58	Unit Test	Unit test will be given every end of the unit. Questions will come from the Mastery Practice pages 122 of Student's Book and Enrichment Exercises of Workbook pages 116 - 117.			
59 60	REVISION FOR THE FINAL EXAMINATION (Giving Pointers and Lesson Coverage for the final exam)				

FINAL EXAMINATION

MATHEMATICS

M2

Core Curriculum for Mathematics M2

Mathematics Strands, Learning Standards and Grade Level Indicators

Strand	Learning Standards		Grade Level Indicators (GLI)
1. Numbers and Operations	MA1.1	Understanding of diverse methods of presenting numbers and their application in real life.	<ol style="list-style-type: none"> 1. Write fractions in the form of decimals and write circulating decimals in form of fractions. 2. Distribute prescribed real numbers and give examples of rational and irrational numbers. 3. Explain and specify square roots and cube roots of real numbers. 4. Apply knowledge of ratio, fractions and percentage to solve problems.
	MA1.2	Understanding of results of operations of numbers, relationship of operations, and application of operations for problem solving.	<ol style="list-style-type: none"> 1. Find square root and cube root of integral numbers by separating factors for the purpose of problem solving as well as be aware of validity of answers. 2. Explain results of finding square root and cube root of integral numbers, fractions and decimals and express relationship between exponents and roots of real numbers.
	MA1.3	Use of estimation in calculation and problem solving.	<ol style="list-style-type: none"> 1. Find estimates of square root and cube root of real number, which can be applied for problem solving as well as be aware of validity of the answers.
	MA1.4	Understanding of numerical system and application of numerical properties.	<ol style="list-style-type: none"> 1. Explain relationships between real numbers, rational numbers and irrational numbers.
2. Measurement	MA2.1	Understanding of the basics of measurement; ability to measure and estimate the size of objects to be measured.	<ol style="list-style-type: none"> 1. Compare measuring units for length and area of the same ad different systems and choose appropriate measuring units. 2. Appropriately estimate time, distance, area, and volume, weight and explain the method used for estimation. 3. Appropriately choose estimation for measurement in various situations.
	MA2.2	Solving measurement problems	<ol style="list-style-type: none"> 1. Apply knowledge of length and area for problem solving in various situations.
3. Geometry	MA3.1	Not applicable to M2	
	MA3.2	Ability for visualization, spatial reasoning and application of geometric models for problem solving.	<ol style="list-style-type: none"> 1. Use properties of congruence of triangles and those of parallels for reasoning and problem-solving.' 2. Use Pythagoras's Theorem and converse for reasoning and problem solving.

Strand	Learning Standards		Grade Level Indicators (GLI)
			3. Understand and apply geometric transformation through transition, reflection and rotation. 4. Identify images from translations, reflection and rotation of models, and explain the method of obtaining the images when given such models and images.
4. Algebra	MA4.2	Ability to apply algebraic expressions, equations, inequality, graphs and other mathematical models to represent various situations as well as interpretation and application for problem solving.	1. Solve problems involving linear equations with one variable and be aware of the validity of the answer. 2. Find coordinates of points and explain characteristics of geometric figures obtained from translation, reflection and rotation in the plane of the rectangular coordinate system.
5. Data Analysis and Probability	MA5.1	Understanding and ability to apply statistical methodology for data analysis.	1. Read and present data by using pie charts.
	MA5.2	Application of statistical methodology and knowledge of probability for valid estimation.	2. Can explain, among events described which will definitely happen, which will definitely not happen and which is more likely to happen.
6. Mathematical Skills and Processes	MA6.1	Capacity for problem solving, reasoning; communication and presentation of mathematical concept; linking various bodies of mathematical knowledge and linking mathematics with other disciplines; attaining ability for creative thinking.	1. Apply diverse methods for problem solving. 2. Appropriately apply mathematical and technological knowledge, skills and processes for problem solving in various situations. 3. Suitably provide reasoning for decision-making and appropriately present conclusions reached. 4. Accurately and succinctly use mathematical language and symbols for communication of concepts and presentation. 5. Link various bodies of mathematical knowledge and link mathematical knowledge, principles and processes with those of other disciplines. 6. Attain ability for creative thinking.

Course Description: Mathematics M2, Semester 1

Subject: Core Mathematics	Course Number: M22101	Level: M2
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 1st

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics:

Squares, Square Roots, Cubes and Cube Roots

Squares, square roots, cubes, cube roots

Rational and Irrational Numbers

Rational numbers, real numbers, operations involving surds

Length and Area

Length, area of rectangles, areas of triangles, parallelograms and trapeziums, estimation of measurements.

Ration, Proportion, and Percentage

Ratio of two quantities, proportion, ratio of three quantities, relationship between percentages, fractions and decimals, computations and problems involving percentages.

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators (GLI):

MA1.1, GLI M2/1	MA1.1, GLI M2/2	MA1.1, GLI M2/3	MA1.1, GLI M2/4
MA1.2, GLI M2/1	MA1.2, GLI M1/2	MA1.3, GLI M2/1	MA1.4, GLI M2/1
MA2.1, GLI M2/1	MA2.1, GLI M2/2	MA2.1, GLI M2/3	MA2.2, GLI M2/1
MA6.1, GLI M1/1	MA6.2, GLI M1/2	MA6.1, GLI M1/3	MA6.1, GLI M1/4
MA6.1, GLI M1/5	MA6.1, GLI M1/6		

Total up to 18 Grade Level Indicators

Course Syllabus: Mathematics M2, Semester 1

Level: Matthayom 2

Credit: 1.5

Period: 60 hours

Semester: 1st Semester

Instruction Time: 3 periods/week

Focus Smart Mathematics, Unit 1: Squares, Square Roots, Cubes and Cube Roots (15 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Squares	Students will be able to identify the square and the properties of squares.	<ul style="list-style-type: none"> Assign Flashback to recall certain Mathematical concepts. Teach what is “square” and how to read squared number; 52 (five to the power of two, five squared or the square of five), SB p. 2. Teach how to write as a number of the power by using examples 1 and 2, SB p. 2. Assign workbook exercise 1 p. 2. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M2/3</p> <p>MA1.2, GLI M2/1</p> <p>MA1.2, GLI M2/2</p> <p>MA1.3, GLI M2/1</p> <p>MA1.6, GLI M1/1</p> <p>MA1.6, GLI M1/2</p> <p>MA1.6, GLI M1/3</p> <p>MA1.6, GLI M1/4</p> <p>MA1.6, GLI M1/5</p> <p>MA1.6, GLI M1/6</p>
2	Determining Squares of Numbers/ Estimating the Squares of Numbers	Students will be able to determine the squares of numbers.	<ul style="list-style-type: none"> Teach how to determine and estimate the squares of numbers using examples 3–4, SB p. 3. Discuss methods in estimating the squares of numbers by using examples 5 – 6, SB p. 4 <p>Method 1: Approximations</p> <p>Method 2: Determining the range</p> <ul style="list-style-type: none"> Homework: Answer workbook exercise 2, p. 2 – 3. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
3	Perfect Squares	Students will be able to determine the square of a whole number.	<ul style="list-style-type: none"> ■ Discuss what perfect square is, SB p. 4 ■ Give examples of perfect squares on the board. ■ Ask students to determine possible perfect square that falls within the range of numbers by using examples 7 8, SB p. 5 ■ Answer workbook exercises 3 – 4, SB p. 4 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M2/3</p> <p>MA1.2, GLI M2/1</p> <p>MA1.2, GLI M2/2</p> <p>MA1.3, GLI M2/1</p>
4	Review of Concepts	Students will be able to understand about perfect squares.	<ul style="list-style-type: none"> ■ Provide additional worksheets and discussion in class to check student's understanding on how to find squares of numbers. 		
5	Solving problems involving Perfect Squares.	Students will be able to solve word problem involving perfect squares.	<ul style="list-style-type: none"> ■ Review on perfect squares ■ Teach students how to solve word problems involving squares of numbers by using example 9, SB p. 5 ■ Answer workbook exercises 5 – 7, p. 4 – 5 ■ Homework: Answer Test Yourself 1.1 of SB p. 6 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
6	Square Roots	Students will be able to determine the square roots of perfect squares, fractions and decimals.	<ul style="list-style-type: none"> ■ Discuss the square roots of a positive number, SB p. 7. ■ Teach students to determine the square roots of perfect squares by using example 10, SB p. 7. ■ Answer workbook exercises 1 – 2, SB p 6. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA1.1, GLI M2/3 MA1.2, GLI M2/1 MA1.2, GLI M2/2 MA1.3, GLI M2/1
7	Determining Squares of Numbers/ Estimating the Squares of Numbers	Students will be able to determine the squares of numbers.	<ul style="list-style-type: none"> ■ Review on fractions (numerator and denominator) . ■ Teach students how to determine square root of fractions, SB p. 7 – 8. ■ Answer Test Yourself 1.2 questions 1 – 3, SB p. 10 – 11. ■ Homework: Answer workbook's questions 3-4, p. 7 – 8. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
8	Square Roots of Fractions/ Decimals (Continued)	Students will be able to determine the square roots of perfect squares, fractions and decimals.	<ul style="list-style-type: none"> ■ Discuss the answer to the homework given ■ Teach students on how to determine the square roots of decimals, SB p. 8. ■ Answer Test Yourself 1.2 questions 4 – 7, SB p. 11. ■ Practice calculation and critical thinking in real life situations involving squares and cubes. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
9	Multiplying Two Squares/ Estimating Square Roots of Positive Numbers.	Students will be able to estimate squares and square roots of numbers	<ul style="list-style-type: none"> ■ Teach students how to multiply two square roots, SB p. 8. ■ Discuss methods in estimating square roots of positive numbers, SB p. 9. ■ Assign workbook exercises 5 – 6, SB p. 8 – 9. ■ Homework: Test Yourself 1.2 of SB p. 8 – 10. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework 	<p>MA1.1, GLI M2/3</p> <p>MA1.2, GLI M2/1</p> <p>MA1.2, GLI M2/2</p> <p>MA1.3, GLI M2/1</p>
10	Cubes	Students will be able to understand what cubes are.	<ul style="list-style-type: none"> ■ Discuss what cube is, SB p. 12 – 13. ■ Teach students how to read 83 (eight to the power of three or eight cubed or the cube of eight) . ■ Teach students how to determine and estimate cubes by using examples 15 – 17, SB p. 12 – 13. ■ Answer exercise 1, SB p. 10. 	<p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	
11	Review Lesson's Concepts	Students will be able to solve problems about cubes.	<ul style="list-style-type: none"> ■ Answer workbook exercises 2- 6, SB p. 11- 12. ■ Homework: Answer questions 1 – 4 in Test Yourself 1.4, SB p. 18 – 19. 		
12	Cube Roots	Students will be able to: <ul style="list-style-type: none"> ■ Understand what cubes and cube roots are. ■ Determine cubes and cube roots of integers. 	<ul style="list-style-type: none"> ■ Explain what cube roots are, SB p. 15. ■ Teach students how to determine cube roots of integers by using examples 19 – 21, SB p. 15 – 16. ■ Answer workbook exercises 1 – 2 p. 12 – 13. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
13	Estimating Cube Roots/ Solving Problems Involving Cube Roots	Students will be able to: <ul style="list-style-type: none"> ■ Estimate cubes and cube roots of numbers. ■ Solve problems involving cubes and cube roots. 	<ul style="list-style-type: none"> ■ Teach students how to estimate cube roots of numbers by using examples 22 – 25, SB p. 17 – 18. ■ Answer workbook exercises 3 – 6, SB p.14-16. ■ Answer Test Yourself 1.4 questions 5- 9 of SB p. 18 – 19. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M2/3</p> <p>MA1.2, GLI M2/1</p> <p>MA1.2, GLI M2/2</p> <p>MA1.3, GLI M2/1</p>
14	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> ■ Discuss the answer to the homework given. ■ Explain the mistakes shown in the Common Mistake column, SB p. 20. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column, SB p. 21. 		
15	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 21 – 22 of Student's Book and Enrichment Exercises of Workbook p. 17 – 18.			

Focus Smart Mathematics, Unit 2: Rational and Irrational Numbers (10 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
16	Rational Numbers	Students will be able to understand what rational numbers are.	<ul style="list-style-type: none"> ■ Teach students what rational number are, SB p. 24. ■ Using example 1, teach them how to write numbers in the form of m/n. e.g. $36 = 36/1$, $-0.01 = -1/100$, $0.3 = 1/3$ ■ Answer Test Yourself 2.1 question 1, SB p. 26. ■ Homework: Answer workbook exercise 1 p. 20. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA1.1, GLI M2/1</p> <p>MA1.1, GLI M2/2</p> <p>MA1.4, GLI M2/1</p> <p>MA1.6, GLI M1/1</p> <p>MA1.6, GLI M1/2</p> <p>MA1.6, GLI M1/3</p> <p>MA1.6, GLI M1/4</p> <p>MA1.6, GLI M1/5</p> <p>MA1.6, GLI M1/6</p>
17	Rational Numbers (Continued)	Students will be able to identify integers as rational numbers.	<ul style="list-style-type: none"> ■ Teach students to identify integers as rational numbers by using example 2, SB p. 24. ■ Answer Test Yourself 2.1 question 2, SB p. 26 ■ Homework: Answer workbook exercise 2 p. 20. 		
18	Recurring Decimals as Rational Numbers	Students will be able to differentiate terminating decimals from recurring decimals.	<ul style="list-style-type: none"> ■ Explain what terminating decimals are and recurring decimals are SB p. 25. ■ Use examples 3 and 4 to explain how to differentiate terminating decimals from recurring decimals, SB p. 3-4. ■ Answer workbook exercise 4 p. 21. ■ Students will apply their knowledge of adding and subtracting decimals by using an online food menu to stimulate a real world restaurant experience. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
19	Review of Concepts	Students will be able to understand and differentiate recurring and non-recurring decimals.	<ul style="list-style-type: none"> ■ Provide additional worksheets and discussion in class on recurring and non-recurring decimals. ■ Assign Test Yourself 2.1 questions 3 – 5, SB p. 26 - 27. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA1.1, GLI M2/1 MA1.1, GLI M2/2 MA1.4, GLI M2/1
20	Real Numbers and Irrational Numbers	Students will be able to understand real numbers, irrational numbers and surds.	<ul style="list-style-type: none"> ■ Understand what real numbers, irrational numbers and surds are, SB p. 27. ■ Use examples 5 and 6, SB p. 27 - 28 to explain the difference of rational numbers and irrational numbers. ■ Answer workbook exercise 1 – 2, SB p. 21-22 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
21	Surds as Irrational Numbers	Students will be able to understand real numbers, irrational numbers and surds.	<ul style="list-style-type: none"> ■ Guide students to understand what surds are, SB p. 28. ■ Use example 7, SB p. 28 to further explain examples of surds. ■ Ask students to answer workbook exercises 1 – 4 p. 22 – 23. ■ Homework: Answer Test Yourself 2.2, SB p. 29. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
22	Operation Involving Surds	Students will be able to simplify surds.	<ul style="list-style-type: none">■ Guide students to simplify surds by, introducing properties, SB p. 29■ Use examples 8 - 11, SB p. 29 - 30 to further explain on operations involving surds.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1, GLI M2/1 MA1.1, GLI M2/2 MA1.4, GLI M2/1
	Operation Involving Surds (Continued)	Students will be able to do the process of changing the surd from the denominator of an expression to rational number.	<ul style="list-style-type: none">■ Explain to students that 'difference of squares' is used when rationalizing the denominator of an expression by multiplying with the conjugate of the denominator.■ Use examples 12 – 13 of SB p.31 – 32.■ Homework: Answer Test Yourself 2.3, SB p. 32.		
23	Operation Involving Surds (Continued)	Students will be able to solve problems involving surds.	<ul style="list-style-type: none">■ Discuss the answer to the homework given.■ Ask students to answer workbook exercises 5 – 7 p. 22 – 23.		
24	Review of Concepts/ Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Ask students for further clarifications or explanations regarding the topic.■ Explain the mistakes shown in the Common Mistake column, SB p. 33.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column, SB p. 34.		
25	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 35 – 36 of Student's Book and Enrichment Exercises of Workbook p. 26 – 27.			

Focus Smart Mathematics, Unit 3: Length and Area (15 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
26	Length A: The Measurement of Length B: Converting length to Other Units	Students will be able to measure and convert length to other units.	<ul style="list-style-type: none"> Review length and units of length, SB p. 38. Teach the units of length used in the British system and the modern metric system too, SB p. 38. Explain how to convert units of measurement, SB p. 38. Explain that we need to use appropriate units when measuring lengths. Use examples 1 – 3, SB p. 39- 40 to guide students how to convert length into other units. Homework: Answer workbook exercise 1-4 p. 29 – 30. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA2.1, GLI M2/2 MA2.1, GLI M2/3 MA2.2, GLI M2/1 MA1.6, GLI M1/1 MA1.6, GLI M1/2 MA1.6, GLI M1/3 MA1.6, GLI M1/4 MA1.6, GLI M1/5 MA1.6, GLI M1/6
27	Length (Continued) C: Calculations involving Length	Students will be able to solve problems involving lengths.	<ul style="list-style-type: none"> Guide students the method to convert length into other units, SB p. 40. Use examples 4 – 5, SB p. 41-42 to calculate length. Answer workbook exercises 5-8 p. 31 – 32. 		
28	Length (Continued) D: Problem Solving	Students will be able to solve word problems involving length.	<ul style="list-style-type: none"> Guide students in understanding word problem, SB p. 42. Use examples 6 – 7, SB p. 42 to explain how to solve word problems involving length. Ask students to answer workbook p. 33 as homework. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
29	Review of Concepts	Students will be able to solve problems involving length.	<ul style="list-style-type: none"> Assign Test Yourself 3.1 questions 1-5, SB p. 43. Homework: Answer Test Yourself 3.1 questions 6-9, SB p. 44. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA2.1, GLI M2/2</p> <p>MA2.1, GLI M2/3</p> <p>MA2.2, GLI M2/1</p>
30	Area of Rectangles	Students will be able to: <ul style="list-style-type: none"> Find area of a rectangle. Solve problems involving areas of rectangles. 	<ul style="list-style-type: none"> Refresh students' memory what area is. SB p. 44. Briefly explain the units of area used in the British system and the modern metric system too. Use example 8, SB p. 45 to measure the area of each shape drawn in grid. Ask students to answer workbook exercises 1-3 p. 34 – 35. Answer workbook 4 – 5 p. 35 – 36. 		
31	Area of Rectangles (Continued)	Students will be able to find the area of different shapes.	<ul style="list-style-type: none"> Discuss answer to homework given. Guide students on how to find area of rectangles by using Example 9 10, SB p. 9. Answer Test Yourself 3.2, SB p. 47. 		
32	Area of Triangles, Parallelograms and Trapeziums	Students will be able to know the formula in finding the length and area of different shapes.	<ul style="list-style-type: none"> Guide students to identify the heights and bases of triangles, parallelograms and trapeziums by using the diagrams, SB p. 48. Answer Test Yourself 3.3 questions 1-3, SB p. 52 - 53. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
33	Areas of Triangles: Identifying the Height and Base of a Triangle	Students will be able to identify the height and the base of a triangle.	<ul style="list-style-type: none"> ■ Guide students to find areas of right-angled triangle, SB p. 48. ■ Use example 11, SB p. 48 to identify the height of a triangle. ■ Ask students to answer workbook exercises 1-2 p. 37. ■ Homework: Answer Test Yourself 3.3 questions 4-5, SB p. 54-55. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	MA2.1, GLI M2/2 MA2.1, GLI M2/3 MA2.2, GLI M2/1
34	Areas of Triangles: Finding the Area of a Right Triangle.	Students will be able to find the area of a right-angled triangle.	<ul style="list-style-type: none"> ■ Use example 12, SB p. 49 to discuss in finding the area of a right-angled triangle. ■ Provide additional worksheet for students to understand the formula in finding the area of a right-angled triangle. ■ Answer Test Yourself 3.3 questions 7-9, SB p. 54. 	Midterm and Final Exams	
35	Finding the Areas of Triangles, Parallelograms and Trapeziums	Students will be able to solve problems in finding area of triangles, parallelograms and trapeziums.	<ul style="list-style-type: none"> ■ Review the formulas in finding areas of triangles, parallelograms and trapeziums, SB p. 49. ■ Use example 13, SB p. 50 to teach students in finding the area of a triangle and trapezium. ■ Answer workbook exercise 3 p. 38 to find the area. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
36	Finding the areas of Triangles, Parallelograms and Trapeziums (Continued)	Students will be able to solve problems in finding area of triangles, parallelograms and trapeziums.	<ul style="list-style-type: none">Assign workbook exercise 4-5 p. 39-41.Develop critical thinking by using tools such as rulers or yardsticks to find the perimeter of objects around the classroom.	Classroom work: <ul style="list-style-type: none">Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA2.1, GLI M2/2 MA2.1, GLI M2/3 MA2.2, GLI M2/1
37	Problem Solving/ Estimation of Measurements	Students will be able to: <ul style="list-style-type: none">Answer word problem in finding the area.Guess a quantity of the measurement	<ul style="list-style-type: none">Use example 16, SB p. 51-52 to discuss the solution in word problems.Answer workbook exercise 1 p. 41-42.Teach students some ways of guessing measurements by hands, thumb, feet, palm, etc. SB p. 55-56.Homework: Test Yourself 3..4, SB p. 56.		
38	Review of Concepts	Students will be able to: <ul style="list-style-type: none">Answer word problem in finding the area.Guess a quantity of the measurement	<ul style="list-style-type: none">Assign Test Yourself 3.3 of SB p. 43 (number 1–3) .Ask students the remaining numbers to be their homework, SB p. 53 – 54 Test Yourself 3.3 (numbers 4–9) .		
39	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">Ask students for further clarifications or explanations regarding the topic.Explain the mistakes shown in the Common Mistake column on p. 57 of SB.Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.Revise the lesson using the Quick Revision column on p. 58.		
40	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 59 – 61 of Student’s Book and Enrichment Exercises of Workbook p. 43 – 44			

Focus Smart Mathematics, Unit 4: Ration, Proportion and Percentage (20 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
41	Ratio of Two quantities	Students will be able to: <ul style="list-style-type: none"> Understand the meaning of ratios and proportion. Perform simple calculations and solve problems involving ratios and proportions. 	<ul style="list-style-type: none"> Ask students to recall simple mathematical concepts. Guide students on how to compare two quantities using Example 1 of SB p. 64 to write two quantities expressed in ratio e.g. 5: 3, a/b, 400: 567, $353/200$ Using example 2, show students how to determine if the given ratios are equivalent or having the same value. Ask students to answer workbook p. 46. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M2/4 MA1.6, GLI M1/1 MA1.6, GLI M1/2 MA1.6, GLI M1/3 MA1.6, GLI M1/4 MA1.6, GLI M1/5 MA1.6, GLI M1/6
42	Ratio of Two Quantities (Continued)	Students will be able to: <ul style="list-style-type: none"> Understand the meaning of ratios and proportion. Perform simple calculations and solve problems involving ratios and proportions. 	<ul style="list-style-type: none"> Guide students on how to simplify ratio by using example 3 of SB p. 65. Using example 4 of SB p. 65, students can state ratios from given ratios. Ask students to answer workbook p. 47. 		
43	Review of Lesson's Concepts	Students will be able to: <ul style="list-style-type: none"> Understand the meaning of ratios and proportion. Perform simple calculations and solve problems involving ratios and proportions. 	<ul style="list-style-type: none"> Assign Test Yourself 4.1 of SB p. 66. Students will solve a multi-step real-life problem applying what they learned about ratios and proportional reasoning as well as demonstrate increased understanding and use of academic language about ratios and proportions. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
44	Proportion	Students will be able to: ■ Determine if two quantities are proportional, given their values. ■ Find the value of a quantity,	■ Explain to students how to determine if two ratios are proportion by using example 5 of SB p. 67. ■ By doing example 6 of SB p. 67 students will know how to determine if a given quantity is proportional to another quantity. ■ Ask students to answer workbook p. 48 (numbers 1 and 2) .	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M2/4
45	Proportion Continued	Students will be able to find the value of a quantity, given the ratio and the sum of the two quantities.	■ Guide students in finding the value of a quantity, given the ratios of two quantities and the value of another quantity, SB p. 68. ■ Use examples 7 and 8 of SB p. 68 to help students understand this topic clearly. ■ Use examples 9 and 10 of SB p. 69 in finding the value of a quantity, given the ratio and the sum of the two quantities.		
46	Proportion Continued	Students will be to find the sum of two quantities, given their ratio and the difference between the quantities.	■ Use examples 9 and 10 to guide students on how to find values of quantity when given certain information and to solve problems involving ratios and proportions. ■ Ask students to answer SB p. 49 -50 (number 3 and 4) as seatwork.		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
47	Review of Lesson's Concepts	Students will be able to find the sum of two quantities, given their ratio and the difference between the quantities.	<ul style="list-style-type: none"> Assign Test Yourself 4.2 of SB p. 72 - 73. Students will expand their knowledge of ratios and proportions by applying proportional thinking to real-life situations. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework 	MA1.1 GLI M2/4
48	Ratio of Three Quantities	Students will be able to: <ul style="list-style-type: none"> Compare three quantities. Determine whether given ratios are equivalent. Simplify a ratio of three quantities to the lowest term. 	<ul style="list-style-type: none"> Using example 14 of SB p. 73, guide students on how to compare three quantities in the same unit. Use examples 15 – 16 of SB p. 74 to guide students to determine whether ratios are equivalent or ratio and simplify ratio of three quantities. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
49	Review of Lesson's Concepts	Students will be able to: <ul style="list-style-type: none"> Understand the meaning of ratios and proportion. Perform simple calculations and solve problems involving ratios and proportions. 	<ul style="list-style-type: none"> Guide students to state the ratio of any two quantities when the ratio of three quantities is given, SB p. 75. Remind students about LCM (lowest common multiple) in finding the ratio of a:b:c when the ratio of a:b and b:c are given. Use example 18 to explain further. Ask students to do workbook p. 50 – 51 (numbers 1 and 2) as homework. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
50	Ratio of Three Quantities (Continued)	Students will be able to: ■ Compare three quantities. ■ Determine whether given ratios are equivalent. ■ Simplify a ratio of three quantities to the lowest term.	■ Guide students to find values of the other two quantities when the ratio of three quantities and the value of one quantity are given, by using example 19 of SB p. 76. ■ Discuss further by using examples 20 and 21 and 22 of SB p. 76 – 77. ■ Do workbook p. 51 – 53 (numbers 3 – 4) for class discussion. ■ Assign workbook p. 53 – 55 (number 5) as homework.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M2/4
51	Solving Problems (Ratio and Proportion)	Students will be able to solve problems involving ratio of quantities.	■ Using examples 23 – 24 of SB p. 78 – 79, guide students to solve problems involving ratio of three quantities. ■ Do workbook p. 54 – 55 to discuss further on problem solving.		
52	Review of Lesson's	Students will be able to solve problems involving ratio of quantities.	■ Assign Test Yourself 4.3 of SB p. 79 - 80.		
53	Relationship between Percentages, Fractions and Decimals	Students will be able to: ■ Understand the relationship between percentages, fractions and decimals. ■ Convert fractions and decimals into percentage and vice versa. ■ Perform simple calculation and solve problems involving percentages.	■ Teach students how to express percentage as the numbers of parts in every 100, SB p. 81. ■ Do workbook p. 56 (number 1) for further clarification.'		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
54	Relationship between Percentages, Fractions and Decimals (Continued)	Students will be able to: ■ Change fractions and decimals into percentages. ■ Change percentages into decimals.	■ Introduce the method to change fraction or decimals into a percentage, SB p. 82. ■ Use examples 26- 29 for further explanation. ■ Ask students to work on exercise on the workbook p. 56 – 57 (numbers 3 – 5) .	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework	MA1.1 GLI M2/4
55	Review of Lesson's Concepts	Students will be able to: ■ Change fractions and decimals into percentages. ■ Change percentages into decimals.	■ Assign Test Yourself 4.4 of SB p. 84. ■ Students can investigate from magazines and newspapers to find incorrect uses of percent by the media. For example, political polls and surveys commonly include incorrect or inaccurate information.	Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
56	Computations and Problems Involving Percentages	■ Students will be able to perform simple calculation and solve problems involving percentages.	■ Guide students to find percentage of a quantity by using examples 30 – 31 of SB p. 84 – 85 ■ Ask students to do workbook p. 57 (numbers 1 -2) as seatwork.		
57	Computations and Problems Involving Percentages (Continued)	■ Students will be able to perform simple calculation and solve problems involving percentages.	■ Guide students to find percentage of a number out of another by using examples 32 – 35 of SB p. 85 - 86. ■ Ask students to do workbook p. 57 – 58 (numbers 3-5) .		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
58	Computations and Problems Involving Percentages	<ul style="list-style-type: none">Students will be able to perform simple calculation and solve problems involving percentages.	<ul style="list-style-type: none">Show students how to find numbers presented by a percentage by using examples 34 – 35 of SB p. 87.Do workbook p. 58 – 59 number 5 to discuss in the class.Ask students to do Test Yourself 4.5 as homework.	Classroom work: <ul style="list-style-type: none">Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA1.1 GLI M2/4
59	Computations and Problems Involving Percentages (Continued)	<ul style="list-style-type: none">Students will be able to perform simple calculation and solve problems involving percentages.	<ul style="list-style-type: none">Using examples 36 – 37, guide students to find the percentage of increase or decrease.Percentage Decrease = (decrease in value)/(original value) X 100%.Solve problems in Examples 38 – 43 together with students.		
60	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 93 - 97 of Student's Book and Enrichment Exercises of Workbook p. 61 – 62			

FINAL EXAMINATION

Course Description: Mathematics M2, Semester 2

Subject: Core Mathematics	Course Number: M22102	Level: M2
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 2nd

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics:

Congruent Triangles

Congruent Triangles.

Pythagoras' Theorem

Relationship between the sides of a right-angled triangle, converse of Pythagoras' theorem.

Transformations

Transformation, Translation, Reflection, Rotation, Isometry, Dilation.

Statistics

Pie charts, obtaining and interpreting information from pie charts, solving problems involving pie charts.

Probability

Probability, probability scale.

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators:

MA3.2, GLI M2/1	MA3.2, GLI M2/2	MA3.2, GLI M2/3	MA3.2, GLI M2/4
MA4.2, GLI M2/2			
MA5.1, GLI M1/1	MA5.2, GLI M1/1		
MA6.1, GLI M1/1	MA6.2, GLI M1/2	MA6.1, GLI M1/3	MA6.1, GLI M1/4
MA6.1, GLI M1/5	MA6.1, GLI M1/6		

Total up to 13 Grade Level Indicators

Course Syllabus: Mathematics M2, Semester 2

Level: Matthayom 2	Credit: 1.5	Period: 60 hours	Semester: 1st Semester	Instruction Time: 3 periods/week
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Focus Smart Mathematics, Unit 5: Congruent Triangles (5 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Congruent Triangles	Students will be able to understand what congruent triangles are.	<ul style="list-style-type: none"> Ask students to recall some mathematical concepts. Explain and show the meaning of congruence and its symbol Explain about congruency, SB p. 99. Ask students to look at example 1 of SB p. 100. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework 	MA3.2, GLI M2/1 MA3.2, GLI M2/2 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
2	Test for Congruent Triangles	Students will be able to identify tests for congruent triangles.	<ul style="list-style-type: none"> Guide students on how to test and confirm if a pair of triangles is congruent by using 'side-side' test, 'side-angle-side' test, and 'angle-side-angle' test. Use examples 2 – 4 to check students' understanding. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
3	Test for Congruent Triangles (Continued)	Students will be able to identify tests for congruent triangles.	<ul style="list-style-type: none"> Solve problems in workbook p. 64 - 67 together with students. Explain the mistakes shown in the Common Mistake column on p. 105 of SB. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column on p. 105. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
4	Review of Lesson's Concepts	Students will be able to identify tests for congruent triangles.	<ul style="list-style-type: none"> Assign Test Yourself 5.1 of SB p. 103 - 104. Students will make a brief presentation in class about different tests for congruency. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/1 MA3.2, GLI M2/2
5	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 106 - 107 of Student's Book and Enrichment Exercises of Workbook p. 68			

Focus Smart Mathematics, Unit 2: Pythagoras's Theorem (10 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
6	Relationship Between the Sides of a Right-Angled Triangle	Students will be able to: <ul style="list-style-type: none"> Understand the relationship between the sides of a right-angled triangle. Identify the hypotenuse of a right-angled triangle. 	<ul style="list-style-type: none"> Explain to students what is a hypotenuse and explain which side of a right-angled triangle is the hypotenuse. Use example 1 of SB p. 109 to explain about hypotenuse. Explain Pythagoras' theorem using example 2 of SB p. 109. Ask students to answer Test Yourself 6.1 of SB p. 112 questions 1 and 2. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/2 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
7	Finding the Length of the Unknown Side of a Right-Angled Triangle	Students will be able to understand the concept of Pythagoras' theorem.	<ul style="list-style-type: none"> ■ Guide students to find the unknown side of right-angled triangles and the lengths of sides of geometric shapes by using examples 3 – 4 of SB p. 110. ■ Ask students to answer Test Yourself 6.1 of SB p. 112 questions 3 to 5 in class. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	MA3.2, GLI M2/2
8	Solving Problems Involving Pythagoras' Theorem	Students will be able to answer problems involving Pythagoras' Theorem.	<ul style="list-style-type: none"> ■ Using examples 5 and 6 of SB p. 111, show students how to solve problems involving Pythagoras' Theorem. ■ Ask students to answer Test Yourself 6.1 of SB p. 112 questions 6 and 7 in class. 		
9	Review of Lesson's Concepts	Students will be able to answer problems involving Pythagoras' Theorem.	<ul style="list-style-type: none"> ■ Assign workbook p. 70 - 73. 		
10	Converse of Pythagoras' Theorems	Students will be able to determine whether a triangle is a right-angled triangle.	<ul style="list-style-type: none"> ■ Explain to students how to identify if a triangle is a right-angled triangle, and obtuse-angled or an acute-angled. ■ Use example 7 and 8 of SB p. 113 – 114 to guide students on how to determine types of triangles with given lengths of sides. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
11	Converse of Pythagoras' Theorems (Continued)	Students will be able to determine whether a triangle is a right-angled triangle.	<ul style="list-style-type: none">Assign questions 1 – 4 in Test Yourself, SB p. 115 and discuss with them.	Classroom work: <ul style="list-style-type: none">Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/2
12	Solving Problem involving converse of Pythagoras' Theorem	Students will be able to determine whether a triangle is a right-angled triangle.	<ul style="list-style-type: none">Show students how to solve using example 9 of SB p. 115.Assign question 5 in Test Yourself p. 115.		
13	Review of Lesson's Concepts	Students will be able to determine whether a triangle is a right-angled triangle.	<ul style="list-style-type: none">Assign workbook p. 73 - 76.Students will be guided through a discussion on how important knowledge of right-angled triangles is to specific professionals or to life in general.		
14	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">Ask students for further clarifications or explanations regarding the topic.Explain the mistakes shown in the Common Mistake column on p. 116 of SB.Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.Revise the lesson using the Quick Revision column on p. 116.		
15	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 117 - 119 of Student's Book and Enrichment Exercises of Workbook p. 77 - 78			

Focus Smart Mathematics, Unit 7: Transformations (30 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
16	Transformation	Students will be able to: ■ Understand what transformations are ■ Identify a transformation	<ul style="list-style-type: none"> ■ Explain and identify what information is, SB p. 121. ■ Using example 1 of SB p. 121, student's will determine what transformation is. ■ Explain what object and image are in transformation. ■ Test student's understanding of transformation by asking them to try Question 1 in test Yourself 7.1 of SB p. 122. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6</p>
17	Transformation (Continued)	Students will be able to identify the object and its image in a transformation.	<ul style="list-style-type: none"> ■ Use example 2 to teach further about transformation. ■ Ask students to answer Questions 2 of Test Yourself of SB p. 123. ■ Ask students to do workbook p. 88 		
18	Translation	Students will be able to: ■ Identify a translation. ■ Determine the image of an object under a translation.	<ul style="list-style-type: none"> ■ Explain what reflection is, SB p. 123. ■ Use example 3 to demonstrate what translation is. ■ Assign Question 1 in test Yourself 7.2 of SB p. 129. 		
19	Determining and Describing a Translation	Students will be able to describe a translation.	<ul style="list-style-type: none"> ■ Emphasize that to describe a translation always starts with a horizontal movement follows by a vertical movement, SB p. 124. ■ Use example 4 and 5 of SB p. 124 to explain. ■ Test student's understanding of transformation by asking them to try Question 2 in test Yourself 7.2 of SB p. 128. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
20	Properties of Translation	Students will be able to state properties of a translation	<ul style="list-style-type: none"> ■ Explain to students that under translation, the object and the image have the same shape, size and orientation, SB p. 125. ■ Test student's understanding of transformation by asking them to try Question 3 and 4 in test Yourself 7.2 of SB p. 128 - 129. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2
21	Determining the Coordinates of the Image of the Object Under Translation	Students will be able to: <ul style="list-style-type: none"> ■ Determine the image of an image or the axis of a reflection. ■ Determine the coordinates of the images or the object under a reflection. 	<ul style="list-style-type: none"> ■ Using example 6 and 7 of SB p. 126 – 127 to determine the coordinates if the image or object under a translation. ■ Test student's understanding of transformation by asking them to try Questions 5 and 6 in test Yourself 7.2 of SB p. 128 - 129. 		
22	Solving Problems Involving Translations	Students will be able to solve problems involving translations.	<ul style="list-style-type: none"> ■ Use Examples 8 and 9 of SB p. 127 to show students how to solve problems involving translation. ■ Test student's understanding of transformation by asking them to try Questions 5 and 6 in test Yourself 7.2 of SB p. 128 - 129. ■ Test student's understanding of transformation by asking them to try Questions 7 and 9 in test Yourself 7.2 of SB p. 129. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
23	Review of Lesson's Concepts	Students will be able to solve problems involving translations.	<ul style="list-style-type: none"> Do workbook p. 80 - 83 in the class for students to understand the full concept of this lesson. Students will use critical thinking to communicate and present daily activities in translation, rotation, reflection, and dilation in real-life situations. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2
24	Reflection	Students will be able to identify a reflection.	<ul style="list-style-type: none"> Teach Reflection, SB p. 131. Use example 10 of SB p. 131 if the following transformations are a reflection. Assign Question 1 of Test Yourself 7.3 p.138. 	Assignments/ Homework: <ul style="list-style-type: none"> Examining homework 	
25	Re Image of an Object Under a Reflection in a Given Line	Students will be able to determine the image on an object under a reflection in a given line.	<ul style="list-style-type: none"> Use example 11 of SB p. 132 to guide students to determine the image of an object in a given line. Assign Question 2 in Test Yourself 7.3, SB p. 3. Homework: Workbook p. 83 - 84 (7.2). 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests 	
26	Properties of a Reflection	Students will be able to state properties of a reflection.	<ul style="list-style-type: none"> Explain the properties of a reflection of SB p. 133. Go to Question 3 of Test Yourself p. 139 of SB and discuss with them. Ask students to answer workbook question. 	Midterm and Final Exams	
27	Determining the Image of an Object or the Axis of Reflection	Students will be able to determine the image of an axis or the axis of a reflection.	<ul style="list-style-type: none"> Using examples 12 - 14, guide students how to determine the image of an object or the axis of reflection. Assign questions 4 and 5 in Test Yourself p. 139. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
28	Determining the Coordinates of the Image Under a Reflection	Students will be able to determine the coordinates of the image under a reflection.	<ul style="list-style-type: none"> ■ Teach students how to determine the coordinates of the image or the object under reflection, SB p. 135. ■ Use examples 15 and 16 for further explanation. ■ Assign Questions 6 and 8 in Test Yourself p. 139 in class. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2
29	Describing and Solving Problems Involving Reflections.	Students will be able to solve problems involving reflections.	<ul style="list-style-type: none"> ■ Using example 18 of SB p. 138, guide students to solve problems involving reflections. ■ Assign Questions 9 - 10 in Test Yourself 7.3 of SB p. 141. ■ Homework: Workbook p. 85. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
30	Rotation	Students will be able to identify a rotation.	<ul style="list-style-type: none"> ■ Teach Rotation and Centre Rotation are, SB p. 141 -142. ■ Use example 19 to further explain Rotation. ■ Assign Question 1 of Test Yourself 7.4 p. 150. 		
31	Determining the Image of an Object Under Rotation	Students will be able to determine the image of an object under rotation.	<ul style="list-style-type: none"> ■ Teach students how to determine the image of an object under a Rotation using example 20 of SB p. 142. ■ Explain the steps and alternative method to determine the image of an object under a rotation. ■ Assign Question 2 of Test Yourself 7.4 p.150. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
32	Properties of a Rotation	Students will be able to state properties of a rotation.	<ul style="list-style-type: none"> Teach the properties of rotation in SB p. 144. Assign Question 3 of Test Yourself 7.4, p. 150. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2</p>
33	Determining the Image of the Center, Angle and Direction of a Rotation	Students will be able to determine the image of the center, angle and direction of a rotation.	<ul style="list-style-type: none"> Use examples 21 – 23 of SB p. 145 – 146 to teach and construct the image of a shape in a rotation. Ask students to do Questions 4 - 5 of Test Yourself 7.4 p. 150. 		
34	Determining the Coordinates of the Image of the Object under a Rotation	Students will be able to determine coordinates or the axis of reflection.	<ul style="list-style-type: none"> Teach students how to determine the coordinates of image or the object, SB p. 146. Use examples 24 – 25 to explain further. Assign Questions 6 - 7 of Test Yourself 7.4 p. 151. 		
35	Describing a Rotation	Students will be able to describe a rotation.	<ul style="list-style-type: none"> Emphasize that in order to describe a rotation you have to state the angle, direction and center of rotation, SB p. 148. Use example 26 to further explain a rotation. 		
36	Solving Problems involving Rotations	Students will be able to solve involving rotations.	<ul style="list-style-type: none"> Teach Example 27 of SB age 149 will explain how to solve problem involving rotations. Homework: Questions 8 - 10 of Test Yourself 7.4 p. 151. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
37	Review of Lesson's Concepts of Rotations	Students will be able to solve involving rotations.	<ul style="list-style-type: none"> Assign workbook p. 86 to 90. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2
38	Isometry	Students will be able to identify isometry.	<ul style="list-style-type: none"> Teach what isometry means, SB p. 152. Use example 28 to check their understanding. Assign Question 1 of Test Yourself 7.5, p. 151 in class. 		
39	Determining Whether a Given Transformation is an Isometry/ Forming Patterns using Isometry	Students will be able to: <ul style="list-style-type: none"> Determine if a given transformation is an isometry. Form patterns using isometry. 	<ul style="list-style-type: none"> Guide students to determine whether a given transformation is an isometry, SB p. 153. Help students to form patterns using isometry. Assign Questions 2 and 3 of Test Yourself 7.5 p. 151. Homework: Workbook p. 90. 		
40	Dilation	Students will be able to understand what enlargement is.	<ul style="list-style-type: none"> Teach enlargement, SB p. 154. Use example 29 of SB p. 29 to explain further. Assign Question 1 in Test Yourself 7.6 p. 161. Use example 30 of SB p. 155 to teach to students what scale factor of enlargement is. Homework: Question 2 in Test Yourself 7.6 p. 161. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
41	(Continued)	Students will be able to understand what enlargement is.	<ul style="list-style-type: none"> ■ Use example 31 of SB p. 157 to teach how to obtain the center of enlargement. ■ Example 32 of SB p. 156 will guide students to determine the image of an object, given the center of enlargement and the scale factor. ■ Homework: Questions 3 - 4 in Test Yourself 7.6 p. 161 – 162. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2</p>
42	Properties of Enlargement/ Calculation of Scale Factor	Students will be able to state properties of enlargement.	<ul style="list-style-type: none"> ■ Explain the properties of enlargement using example 33 of SB p. 157. ■ Guide students to calculate the scale factor and the length of the side image and its object by using example 34 of SB p. 158. ■ Explain the relationship between the areas of the image and its object using examples 35 – 37 of SB p. 159 – 160. ■ Ask students to do Questions 5 - 9 in Test Yourself 7.6 p. 162 – 164 as their homework. 		
43	Review of Concepts	Students will be able to state properties of enlargement.	<ul style="list-style-type: none"> ■ Check student's homework. ■ Assign workbook p. 91 – 97 as seatwork and discuss it in class. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
44	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to	<ul style="list-style-type: none"> Ask students for further clarifications or explanations regarding the topic. Explain the mistakes shown in the Common Mistake column on p. 165 of SB. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column on p. 166. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M2/3 MA3.3, GLI M2/4 MA4.2, GLI M2/2
45	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 167 – 173 of Student's Book and Enrichment Exercises of Workbook p. 99 – 102			

Focus Smart Mathematics, Unit 8: Statistics (8 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
46	Pie Charts	Students will be able to construct pie charts.	<ul style="list-style-type: none"> Have students recall certain mathematical concepts. Emphasize and show how to construct a pie chart of SB p. 175. Use example 1 of SB p. 176. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA5.1, GLI M2/1 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4
46	Pie Charts (Continued)	Students will be able to solve problems on pie charts.	<ul style="list-style-type: none"> Test students understanding about pie-charts by asking them to answer questions 1 to 3 in Test Yourself 8.1. Discuss the answer with them. Ask students to do workbook p. 104 and 105 as their homework. 	Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA 6.1 GLI M1/5 MA 6.1 GLI M1/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
48	Obtaining and Interpreting Pie Charts	Students will be able to understand the uses of pie charts.	<ul style="list-style-type: none"> ■ Teach students to use pie charts and how to interpret information, SB p. 177. ■ Assign Questions 1 and 2 in Test Yourself 8.2. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA5.1, GLI M2/1
49	Obtaining and Interpreting Pie Charts (Continued)	Students will be able to interpret information from pie charts.	<ul style="list-style-type: none"> ■ Assign workbook p. 105 and discuss in class. ■ Motivate and encourage students to ask question for topics they don't understand. ■ Students will be given topics to survey people around Surat Thani. They need to investigate certain issues and survey to gather information. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
50	Solving Problems Involving Pie Charts	Students will be able to solve problems involving pie charts.	<ul style="list-style-type: none"> ■ Teach students how to obtain and interpret information using examples 3 and 4 of SB p. 179 to 180. ■ Assign Questions 1 and 2 in Test Yourself 8.3, SB p. 181. 		
51	Solving Problems Involving Pie Charts (Continued)	Students will be able to solve problems involving pie charts.	<ul style="list-style-type: none"> ■ Assign Workbook p. 106 – 108. ■ Students will make a brief communication and presentation with the activity done and present the information using pie charts, line graphs, or bar graphs. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
52	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> Ask students for further clarifications or explanations regarding the topic. Explain the mistakes shown in the Common Mistake column on p. 182 of SB. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column on p. 183. 		
53	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 183 - 185 of Student's Book and Enrichment Exercises of Workbook p. 109 - 110			

Focus Smart Mathematics, Unit 9: Probability (7 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
54	Probability Scale	Students will be able to understand what probability scales are.	<ul style="list-style-type: none"> Teach what probability scales are, SB p. 187. Explain examples of likely and unlikely events. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA5.2, GLI M2/1 MA 6.1 GLI M1/1 MA 6.1 GLI M1/2 MA 6.1 GLI M1/3 MA 6.1 GLI M1/4 MA 6.1 GLI M1/5 MA 6.1 GLI M1/6
55	Probability Scale (Continued)	Students will be able to solve problems on probability scale.	<ul style="list-style-type: none"> Use example 1 and 2 of SB p.188 to teach further about probability. Assign students to do Questions 1 and 2 in Test Yourself p. 189. 		
56	Review of Lesson's Concepts	Students will be able to solve problems on probability scale.	<ul style="list-style-type: none"> Assign Workbook p. 112. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
57	Probability	Students will be able to understand probability.	<ul style="list-style-type: none">■ Teach what experiment, outcome and event are, SB p. 190.■ Use examples 3 – 6 to further explain.■ Homework: Test Yourself 9.2 of SB p. 192.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA5.2, GLI M2/1
58	Probability (Continued)	Students will be able to understand probability.	<ul style="list-style-type: none">■ Check students' answers in the homework given.■ Assign Workbook p. 113 – 114.■ Students will find the probability of dependent and independent events and use the results to make predictions and decisions.		
59	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Ask students for further clarifications or explanations regarding the topic.■ Explain the mistakes shown in the Common Mistake column on p. 182 of SB.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column on p. 183.		
60	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 183 - 185 of Student's Book and Enrichment Exercises of Workbook p. 109 - 110			

FINAL EXAMINATION

MATHEMATICS

M3

Core Curriculum for Mathematics, M3

Mathematics Strands, Learning Standards and Grade Level Indicators

Strand	Learning Standards		Grade Level Indicators (GLI)
1. Numbers and Operations	Not applicable for M3		
2. Measurement	MA2.1	Understanding of the basics of measurement; ability to measure and estimate the size of objects to be measured.	<ol style="list-style-type: none"> 1. Find the surface area of prisms and cylinders. 2. Find the volume of prisms, cylinders, pyramids, cones and spheres. 3. Compare units for measuring volume or capacity of the same or different systems and choose appropriate units of measure. 4. Appropriately use estimation for measurement in various situations.
	MA2.2	Solving measurement problems	<ol style="list-style-type: none"> 1. Apply knowledge of length and area for problem solving in various situations.
3. Geometry	MA3.1	Ability to explain and analyse two-dimensional and three-dimensional geometric figures.	<ol style="list-style-type: none"> 1. Explain the characteristics and the properties of prisms, pyramids, cylinders, cones, and spheres.
	MA3.2	Ability for visualization, spatial reasoning and application of geometric models for problem solving.	<ol style="list-style-type: none"> 1. Explain the characteristics and the properties of prisms, pyramids, cylinders, cones, and spheres.
4. Algebra	MA4.1	Not applicable for M3	
	MA4.2	Ability to apply algebraic expressions, equations, inequality, graphs and other mathematical models to represent various situations as well as interpretation and application for problem solving.	<ol style="list-style-type: none"> 1. Apply knowledge of linear inequalities with one variable for problem solving, as well as be aware of the validity of answer. 2. Write a graph showing link of two sets of quantities with linear relationship. 3. Draw graphs of linear equations with two variables. 4. Read and interpret meaning of systems of linear equations with two variables and other graphs. 5. Solve systems of linear equations with two variables, which can be applied for problem solving, as well as be aware of the validity of the answer.

Strand	Learning Standards		Grade Level Indicators (GLI)
5. Data Analysis and Probability	MA5.1	Understanding and ability to apply statistical methodology for data analysis.	<ol style="list-style-type: none"> 1. Set up an issue and write questions about it and set appropriate methods of study and of data collections. 2. Find arithmetic mean, median, and mode of non-frequency distribution data and make appropriate selection for utilization. 3. Present data in appropriate forms. 4. Read, interpret and analyse the data obtained from presentations.
	MA5.2	Application of statistical methodology and knowledge of probability for valid estimation.	<ol style="list-style-type: none"> 1. Find probability of events from random sampling with equal probability for each result, and apply knowledge of probability for valid projection of events.
	MA5.3	Application of knowledge of statistics and probability for decision making and problem-solving.	<ol style="list-style-type: none"> 1. Apply knowledge of statistics and probability for decision making in various situations. 2. Discuss possible errors in presenting statistical data.
6. Mathematical Skills and Processes	MA6.1	Capacity for problem solving, reasoning; communication and presentation of mathematical concept; linking various bodies of mathematical knowledge and linking mathematics with other disciplines; attaining ability for creative thinking.	<ol style="list-style-type: none"> 1. Apply diverse methods for problem solving. 2. Appropriately apply mathematical and technological knowledge, skills and processes for problem solving in various situations. 3. Suitably provide reasoning for decision-making and appropriately present conclusions reached. 4. Accurately and succinctly use mathematical language and symbols for communication of concepts and presentation. 5. Link various bodies of mathematical knowledge and link mathematical knowledge, principles and processes with those of other disciplines. 6. Attain ability for creative thinking.

Course Description: Mathematics M3, Semester 1

Subject: Core Mathematics	Course Number: M 23101	Level: M 3
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 2nd

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics:

Surface Area:

Prisms, pyramids, cylinders, cones and spheres, surface area.

Volume

Volume of cuboids, volumes of right circular cylinders and right prisms, volumes of right pyramids and right circular cones, volumes of spheres, volumes of composite solids.

Similar Triangles

Similar triangles.

Linear Inequalities

Inequality, linear inequalities in one unknown, performing computation on inequalities, solving inequalities in one variable, simultaneous linear inequalities in one variable.

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators (GLI):

MA2.1, GLI M3/1	MA2.1, GLI M3/2	MA2.1, GLI M3/3	MA2.1, GLI M3/4
MA2.2, GLI M3/1	MA2.1, GLI M3/3	MA2.1, GLI M3/4	
MA3.2, GLI M3/1			
MA3.3, GLI M3/1			
MA4.2, GLI M3/1			
MA6.1, GLI M3/1	MA6.2, GLI M3/2	MA6.1, GLI M3/3	MA6.1, GLI M3/4
MA6.1, GLI M3/6			MA6.1, GLI M3/5

Total up to 15 Grade Level Indicators

Course Syllabus: Science M3, Semester 1

Level: Matthayom 3

Credit: 1.5

Period: 60 hours

Semester: 1st Semester

Instruction Time: 3 periods/week

Focus Smart Mathematics 3: Unit 1 Surface Area (10 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Prisms, Pyramids, Cylinders, Cones and Spheres	Students will be able to understand the characteristics of prisms, cylinders, pyramids, cones and spheres.	<ul style="list-style-type: none"> ■ Introduce the shape of prisms, pyramids, cylinders, cones and spheres. ■ Explain the characteristics of each shape, SB p. 2 – 3. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA3.3, GLI M3/1 MA2.1, GLI M3/1 MA2.1, GLI M3/4 MA2.1, GLI M3/1 MA6.1, GLI M3/1
2	Prisms, Pyramids, Cylinders, Cones and Spheres	Students will be able to draw and describe geometrical solids.	<ul style="list-style-type: none"> ■ Ask some volunteers in class to draw a prism, cone, pyramid, cylinder, cone and sphere. ■ Ask for volunteers to describe each picture. ■ Review the properties and characteristics of these shapes. ■ Answer Test Yourself 1.1 of SB p. 3 and discuss with students. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
3	Surface Area	Students will be able to determine the surface area of prisms, pyramids, cylinder and cones.	<ul style="list-style-type: none"> ■ Teach the formulae for surface areas of prisms, pyramids, cylinders, and cones. 		
4	Surface Area (Continued)	Students will be able to determine the surface area of prisms, pyramids, cylinder and cones.	<ul style="list-style-type: none"> ■ Use example 1 of SB p. 4 to find the surface area of a pyramid and cone. ■ Teach how to get the surface area ■ Use example 3 to show how to get the surface area of a prism. ■ Homework: Test Yourself 1.2 question 1 p. 8. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
5	Finding the Surface Area of a Sphere	Students will be able to determine the surface area of a sphere.	<ul style="list-style-type: none"> Review homework. Explain to students how to get the surface area of a sphere, SB p. 5. Answer Test Yourself 1.2 questions 1-2, SB p. 8. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA3.3, GLI M3/1</p> <p>MA2.1, GLI M3/1</p> <p>MA2.1, GLI M3/4</p> <p>MA2.1, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
6	Finding the Length of Geometrical Solid	Students will be able to determine the length of a triangular prism and cylinder given the surface area.	<ul style="list-style-type: none"> Use example 4, SB p. 6 to find the length of a triangular prism given the surface area. Use example 5 of SB pp. 6 - 7 to find the area length of a cylinder. Answer workbook pp. 2 - 3. 		
7	Finding the Length of Geometrical Solid (Continued)	Students will be able to solve the length of a cone and a sphere.	<ul style="list-style-type: none"> Use example 6 and 7, SB p. 7 to show students the formula to find the length of a cone and a sphere. Answer Test Yourself 1.2 questions 3-5, SB p. 8. Homework: Answer Workbook pp. 4 - 5. 		
8	Finding the Surface Area	Students will be able to find the surface area of some geometrical figures.	<ul style="list-style-type: none"> Use example 8 to teach the surface area of a cylinder, SB p. 8. Answer Test Yourself 1.2 questions 6 - 7, SB p. 9. Homework: Workbook p. 6- 7. <p>Investigate and solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids.</p>		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
9	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> Review homework. Explain the mistakes shown in the Common Mistake column, SB p. 9. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column, SB pp. 10 – 11. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.3, GLI M3/1 MA2.1, GLI M3/1 MA2.1, GLI M3/4 MA2.1, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
10	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 11 - 13 of Student's Book and Enrichment Exercises of Workbook p. 8 - 9			

Focus Smart Mathematics, Unit 2: Volume of Cuboids (24 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
11	Volume of a Cuboid	Students will be able to understand the meaning of volumes and its units.	<ul style="list-style-type: none"> Ask students to recall metric units in measuring volumes. Teach the British system, SB p. 15. Discuss Volume and its metric units, SB p. 15. Answer Test Yourself 2.1 question 1, p. 18. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework 	MA2.1, GLI M3/2 MA2.2, GLI M3/3 MA2.2, GLI M3/4 MA2.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
12	Calculating the Volume of a Cuboid	Students will be able calculate the volume of cuboids.	<ul style="list-style-type: none"> Discuss the formula on how to calculate the volume of cuboids. Use example 1 to explain how to find the volume of cuboids. Answer Test Yourself 2.1 questions 2 – 3, p. 19. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
13	Solving Problems Involving the Volume of Cuboids	Students will be able to determine the volume of cuboids and check the validity of their answer.	<ul style="list-style-type: none"> ■ Use examples 2 – 3, SB pp. 17 – 18 to teach volume based on the diagram. ■ Answer Test Yourself 2.1 questions 4 -5 p. 19 and discuss the answer with students. ■ Homework: Test Yourself 2.1 questions 6 – 7, SB p. 20. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA2.1, GLI M3/2</p> <p>MA2.2, GLI M3/3</p> <p>MA2.2, GLI M3/4</p> <p>MA2.2, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
14	Review of Lesson's Concepts	Students will be able to determine the volume of cuboids.	<ul style="list-style-type: none"> ■ Check student's answer in their homework. ■ Answer Workbook p. 11-13. 		
15	Volume of a Right Circular Cylinders	Students will be able to compute the volume, height and the base of a right circular cylinder.	<ul style="list-style-type: none"> ■ Discuss the formula in finding the volume of a right circular cylinder, SB p. 20. ■ Use example 5, SB p. 20 to guide students how to find the volume. ■ Use example 6 and 7, SB pp. 21 – 22. to discuss about the height of a right cylinder 		
16	Volume of a Right Circular Cylinders (Continued)	Students will be able to determine the volume, height and the base of a right circular cylinder.	<ul style="list-style-type: none"> ■ Answer Workbook exercises 1 – 2 p.14. ■ Homework: Test Yourself 2.2 questions 1-3, SB pp. 26 – 27. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
17	Volume of a Right Prism	Students will be able to find the volume, height and area of the base of a right prism.	<ul style="list-style-type: none"> ■ Introduce the formula of a right prism, SB p. 22. ■ Use examples 8 – 10, SB pp. 22 – 23 to find the volume, height and the base of a right prism. ■ Answer Workbook questions 5 – 8 pp. 17 – 19. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA2.1, GLI M3/2 MA2.2, GLI M3/3 MA2.2, GLI M3/4 MA2.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3
18	Converting Volume in One Metric Unit	Students will be able to know the metric units used in determining volume.	<ul style="list-style-type: none"> ■ Explain that the volume of a solid is measured in cubic units such as mm³, cm³ and m³. ■ Use examples 11 – 12, SB pp. 24 – 25 to find the volume of cuboids. ■ Answer Workbook exercise 9 pp. 19 – 20. ■ Homework: Test Yourself 2.2 questions 4 – 7, pp. 27 – 28. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
19	Finding the Volume of a Liquid in a Container	Students will be able to know estimation to measure volumes.	<ul style="list-style-type: none"> ■ Use examples 13 – 15 to find the volume of a liquid inside the container, SB pp. 25 – 26. ■ Answer Test Yourself 2.2 question 8, SB p. 28. 		
20	Solving Problems Involving Volume of Right Circular Cylinders and Right Prisms	Students will be able to solve the volume of right circular cylinders and right prisms.	<ul style="list-style-type: none"> ■ Answer workbook exercises 10 – 11 p. 20 – 23. ■ Discuss the answer with students. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
21	Volume of a Right Pyramid	Students will be able to know how to find the volume, height and the base of a right pyramid.	<ul style="list-style-type: none"> ■ Teach the volume of a right pyramid, SB p. 28. ■ Guide students to use example 16, SB p. 29 to find the volume of a right pyramid. ■ Answer Test Yourself 2.3 questions 1 p. 33. ■ Use examples 17 – 18, SB pp. 29 – 30 to guide students to find the height and the area of base of a right pyramid. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	<p>MA2.1, GLI M3/2</p> <p>MA2.2, GLI M3/3</p> <p>MA2.2, GLI M3/4</p> <p>MA2.2, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
22	Volume of a Right Pyramid (Continued)	Students will be able to know how to find the volume, height and the base of a right pyramid.	<ul style="list-style-type: none"> ■ Answer Workbook exercises 1 – 5 pp. 24 – 26 and discuss. ■ Homework: Answer Test Yourself 2.3 questions 1 – 2, SB p. 33. 	Midterm and Final Exams	
23	Volume of a Right Circular Cone	Students will be able to know how to find the volume, height and the base of a right circular cone.	<ul style="list-style-type: none"> ■ Discuss the formula in finding the volume of a right circular cone, SB p. 30. ■ Use example 19, SB pp. 30-31 to guide students to find the volume of a right circular cone. ■ Answer Test Yourself 2.3 questions 3, p. 33. ■ Guide students to determine the height and the base of radius by using examples 20 – 21 SB p. 31 – 32. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
24	Volume of a Right Circular Cone (Continued)	Students will be able to know how to find the volume, height and the base of a right circular cone.	<ul style="list-style-type: none"> ■ Answer Workbook exercises 5 – 7 pp.27 – 29 and discuss. ■ Homework: Test Yourself 2.3 questions 4 – 6, SB pp. 33-34. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA2.1, GLI M3/2 MA2.2, GLI M3/3 MA2.2, GLI M3/4 MA2.2, GLI M3/1 MA6.1, GLI M3/1
25	Solving Problems Involving Volume of a Right Pyramid and Right Circular Cone.	Students will be able to solve problems involving volume of a right pyramids and right cones.	<ul style="list-style-type: none"> ■ Use example 22, SB p. 32 to help students finding the volume of a right pyramid. ■ Answer Test Yourself 2.3 questions 7 – 9, SB p. 34. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
26	Solving Problems (Continued)	Students will be able to solve problems involving the volume of a right pyramids and right cones.	<ul style="list-style-type: none"> ■ Answer Workbook questions 8 pp. 29 - 31 and discuss the answer in class. 	Midterm and Final Exams	
27	Volume of Spheres	Students will be able to know how to determine the volume of a sphere.	<ul style="list-style-type: none"> ■ Teach the formula for volumes of spheres, SB p. 35. ■ Use example 23, SB p. 35 for further explanation. ■ Answer Test Yourself 2.4 question 1, SB p. 38. 		
28	Volume of Spheres (Continued)	Students will be able to find the radius of a sphere.	<ul style="list-style-type: none"> ■ Teach how to determine the radius of a sphere using the formula to find the volume of a sphere. ■ Use example 24, SB p 36 to explain further. ■ Answer Test Yourself 2.4 question 2, SB p. 38. ■ Homework: Workbook exercise 3, pp. 32 – 33. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
29	Volume of Spheres (Continued)	Students will be able to find the solve problems involving volume of spheres.	<ul style="list-style-type: none"> ■ Guide students to solve problems involving volumes of spheres, using examples 25 – 26, SB pp. 37-38. ■ Answer Test Yourself 2.4 questions 3 – 5, SB pp. 38 – 39. ■ Homework: Answer Workbook exercises 1 -2, p. 31 – 32 as their homework. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA2.1, GLI M3/2</p> <p>MA2.2, GLI M3/3</p> <p>MA2.2, GLI M3/4</p> <p>MA2.2, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
30	Volumes of Composite Solids	Students will be able to understand composite solids.	<ul style="list-style-type: none"> ■ Describe in class what composite solids are, SB p. 39. ■ Guide students to identify the types of solids that make up the composite solid. ■ Answer Test Yourself 2.5 questions 3-5, SB pp. 41 – 42. 		
31	Volumes of Composite Solids (Continued)	Students will be able to solve problems involving volume of composite solids.	<ul style="list-style-type: none"> ■ Teach how to solve problems involving volumes of composite solids by using examples 28 – 29, SB pp. 40 – 41. ■ Answer Test Yourself 2.5 questions 1-2, SB pp. 41 - 42. 		
32	Volumes of Composite Solids (Continued)	Students will be able to solve problems involving volume of composite solids.	<ul style="list-style-type: none"> ■ Review the formula for volumes. ■ Answer Workbook exercises 1 - 2, pp. 34 – 36. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
33	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Explain the mistakes shown in the Common Mistake column, SB p. 43.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column, SB p. 44.■ Learn how to estimate the volume of containers and other objects in the world around them, comparing their estimated values to be actual values.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA2.1, GLI M3/2 MA2.2, GLI M3/3 MA2.2, GLI M3/4 MA2.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
34	Review of Unit 2				
35	UNIT TEST	Unit test will be given for every unit. Questions will come from the p. 45 - 51 of Student's Book and Enrichment Exercises of Workbook p. 37-38.			Mastery Practice
MIDTERM EXAMINATION					

Focus Smart Mathematics 3: Unit 3, Similar Triangles (6 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
36	Similar Triangles	Students will be able to understand similar triangles.	<ul style="list-style-type: none"> Teach how to determine similar triangles, SB p. 53. Teach how to identify what similar triangles are by using example 1, SB p. 53. Answer Test Yourself 3.1 questions 1-2, SB p. 55. Using online resources, students will investigate and research activities of how the properties of similar triangles can be used to solve real-life problems. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA3.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
37	Similar Triangles (Continued)	Students will be able to know properties of similar triangles.	<ul style="list-style-type: none"> Review concepts of similar triangles. Explain examples 2 -3, SB p. 54 to find the length of similar triangles. Homework: Test Yourself 3.1 questions 3 – 4, SB p. 55 – 56. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA3.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
38	Similar Triangles Continued	Students will be able to solve problems involving similar triangles.	<ul style="list-style-type: none"> Ask students to recall how to identify similar triangles. Answer Workbook exercises 1 - 2, p. 40 – 41. 	Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests 	
39	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> Explain the mistakes shown in the Common Mistake column, SB p.56. Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. Revise the lesson using the Quick Revision column, SB p. 57. 	Midterm and Final Exams	
40	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 57 - 58 of Student's Book and Enrichment Exercises of Workbook p. 42.			

Focus Smart Mathematics 3: Unit 4, Linear Inequalities (20 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
41	Inequality	Students will be able to understand linear inequalities.	<ul style="list-style-type: none"> Teach the meaning of inequalities, SB p. 79. Explain to student the relation of 'greater than' and 'lesser than'. Use examples 1 – 2, SB p. 79 to further explain. Answer Test Yourself 5.1 questions 1 – 3, SB p. 80. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework:	MA4.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
42	Inequality (Continued)	Students will be able to understand the concepts of 'greater than' and 'less than.'	<ul style="list-style-type: none"> Review the concepts of greater than and less than. Teach the relation of greater than, less than and equal to, SB p. 80. Use example 3, SB p. 80 to explain further. 	<ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	
43	Inequality (Continued)	Students will be able to perform operations involving inequalities.	<ul style="list-style-type: none"> Review the concepts learned. Answer workbook exercises 1- 3, p. 54 - 55 individually in class. 		
44	Linear Inequalities in One Unknown	Students will be able to determine if a given relationship is a linear inequality in one unknown.	<ul style="list-style-type: none"> Explain what linear inequality in one unknown is, SB p. 81. Discuss about inequalities in one unknown by using example 4, SB p. 81. Answer Test Yourself 5.2 questions 1, SB p. 85. 		
45	Possible Solutions for a Linear Inequality in One Unknown	Students will be able to perform operation involving linear inequality in one unknown.	<ul style="list-style-type: none"> Ask students to remember concepts for learning inequalities in one unknown, SB p. 82. Guide students by giving examples 5 - 7, SB pp. 82 - 84. Answer Test Yourself questions 5.2 question 2, SB p. 85. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
46	Constructing Linear Inequalities	Students will be able to construct linear inequalities.	<ul style="list-style-type: none"> ■ Introduce the steps in constructing linear inequalities, SB p. 84. ■ Use example 8, SB to explain how to construct linear inequalities. ■ To develop their critical thinking, students will write a linear inequality to model a given situation and draw a graph of inequality. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA4.2, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
47	Constructing Linear Inequalities (Continued)	Students will be able to construct linear inequalities.	<ul style="list-style-type: none"> ■ Answer Test Yourself 5.2 questions 3 – 5, SB p. 85. 		
48	Review of Lesson's Concepts	Students will be able to construct linear inequalities.	<ul style="list-style-type: none"> ■ Workbook exercises 1 – 4 p. 55 – 57. ■ Discuss workbook exercises. 		
49	Performing Computation of Inequalities	Students will be able to perform computations of inequalities.	<ul style="list-style-type: none"> ■ Guide students how to perform computations of inequalities, SB p. 86. ■ Use example 9, SB p. 86 to solve inequalities. ■ Answer Test Yourself 5.3 questions 1 – 2, SB p. 88. ■ Homework: Answer Workbook exercises 1 – 2 p. 57 – 58. 		
50	Performing Computation of Inequalities (Continued)	Students will be able to perform computations of inequalities.	<ul style="list-style-type: none"> ■ Review how to perform inequalities by subtracting and adding numbers for both sides. ■ Guide students by multiplying or dividing a number for both sides of inequalities, SB p. 86. ■ Use example 10, SB p. 86 to explain further. ■ Answer Test Yourself 5.3 questions 3 – 4, SB p. 88. ■ Homework: Answer Workbook exercise 3 p. 58. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
51	Performing Computation of Inequalities (Continued)	Students will be able to construct inequalities from given information.	<ul style="list-style-type: none"> Using examples 11 - 12, SB show students how to construct inequalities from a given information. Answer Test Yourself 5.4 questions 5 to 7, SB p. 89. Homework: Workbook exercise 5, p. 59. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4 MA6.1, GLI M3/5 MA6.1, GLI M3/6
52	Solving Inequalities on One Variable	Students will be able to add or subtract to solve linear inequality in one variable.	<ul style="list-style-type: none"> Teach how to solve inequality in one variable, SB p. 89. Use example 13, SB p. 90 to further explain how to solve inequalities. Answer Test Yourself 5.4 questions 1-2, SB p. 94. 		
53	Solving Inequalities on One Variable (Continued)	Students will be able to add or subtract to solve linear inequality in one variable.	<ul style="list-style-type: none"> Continue answering Test Yourself 5.4 questions 3 – 4 p. 94. Homework: Answer Workbook exercise 1 p. 60. 		
54	Solving Inequalities on One Variable (Continued)	Students will be able to add or subtract to solve linear inequality in one variable.	<ul style="list-style-type: none"> Guide students to add and multiply a number for both inequalities to solve linear equations in one variable by using examples 14 – 15, SB pp. 91 – 92. Continue answering Test Yourself 5.4 questions 5 – 6 p. 94. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
55	Solving Inequalities on One Variable (Continued)	Students will be able to do the combined operations in solving linear inequalities.	<ul style="list-style-type: none"> ■ Explain how to solve linear inequalities in one variable using the combined operations, SB p. 92. ■ Use examples 16 and 17, SB p. 92 – 93 to explain further. ■ Answer exercise 2 of workbook p. 60. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA4.2, GLI M3/1 MA6.1, GLI M3/1 MA6.1, GLI M3/2 MA6.1, GLI M3/3 MA6.1, GLI M3/4
56	Solving Inequalities on One Variable (Continued)	Students will be able to do the combined operations in solving linear inequalities.	<ul style="list-style-type: none"> ■ Answer workbook p. 61. ■ Discuss in class. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA6.1, GLI M3/5 MA6.1, GLI M3/6
57	Simultaneous Linear Inequalities in One Variable	Students will be able to represent the common values of two simultaneous linear inequalities in a number line.	<ul style="list-style-type: none"> ■ Guide students how to represent linear inequalities in a number line by using example 18, SB p. 95. ■ Answer Test Yourself 5.5 questions 1-2, p. 99. ■ Students will make a brief presentation to identify possible solutions to inequalities in one and two variables, and then recognize the patterns and the coordinates of the solutions. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	
58	Simultaneous Linear Inequalities in One Variable (Continued)	Students will be able to determine and solve linear inequalities for two given linear inequalities.	<ul style="list-style-type: none"> ■ Explain examples 19 – 20, SB p. 96 on how students how to determine the equivalent inequalities. ■ Answer Test Yourself 5.5 question 3 p. 99. ■ Guide students to solve two simultaneous linear equations by using examples 21 – 22, SB p. 98 – 99. ■ Answer workbook exercises 1 – 3 p. 62 – 64. 	Midterm and Final Exams	

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
59	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> ■ Ask students for further clarifications or explanations regarding the topic. ■ Explain the mistakes shown in the Common Mistake column on p. 100 of SB. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column on p. 101. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA4.2, GLI M3/1</p> <p>MA6.1, GLI M3/1</p> <p>MA6.1, GLI M3/2</p> <p>MA6.1, GLI M3/3</p> <p>MA6.1, GLI M3/4</p> <p>MA6.1, GLI M3/5</p> <p>MA6.1, GLI M3/6</p>
60	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 102 – 103 of Student's Book and Enrichment Exercises of Workbook p. 65			

FINAL EXAMINATION

Course Description: M3 Mathematics, Semester 2

Subject: Core Mathematics	Course Number: M 23102	Level: M 3
Period: 60 hours/semester	Academic Credit: 1.5	Semester: 2nd

This course provides students with basic knowledge, reasoning skills, calculation, critical thinking and problem solving to the following topics:

Linear Equations

Linear equations in two variables, simultaneous linear equations in two variable.

Graphs and Functions

Functions, graphs of functions.

Statistics

Statistic data, frequency, pictograms, bar charts, line graphs, mode, median, mean.

Probability

Events and outcomes, probability, outcomes from independent events.

This course will help students to learn and ask questions in relation to mathematical situations and their mathematical experiences in daily life; develop range of approaches, including the use of technology to explore and solve problems. Students should be able to represent and communicate mathematical ideas and give reasons to support their conclusions. Moreover, students must be able to use the mathematical knowledge and understanding with the use of mathematics in the real world.

Grade Level Indicators:

MA4.2, GLI M3/5	MA4.2, GLI M3/2	MA4.2, GLI M3/3	MA4.2, GLI M3/4	MA4.2, GLI M3/5
MA5.1 GLI M3/1	MA5.1 GLI M3/2	MA5.1 GLI M3/3	MA5.1 GLI M3/4	MA5.2 GLI M3/1
MA5.3 GLI M3/1	MA5.3 GLI M3/2	MA5.3 GLI M3/3	MA6.1 GLI M3/1	MA6.1 GLI M3/2
MA6.1 GLI M3/3	MA6.1 GLI M3/4	MA6.1 GLI M3/4	MA6.1 GLI M3/6	

Total up to 18 Indicators

Course Syllabus: Science M3, Semester 2

Level: Matthayom 3

Credit: 1.5

Period: 60 hours

Semester: 1st Semester

Instruction Time: 3 periods/week

Focus Smart Mathematics 3: Unit 5, Linear Equations in 2 Variables (11 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
1	Linear Equations in Two Variables	Students will be able to understand the characteristics of prisms, cylinders, pyramids, cones and spheres.	<ul style="list-style-type: none"> Teach students what linear equation in two variables, SB p. 60. Use example 1, SB p. 60 to explain further what linear equation is. Answer workbook exercise 1 in Test Yourself 4.1. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.2, GLI M3/5 MA6.1 GLI M3/1 MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
2	Writing Linear Equations in Two Variables	Students will be able to write linear equation in two variables from the information given.	<ul style="list-style-type: none"> Guide students to write equations in two variables by using example 2 and 3, SB p. 60 – 61. Answer Test Yourself 4.1 questions 2-4, SB p. 63 – 64. Homework: Answer Workbook exercises 1-2, p. 44. 		
3	Determining the Value of a Variable given the Other Variable.	Students will be able to determine the value of a variable given the other variable.	<ul style="list-style-type: none"> Teach students to determine the value of a variable given the other variable by using example 4, SB p. 61-62. Answer Test Yourself 4.1 questions 5 – 6, SB p. 64. 		
4	Review of Concepts Learned	Students will be able to answer problems in linear equations in two variables.	<ul style="list-style-type: none"> Answer Test Yourself 4.1 questions 7-8, SB p. 63-64. Homework: Answer Workbook exercises 3-4, p. 44. Practice solving problems in real-life situations involving linear equations. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
5	Simultaneous Linear Equations in Two Variables	Students will be able to solve equations in two variables.	<ul style="list-style-type: none"> ■ Teach simultaneous linear equation is by using example 6, SB p. 65. ■ Teach students to identify simultaneous linear equations and non-simultaneous linear equations, SB p. 67. ■ Answer Test Yourself 4.2 question 1, SB p. 70. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework 	<p>MA4.2, GLI M3/5</p> <p>MA6.1 GLI M3/1</p> <p>MA6.1 GLI M3/2</p> <p>MA6.1 GLI M3/3</p> <p>MA6.1 GLI M3/4</p> <p>MA6.1 GLI M3/5</p> <p>MA6.1 GLI M3/6</p>
6	Solving Two Simultaneous Linear Equations in Two Variables	Students will be able to solve equations in two variables by substitution method.	<ul style="list-style-type: none"> ■ Use example 7, SB p. 66 to explain to students how to solve two linear equations in two variables by substitution method. ■ Answer Test Yourself 4.2 question 2, SB p. 70 ■ Homework: Answer workbook exercises 1-2, pp. 46 – 47. 	<p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	
7	Solving Two Simultaneous Linear Equations in Two Variables (Continued)	Students will be able to solve equations in two variables by elimination method.	<ul style="list-style-type: none"> ■ Use example 8, SB p. 67 to teach how to solve two linear equations in two variables by elimination method. ■ Answer Test Yourself 4.2 question 3, SB p. 71 Solving Two Simultaneous Linear Equations in Two Variables ■ Homework: Answer Workbook exercise 3 p. 47. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
8	Solving Two Simultaneous Linear Equations in Two Variables (Continued)	Students will be able to solve problems involving two simultaneous equations in two variables	<ul style="list-style-type: none">■ Teach students the steps to solve problems involving two simultaneous equations in two variables, SB p. 69■ Use example 10, SB p. 69.■ Answer Test Yourself 4.2 question 4, SB p. 71.■ Homework: Answer Workbook exercise 4 pp. 48 – 50.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests	MA4.2, GLI M3/5 MA6.1 GLI M3/1 MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
9	Solving Problems Involving Two Simultaneous Equations in Two Variables (Continued)	Students will be able solve problems involving two simultaneous equations in two variables	<ul style="list-style-type: none">■ Answer Test Yourself 4.2 questions 5-9, SB p. 72.■ Homework: Answer Workbook exercise 5 p. 49 - 50.	Midterm and Final Exams	
10	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Discuss to students the answer in the homework given.■ Explain the mistakes shown in the Common Mistake column, SB p. 73.■ Review the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column, SB p. 74.		
11	UNIT TEST	Unit test will be given for every. Questions will come from the Mastery Practice p. 74-77 of Student's Book and Enrichment Exercises of Workbook p. 51 – 52.			

Focus Smart Mathematics 3: Unit 6, Graph of Functions (11 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
12	Functions	Students will be able to identify relationship between two variables.	<ul style="list-style-type: none"> ■ Teach students to identify the variables in situations that show a relationship by using example 1, SB p. 105. ■ Answer Test Yourself 6.1 question 1, SB p. 107. ■ Homework: Answer Workbook exercise 5 p. 67. 	<p>Classroom work:</p> <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> ■ Examining homework 	<p>MA4.2, GLI M3/2</p> <p>MA4.2, GLI M3/3</p> <p>MA4.2, GLI M3/4</p> <p>MA4.2, GLI M3/5</p> <p>MA6.1 GLI M3/1</p> <p>MA6.1 GLI M3/2</p> <p>MA6.1 GLI M3/3</p>
13	Dependent and Independent Variables	Students will be able to identify what dependent and independent variables are.	<ul style="list-style-type: none"> ■ Teach the difference between dependent and independent variables by using example 2, SB p. 105. ■ Answer Test Yourself 6.1 question 2, SB p.107 ■ Homework: Answer Workbook, exercise 2 p. 67-68. 	<p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA6.1 GLI M3/4</p> <p>MA6.1 GLI M3/5</p> <p>MA6.1 GLI M3/6</p>
14	Calculating the Value of the Dependent Variable Given the Value of the Independent Variable	Students will be able to solve the value of the dependent variable given the value of the independent variable.	<ul style="list-style-type: none"> ■ Teach how to solve the value of the dependent variable given the value of the independent variable by using example 3, SB p. 106. ■ Answer Test Yourself 6.1 question 3, SB p. 107. ■ Homework: Workbook exercises 3 p. 68-69. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
15	Graphs of Functions	Students will be able to construct tables of values of a function.	<ul style="list-style-type: none"> ■ Teach students how to construct table of values of a function using example 4, SB p. 108. ■ Assign Test Yourself 6.2 question 3, SB p.115. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.2, GLI M3/2 MA4.2, GLI M3/3 MA4.2, GLI M3/4 MA4.2, GLI M3/5 MA6.1 GLI M3/1
16	Drawing Graphs of Functions	Students will be able to explain what graph of functions is.	<ul style="list-style-type: none"> ■ Teach students how to draw graphs of functions, SB p. 108. ■ Teach students the procedure to draw a graph, SB p. 109. ■ Use example 5, SB p. 109 to explain the steps to draw a graph of function. 		MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
17	Drawing Graphs of Functions	Students will be able to explain what graph of functions is.	<ul style="list-style-type: none"> ■ Continue examples 6 – 7, SB pp. 109-110 to explain further to students how to graph functions. ■ Answer Test Yourself 6.2 question 2, SB p. 115. ■ Homework: Answer Workbook exercise 1 p. 69. 		
18	Determining from Graph the Values of Variables	Students will be able to determine from graph the values of variables.	<ul style="list-style-type: none"> ■ Teach students how to determine from graph the values of variables by using example 8, SB p. 111. ■ Answer Test Yourself 6.2 question 3, SB p. 116. ■ Homework: Answer Workbook exercise 2 p. 70 – 71. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
19	Determining from graph the values of variables.	Students will be able to determine from graph the values of variables.	<ul style="list-style-type: none">Answer workbook exercise 3 p. 72-73.Homework: Answer Test Yourself 6.2 questions 3-4, p. 116 – 117.Students plot points by hand for several simple functions.	Classroom work: <ul style="list-style-type: none">Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA4.2, GLI M3/2
20	Problem Solving	Students will be able to solve problems on functions.	<ul style="list-style-type: none">Discuss the answer to the homework.Teach how to identify to solve problems in equations, use example 12, SB p. 114.Answer Test Yourself 6.2 questions 5- 6, SB p. 116 – 117.		MA4.2, GLI M3/3
21	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">Discuss the answer in the homework given.Explain the mistakes shown in the Common Mistake column, SB p. 117.Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.Revise the lesson using the Quick Revision column, SB p. 118.		MA4.2, GLI M3/4
22	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 119-122 of Student’s Book and Enrichment Exercises of Workbook p. 76-77.			

MID TERM EXAMINATION

Focus Smart Mathematics 3: Unit 7, Statistics (29 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
23	Statistics and Data	Students will be able to understand how to conduct a survey.	<ul style="list-style-type: none"> ■ Explain what statistic are, SB p. 124. ■ Discuss the three ways to gather information or to do a survey, SB p. 128. ■ Explain example 1, SB p. 128: how to conduct a survey. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA5.1 GLI M3/1 MA5.1 GLI M3/2 MA5.1 GLI M3/3 MA5.1 GLI M3/4 MA5.3 GLI M3/1 MA5.1 GLI M3/2 MA6.1 GLI M3/1
24	Statistics and Data	Students will be able to identify different kinds of surveys.	<ul style="list-style-type: none"> ■ Answer Workbook exercises 1-2 p.79. ■ Homework: Answer Test Yourself 7.1, SB p. 126. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
25	Frequency	Students will be able to understand to know how to determine the frequency of data.	<ul style="list-style-type: none"> ■ Explain what frequency means and how we determine frequencies, SB p. 126. ■ Explain frequency by using example 2, SB p. 126. ■ Answer Test Yourself 7.1 question 1, SB p. 130. 		
26	Frequency (Continued)	Students will be able to identify how to determine the highest or the lowest frequency.	<ul style="list-style-type: none"> ■ Guide students on how to determine the highest or the lowest frequency by using examples 3-4, SB p. 127-128. ■ Guide students to obtain information from frequency tables by using examples 5-6, SB pp. 128-129. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
27	Review Lesson's Concepts	Students will be able to obtain information from frequency tables.	<ul style="list-style-type: none"> ■ Answer Workbook exercises 1-4 pp.79 – 82. ■ Homework: Answer Test Yourself 7.1 questions 2 – 5, SB p. 130-131. ■ Practice interpreting statistics and graphs from real-life situations. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA5.1 GLI M3/1 MA5.1 GLI M3/2 MA5.1 GLI M3/3 MA5.1 GLI M3/4 MA5.3 GLI M3/1 MA5.1 GLI M3/2 MA6.1 GLI M3/1
28	Pictograms	Students will be able to construct pictogram to represent data.	<ul style="list-style-type: none"> ■ Teach what pictograms are, SB p. 132. ■ Teach how to construct pictograms to represent data by using example 7, SB p. 132. ■ Answer Test Yourself 7.3 question 1 p. 142. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
29	Pictograms (Continued)	Students will be able to obtain information from pictograms.	<ul style="list-style-type: none"> ■ Guide students to obtain information by using example 8, SB p. 133. ■ Answer Workbook exercise 1 p. 83. ■ Homework: Answer Test Yourself 7.3 question 2 p. 142. 		
30	Pictograms (Continued)	Students will be able to solve problems involving pictograms.	<ul style="list-style-type: none"> ■ Guide students to solve problems involving pictograms by using examples 9 – 10, SB p. 134-135. ■ Answer Workbook exercise b p. 83. 		
31	Pictograms (Continued)	Student will be able to solve and understand data from pictograms.	<ul style="list-style-type: none"> ■ Answer Workbook pp. 84 – 85 and lead class discussion. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
32	Pictograms (Continued)	Student will be able to solve and understand data from pictograms.	■ Answer Test Yourself 7.3 question 3, SB p. 142 and discuss the answer in class.	Classroom work: ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: ■ Examining homework Test/Worksheet/Unit test: ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA5.1 GLI M3/1
33	Bar Charts	Students will be able to construct a bar chart to represent data.	■ Explain to students what bar charts are, SB p. 135. ■ Guide students how to construct a bar chart by using example 11, SB p. 135. ■ Answer Workbook p. 87-88. ■ Homework: Test Yourself 7.3 question 4 p. 143.		MA5.1 GLI M3/2
34	Bar Charts (Continued)	Students will be able to obtain information from bar charts.	■ Guide students to obtain information from bar chart, using example 12, SB p. 136. ■ Answer Workbook pp. 89 – 90. ■ Homework: Answer Test Yourself 7.3 question 5 p. 143.		MA5.1 GLI M3/3
35	Bar Charts (Continued)	Student will be able to solve and understand data from bar charts.	■ Use examples 13-14, SB p. 137-138 to solve problems involving bar charts. ■ Answer Test Yourself question 5, SB, pp.143-144.		MA5.1 GLI M3/4
36	Bar Charts (Continued)	Student will be able to solve and understand data from bar charts.	■ Answer Workbook pp. 91-93 and discuss.		MA5.3 GLI M3/1
37	Bar Charts (Continued)	Student will be able to solve and understand data from bar charts.	■ Answer Test Yourself 7.3 questions 6-5, SB p. 144 and discuss the answer in class.		MA5.1 GLI M3/2
					MA6.1 GLI M3/1
					MA6.1 GLI M3/2
					MA6.1 GLI M3/3
					MA6.1 GLI M3/4
					MA6.1 GLI M3/5
					MA6.1 GLI M3/6

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
38	Line Graphs	Students will be able to represent data using a line graph.	<ul style="list-style-type: none"> Teach how to construct line graphs, SB p. 139. Use example 15, SB p. 139 to explain data using line graphs. Answer Test Yourself 7.3 question 8, SB p. 145. 	<p>Classroom work:</p> <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects <p>Assignments/ Homework:</p> <ul style="list-style-type: none"> Examining homework <p>Test/Worksheet/Unit test:</p> <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests <p>Midterm and Final Exams</p>	<p>MA5.1 GLI M3/1</p> <p>MA5.1 GLI M3/2</p> <p>MA5.1 GLI M3/3</p> <p>MA5.1 GLI M3/4</p> <p>MA5.3 GLI M3/1</p> <p>MA5.1 GLI M3/2</p> <p>MA6.1 GLI M3/1</p> <p>MA6.1 GLI M3/2</p> <p>MA6.1 GLI M3/3</p> <p>MA6.1 GLI M3/4</p> <p>MA6.1 GLI M3/5</p> <p>MA6.1 GLI M3/6</p>
39	Line Graphs (Continued)	Students will be able to obtain information from bar charts.	<ul style="list-style-type: none"> Guide students how to obtain information by using example 16, SB p. 140. Answer Test Yourself 7.3 question 9, SB p. 145. 		
40	Line Graphs (Continued)	Student will be able to solve and understand data from bar charts.	<ul style="list-style-type: none"> Guide students on how to solve problems involving line graphs by using example 17, SB p. 141. Answer Test Yourself 7.3 question 10, SB p. 145. Homework: Answer Workbook p. 97-99 		
41	Line Graphs (Continued)	Student will be able to solve and understand data from bar charts.	<ul style="list-style-type: none"> Answer Workbook p. 93-96 and discuss. Discuss the answer in class. Conduct survey about school subjects by asking another class seven questions. 		
42	Line Graphs (Continued)	Student will be able to solve and understand data from bar charts.	<ul style="list-style-type: none"> Answer Workbook p. 97-99. Present in class the results of the survey using a line graph. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
43	Mode	Student will be able to understand mode in a set of data.	<ul style="list-style-type: none"> ■ Explain what mode is, SB p. 146. ■ Teach mode and how to determine mode from the set of data, examples 18, SB p. 146. ■ Homework: Answer Test Yourself 7. 4 questions 1 – 3, SB p. 154. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA5.1 GLI M3/1 MA5.1 GLI M3/2 MA5.1 GLI M3/3 MA5.1 GLI M3/4 MA5.3 GLI M3/1 MA5.1 GLI M3/2 MA6.1 GLI M3/1
44	Mode (Continued)	Students will be able to understand mode in a given frequency tables.	<ul style="list-style-type: none"> ■ Teach students how to determine mode from the set of a frequency table, examples 19 – 21, SB p. 146 – 148. ■ Answer Workbook questions 2 – 3 pp. 99 – 101 and lead discussion. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4 MA6.1 GLI M3/5 MA6.1 GLI M3/6
45	Median	Students will be able to understand median in a set of data.	<ul style="list-style-type: none"> ■ Explain what median is, SB p. 149. ■ Explain median and how to determine median from the set of data, example 22, SB p. 149. ■ Homework: Answer Test Yourself 7. 4 questions 4 – 5, SB p. 155. 		
46	Median (Continued)	Students will be able to understand median in a given frequency tables.	<ul style="list-style-type: none"> ■ Teach students on how to determine median from the set of frequency table, examples 23, SB p. 150. ■ Answer workbook questions 4 – 5 pp. 101 – 102. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
47	Mean	Students will be able to understand mean in a set of data.	<ul style="list-style-type: none"> ■ Explain what Mean is, SB p. 151. ■ Teach Mean and how to determine mean from a set of data, example 24, SB p. 151. ■ Homework: Answer Test Yourself 7. 4 questions 6 – 7, SB p. 155. 	Classroom work: <ul style="list-style-type: none"> ■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects 	MA5.1 GLI M3/1 MA5.1 GLI M3/2 MA5.1 GLI M3/3 MA5.1 GLI M3/4 MA5.3 GLI M3/1
48	Mean (Continued)	Students will be able to understand mean in a given frequency tables.	<ul style="list-style-type: none"> ■ Teach students how to determine Mean from the set of a frequency table, 25, SB p. 152. ■ Answer Workbook questions 6 – 7 pp. 102 – 103. 	Assignments/ Homework: <ul style="list-style-type: none"> ■ Examining homework 	MA5.1 GLI M3/2 MA6.1 GLI M3/1
49	Solving Problems involving Mode, Median and Mean	Students will be able to solve mixed problems about mode, median and mean.	<ul style="list-style-type: none"> ■ Teach students how to solve problems involving mode, median and mean by using example 26, SB pp. 153 – 154. ■ Answer Workbook exercise 8, pp. 103-104. ■ Homework: Test Yourself 7. 4 questions 8 – 10, SB pp. 155 – 156. 	Test/Worksheet/Unit test: <ul style="list-style-type: none"> ■ Worksheets, pop quizzes, chapter reviews, unit tests 	MA6.1 GLI M3/2 MA6.1 GLI M3/3 MA6.1 GLI M3/4
50	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none"> ■ Discuss the answer in the homework given. ■ Explain the mistakes shown in the Common Mistake column, SB pp. 157 – 158. ■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column. ■ Revise the lesson using the Quick Revision column, SB pp. 158 – 159. 	Midterm and Final Exams	MA6.1 GLI M3/5 MA6.1 GLI M3/6
51	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 159 – 167 of Student's Book and Enrichment Exercises of Workbook p. 106 – 108.			

Focus Smart Mathematics 3: Unit 8, Probability (29 hours)

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
52	Events and Outcomes	Students will be able to understand events and outcomes.	<ul style="list-style-type: none"> Teach what events and outcomes are, SB p. 169. Teach students what events and outcomes are by using example 1, SB p. 169. Answer Test Yourself 8.1 question 1, SB p.171. 	Classroom work: <ul style="list-style-type: none"> Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none"> Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none"> Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA5.2 GLI M3/1 MA5.3 GLI M3/1
53	Equally Life Outcomes	Students will be able to explain what equally likely and not equally likely outcomes mean.	<ul style="list-style-type: none"> Teach students what equally likely and not equally likely outcomes mean by using examples 2 – 3, pp. 170 – 171. Answer Workbook exercises 1 – 3 pp. 110 – 112. Homework: Test Yourself 8.1 questions 2 - 4, SB p.171. 		
54	Probability	Students will be able to explain and how probability can be stated in fraction form.	<ul style="list-style-type: none"> Teach what probability is and how probability can be stated in fraction form, SB p. 172. Explain how to get all possible outcomes by using example 4, SB p. 173. Answer Test Yourself 8.2 question 1, p.177. 		
55	The Probability Scale	Students will be able to know what are probabilities scales are.	<ul style="list-style-type: none"> Explain the scale of probability, SB p. 174. Use examples 5-6, pp. 174 – 175, to understand probability scales. Answer Test Yourself 8.2 questions 2 - 3, p. 177. Homework: Answer workbook exercises 1 – 3 pp. 112 – 114. 		

Lesson 1 hour lesson	Topic	Objectives	Activities	Overall Assessment/ Evaluation	Strand/Grade Level Indicators/
56	Calculating Probabilities	Students will be able to know how to calculate probabilities.	<ul style="list-style-type: none">■ Guide students to calculate probabilities for events by using examples 7 – 9, SB p. 176 – 177.■ Answer Test Yourself 8.2 questions 4 - 7, p. 178.■ Homework: Answer Workbook exercises 4 – 5 p.115 – 118.	Classroom work: <ul style="list-style-type: none">■ Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects Assignments/ Homework: <ul style="list-style-type: none">■ Examining homework Test/Worksheet/Unit test: <ul style="list-style-type: none">■ Worksheets, pop quizzes, chapter reviews, unit tests Midterm and Final Exams	MA5.2 GLI M3/1 MA5.3 GLI M3/1
57	Tree Diagram	Students will know what tree diagrams are and how they are used in calculating probability.	<ul style="list-style-type: none">■ Teach what a tree diagram is, SB p. 179.■ Use example 10, SB p. 179 to explain how to make a tree diagram to calculate probability.■ Answer Test Yourself 8.3 question 1, SB p. 181.■ Students work together on some simple games. They make predictions of the outcomes and then conduct the experiments to gather data.		
58	Independent Events	Students will know what tree diagrams are and how they are used in calculating probability.	<ul style="list-style-type: none">■ Use example 11, SB p. 181 to explain the probability of two independent events.■ Answer Test Yourself 8.3 questions 2 - 3, p. 181.■ Homework: Answer Workbook exercises 1 – 4 p. 118 – 122.		
59	Conclusion	Students will be able to identify mistakes and be aware of validity of answers to the operations.	<ul style="list-style-type: none">■ Discuss the answer in the homework given.■ Explain the mistakes shown in the Common Mistake column, SB p. 182.■ Ensure students understand the terms used in this chapter by referring to the Mathematical Terms column.■ Revise the lesson using the Quick Revision column, SB p. 183.		
60	UNIT TEST	Unit test will be given for every unit. Questions will come from the Mastery Practice p. 184 - 185 of Student's Book and Enrichment Exercises of Workbook p. 122 - 123.			

FINAL EXAMINATION

III. Assessment and Evaluation of Students' Achievement

Overall Assessment

The primary goal of assessment and evaluation is determine whether or not the prescribed learning standards have been achieved. Information is gathered to help teachers determine students' strengths and weaknesses in learning mathematics. The overall assessment also helps teachers to create instructional approaches to motivate students and in assessing the overall effectiveness of classroom practices.

Assessment or evaluation is the method of gathering information from learning sources including assignments, projects, classroom participation and tests that correctly depict the student performance. Overall assessment refers to the quality of judging student performance based on the criteria set for each level. Students will receive feedback from teachers at the end of each semester in the form of a letter. Areas of assessment include:

Classroom work:

- Asking questions; monitoring; assessing projects, tasks and assignments, and other in-class projects

Assignments/Homework:

- Examining homework

Test/Worksheet/Unit test:

- Worksheets, pop quizzes, chapter reviews, unit tests

Mid-term and Final Examinations

Criteria for Grading System

Semester 1:

Test/Quizzes/Unit Test	Seatwork/ Homework	Participation	Midterm Exam	Total (Summative 1)
15	5	5	20	45

Semester 2:

Test/Quizzes/ Unit Test	Seatwork/ Homework	Participation	Final Exam	Total (Summative 2)
15	5	5	30	55

Final Grade is computed by adding Summative 1 (Semester 1) and Summative II (Semester 2)

Summative I	Summative 2	Final Grade
45	55	100

IV. Supplementary Curriculum for Mathematics

40 hours a semester (two periods per week)

This Andrew Biggs Academy Supplementary Curriculum is based on ABA's unique and proven methodology of inspiring creativity, facilitating collaboration, and building confidence in our students. We achieve this by creating a learning environment where students feel safe taking risks when applying new concepts.

We believe the key to learning mathematics within this framework is to challenge and engage students with math concepts that can be applied within the context of real-life scenarios and situations. In other words, in our classrooms students will learn not just by listening and memorizing, but also by doing.

The Supplementary Curriculum for M1-3 Mathematics will be two hours per week for a total of 40 hours per semester. This breaks down to two periods per week. Our program is designed to be fluid and flexible, with our teachers taking the lead in assessing the areas in greatest need of study by taking into account a variety of factors including:

1. Student progress
2. Areas within the Core Curriculum that require review or further instruction
3. Filling coursework gaps between the Thai and EP math programs
4. Additional areas of instruction not included in the Core Curriculum

V. Reference Books

Focus Smart Mathematics Textbook, M.1
Focus Smart Mathematics Workbook, M1.

Focus Smart Mathematics Textbook, M2.
Focus Smart Mathematics Workbook, M1

Focus Smart Mathematics Textbook, M3
Focus Smart Mathematics Workbook, M3