



COMMONWEALTH OF THE BAHAMAS
DEPARTMENT OF EDUCATION

JUNIOR HIGH SCHOOL MATHEMATICS

CURRICULUM GUIDELINES
GRADES 7 – 9

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PREFACE

This document incorporates revisions of unpublished curricula produced during numerous curriculum development exercises conducted by the Department of Education over the past thirty years. The objectives and content outlined in the Curriculum Guidelines were formulated based on national goals, current research and best practices in mathematics, as well as entry-level requirements for programmes at the University of The Bahamas and other local, regional, and international colleges and universities.

The quest for a more coherent and relevant mathematics curriculum began after the National Council of Teachers of Mathematics (NCTM) officially released its *Curriculum and Evaluation Standards for School Mathematics (NCTM 1989)*. The *Standards* provided a new vision and framework for strengthening the mathematics curriculum. It provided the impetus for revamping the Bahamian mathematics curriculum and producing a document to guide the improvement of teaching and learning mathematics in both public and private schools.

Principles and Standards for School Mathematics (NCTM 2000), *Curriculum Focal Points for Pre-K–Grade 8 Mathematics: A Quest for Coherence (NCTM 2006)* and other NCTM publications were also considered as the High School Mathematics Curriculum team created the Curriculum Guidelines. In keeping with NCTM's vision that is based on the assumption that all students are capable of learning mathematics, the Curriculum Guidelines provides a framework to foster an understanding of the 'whats', 'whys', and 'hows' of mathematics, and ensures alignment of the content within and across all the high school grade levels, from grade 7 to grade 12.

It is envisioned that teachers and parents, in home-school and homework settings, will use this document to guide their planning and teaching. The Scope and Sequence, Scope of Work, Strategies, and the suggested

supplementary activities from texts and other resources, can be used to develop a high-quality learning experience that will help students attain the goals and objectives outlined.

ACKNOWLEDGEMENTS

An extensive amount of collaboration, research, evaluating, writing and editing is credited for the creation of this document of national importance and magnitude. The development of the High School Mathematics Curriculum Guidelines would not have been accomplished without the hard work, dedication, and commitment of the team of mathematics educators, Education Officers, clerical officers and Curriculum Supervisors. The Department of Education is grateful for the commitment, dedication, efficiency, and professionalism of the following persons who made this achievement possible.

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INTRODUCTION

Mathematics is a vital component in the development of science, technology, industry and commerce, and as such, is essential in everyday life. Critical thinking, problem solving, and communicating ideas effectively are keys to success in a technology driven, information-based world.

The study of mathematics requires reasoning, applying, analyzing, and understanding of principles, ideas, and patterns in our environment. Studying mathematics equips students with the knowledge, skills, and mindset that are essential for meaningful participation in society.

A high-quality mathematics programme provides the foundation for understanding the world, adapting to rapid change in the digital age, and producing twenty-first century global citizens. All students need classroom experiences that will help them learn mathematics with understanding, make connections, and apply mathematics in other contexts. An effective mathematics programme also develops an appreciation for the beauty and power of mathematics, and a sense of enjoyment and desire to learn more about the subject.

The focus of the Mathematics High School Curriculum is the content knowledge, understanding, and skills needed to educate students to appreciate and utilize mathematics. It outlines the framework that mathematics educators can use to create yearly schemes, design unit and lessons plans, and produce materials that will enhance the teaching and learning process, and ensure that their students become critical thinkers who can reason mathematically and solve problems.

OVERARCHING GOALS

The High School Mathematics Curriculum is designed to cultivate and develop students who are:

- a) proficient in logical, critical and analytical reasoning;
- b) proficient in using emerging technologies and other mathematical tools;
- c) problem solvers, communicating mathematically, and working cooperatively;
- d) able to connect classroom experiences and real life situations;
- e) self-confident and value the importance and usefulness of mathematics.

SUB-GOALS

The curriculum framework outlined in this document, aims to have all students in The Bahamas achieve the following:

1. Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.
2. Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

3. Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.
4. Make and use appropriate measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.
5. Demonstrate spatial sense and use geometric methods to analyze, categorize, and draw conclusions about plane shapes and space figures.
6. Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty-using concepts of probability.

To achieve these overarching goals and sub-goals, all students must have many and varied high-quality experiences, through which they read, write, discuss, make conjectures, and test solutions to practical problems.

HOW TO USE THE CURRICULUM GUIDELINES

Mathematics is a highly interconnected and cumulative subject. This Mathematics curriculum introduces skills and concepts in sequence, which contributes to and serves as building blocks for other concepts across grade levels. The curriculum also gives focus to important mathematics strands that will prepare students for continued study, and problem solving at school, home, and even work settings. Instead of seeing mathematics as a set of disconnected topics, students should be able to view, understand, and appreciate the relationships among mathematical skills and concepts. When students make connections and develop skills, their understanding deepens and expands.

The objectives at each grade level are divided into five content strands: Number and Operations, Algebra, Geometry & Spatial Sense, Measurement, and Statistics & Probability. While each of the five strands deals with a different area of mathematics at the respective grade levels, objectives from the strands should be integrated. For example, while teaching Statistics, it is natural to ask questions that will require students to compute data presented in graphical form.

Teachers are not expected to cover the content in the order the strands are presented in the scope and sequence. Instead, teachers are encouraged to use this curriculum guide to formulate a yearly plan in a manner that integrates the content of the strands in an effort to complete the annual learning goals for the particular grade level.

Please note that The Scope of Work does not list every possible specific objective for the concepts/topics of each content strand. It provides a guide to the level of content, activities and resources that should be integrated at each grade level.

GLOSSARY OF CURRICULUM TERMS

Content Strands – The five broad areas that organize the concepts and topics to be taught.

Learning Objectives – Specific statements of what the students will understand and learn to do.

Overarching Goals – Outline the intended purpose of the curriculum document. They define the overall intended outcomes of the High School Mathematics Curriculum.

Sub-goals – Indicate the main objectives for the various strands of the curriculum.

Scope and Sequence – A table outlining the objectives for each grade level, showing the progression and overview of the work to be accomplished.

Scope of Work – Outlines, for each grade level, suggested content, activities, assessments, and resources to facilitate and enhance the teaching and learning process.

OVERVIEW OF CONTENT STRANDS

The five content strands in this document are in line with those used by the National Council of Teachers of Mathematics (NCTM). For each of the content strands, the overarching goals and sub-goals are outlined in the objectives of the concepts/topics.

Number and Operations: This content area focuses on students' understanding the real number system, types of real numbers, and graphing real numbers. Proficiency with operating on whole numbers, fractions, decimals, and integers is emphasized. The relationship between fractions, decimals and percents; rounding, approximating and estimating are applied to real world situations. Students are also expected to recognize, describe, and extend special number patterns using arithmetic operations.

Algebra: Algebra provides the tools through which one communicates in the language of mathematics. It provides a way to explore, analyze, and represent mathematical concepts and ideas. The Algebra strand develops students' ability to recognize, represent, and solve problems involving relations, functions and equations. Students focus on constructing, evaluating and manipulating algebraic expressions, the distributive property and factorization, solving linear and quadratic equations, solving linear inequalities, systems of linear equations and inequalities. Algebraic models are represented both symbolically and graphically. Senior high students also study linear and quadratic functions, matrix algebra and differentiation.

Geometry & Spatial Sense: Stresses the development of students' awareness of their physical environments through working with two- and three-dimensional shapes. Geometry is a natural content area for the development of students' reasoning and justification skills. They study attributes and angle properties of polygons, circles and compound shapes. Features prisms, pyramids, cylinders, cones and spheres are used to solve real-world problems of compound three dimensional objects. Students identify and perform geometric transformations. Recognize both line and rotational symmetry. Additionally senior high students study trigonometry and vectors. Understanding geometric concepts is essential for students to make sense of measurement.

Measurement: Students investigate concepts such as dimension, length, area, volume, capacity, time and temperature. They learn what attributes of a shape can be measured and how to measure by working with customary units and metric units. Students also become familiar with telling time using a twelve hour and twenty-four hour clock; and computing elapsed time. This content strand highlights connections within mathematics and connections between mathematics and other subject areas, such as Social Studies, Religious Studies, Science, Music, Art, and Physical Education.

Statistics and Probability: Emphasizes the collection, organization, and interpretation of data. The primary purpose of this strand is to develop students' ability to organize and analyze data intelligently, and use probabilities to describe the likelihood of events

occurring. While junior high school students determine probabilities for simple/single events, senior high school students should solve problems involving compound events. Students display statistical data in the form of tables and graphs. Venn diagrams and tree diagrams are used as visual aids to solve probability problems. Statistics and Probability are also linked to other content areas such as sets, number and operations, geometry, and algebra.



COMMONWEALTH OF THE BAHAMAS
MINISTRY OF EDUCATION

SCOPE AND SEQUENCE

HIGH SCHOOL MATHEMATICS

GRADES 7 – 12

DEPARTMENT OF EDUCATION
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THE MINISTRY OF EDUCATION CURRICULUM DIVISION
SCOPE AND SEQUENCE
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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
The Real Number System & Natural and Whole Numbers	Identify/locate the natural/counting and, whole numbers as points on the real number line.	Use prime factorization to find H.C.F. & L.C.M.,	Cubes and cube roots . Use prime factorization to find cube roots.	Revise types of numbers such as natural numbers, whole numbers, odd, even, prime, composite, square, and cube numbers.	.	
	Define and identify odd, even, prime, composite	Multiply and divide whole numbers by powers of ten.	Use associative and commutative properties of addition and multiplication and the distributive property over whole numbers.	Estimating the results of arithmetic operations including powers and roots.		
	Identify factors and multiples of whole numbers (apply divisibility rules).					
	Use list of factors to find H.C.F., use list of multiples to find L.C.M.			Use of a scientific calculator to compute operations including powers and roots.		
	Prime factorization of whole numbers.					

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
The Real Number System & Natural and Whole Numbers	Exponential/index notation (base, natural number exponent/index, power). Powers of whole numbers natural number exponents only. Define and identify, square, cube numbers Explore the powers of ten (natural number exponents only). Recognize and explain that our number system is a decimal (base ten) system. Write numbers in expanded form using powers of ten.	Squares and square roots. Use prime factorization to find square roots. Problem solving involving addition, subtraction, multiplication, and division, factors, multiples, H.C.F. and L.C.M., squares and square roots	Solve problems using H.C.F./ G.C.F., L.C.M, square roots and cube roots.	Use the commutative and associative properties of addition and multiplication and the distributive property of multiplication over addition to simplify computations with natural numbers. Use a scientific calculator to evaluate square roots and cube roots. More problem solving using H.C.F./ G.C.F., L.C.M, square roots and cube roots.	Understand that square roots of non-perfect squares, and cube roots of non-perfect cubes, are not whole numbers.	Approximate square roots and cube roots that are not whole numbers.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
The Real Number System & Natural and Whole Numbers <i>cont'd</i>	Multiply whole numbers by powers of ten. Divide whole numbers by powers of ten, with reminders where necessary. Prime factorization using index form.					
Sequences	Problem solving involving addition, subtraction, multiplication, and division, factors multiples, HCF and LCM. Continue sequences of even, odd, multiples, squares, cubes and triangular numbers	Identify patterns in sequences of natural numbers to list more terms. Identify patterns in sequences of natural numbers, whole numbers, and integers to list more terms.	Identify patterns in sequences of natural numbers, whole numbers, integers, common and decimal fractions to list more terms.	Use simple algebraic expressions to generalize the pattern in sequences involving consecutive even/odd numbers; consecutive numbers; multiples; squares and cubes, triangular number and Fibonacci sequence.	Find the nth term in a sequence given the formula for the nth term.	Determine and use a formula for the nth term in a number sequence. Solve problems involving sequences.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Sequences <i>cont'd</i>		Identify special sequences and list more terms (<i>even, odd, prime, triangular, square and cube numbers, Fibonacci Sequence</i>).		Use the general pattern to continue the sequence and to find missing term(s).		
Integers	Use integers to represent opposite situations. Identify/locate integers on the number line. Compare and order integers using the number line. Use of inequality symbols. Add and subtract integers using the number line. Problem solving involving addition, and subtraction.	Use the number line/rules derived to add, subtract, multiply and divide integers. Problem solving involving addition, subtraction, multiplication and division	Revise using the number line and rules for adding, subtracting, multiplying and dividing integers. Powers of integers. Problem solving using integers in practical situations	Use a scientific calculator to operate on integers. More problem-solving using integers in practical situations	Identify pairs of integers with given products and sums. Even and odd powers of negative integers. Understand that the square of an integer is never negative.	Understand that the square root of a negative number is not a real number.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Rational Numbers as Common Fractions	Define rational numbers as common fractions. Revise vocabulary of common fractions: fraction, numerator, denominator, proper & improper fractions, mixed numbers, equivalent fractions, reduce fraction, lowest terms. Identify/locate rational numbers on the real number line.	Order fractions in ascending and descending order with and without the number line. Addition, subtraction, multiplication and division of up to three fractions and/or mixed number and two operations. Problem solving involving addition, subtraction multiplication and division of up to three fractions and two operations.	More addition, subtraction, multiplication and division of up to three fractions and/or mixed numbers and two operations. More problem-solving involving addition, subtraction multiplication and division of up to three fractions and two operations. Locate/graph points with rational coordinates on the real number line.	Use of the fraction key on calculators to add, subtract, multiply and divide fractions and mixed numbers. More challenging problem-solving involving addition, subtraction, multiplication and division of up to three fractions and/or mixed numbers and two operations.	Understand that the denominator of a fraction cannot be zero. Understand that square roots of non-perfect squares or cubes are irrational numbers.	Approximate irrational numbers and graph them on the real number line. Identify sets of real and unreal numbers.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Rational Numbers as Common Fractions <i>cont'd</i>	Compare & Order with and without the number line. Use of inequality symbols. Add, subtract, multiply and divide two fractions and/or mixed numbers. Problem solving involving addition, subtraction, multiplication, and division, of two fractions.					
Rational Numbers as Decimals	Rational numbers as decimals. Decimal place value: billions to thousandths Reading and writing decimal numbers.	Decimal place value: billions to ten thousandths. Change common fractions to decimals and vice versa.	Decimal place value: billions to millionths. Add, subtract, multiply and divide decimals.	Problem solving involving at least two of the operations, addition, subtraction multiplication and division.	Understand that rational numbers are terminating or repeating decimals.	Understand that irrational numbers are infinite, non-repeating decimals.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Rational Numbers as Decimals <i>cont'd</i>	Writing decimal fractions as decimal numbers and vice versa. Identify/locate decimal numbers on the real number line. Compare & Order with and without the number line. Use of inequality symbols. Adding, subtracting decimals with and without regrouping. Multiply and divide decimals by powers of ten. Multiply and divide decimals by whole numbers. Multiply and divide decimals by a decimal. Solve problems using operations on decimals.	Identify rational numbers as terminating and recurring (repeating) decimals using the dot (·) and bar (¯) notation above single repeated digits and blocks of repeated digits. Comparing and ordering decimals with and without the number line. Add, subtract, multiply and divide decimals. Problem solving involving at least two of the operations, addition, subtraction multiplication and division				

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
ROUNDING. APPROXIMATION & ESTIMATION	Rounding whole numbers to a given place value. Rounding decimals to a given place value and to a given number of decimal places, with and without the number line. Estimate sums, differences, products and quotients to check the reasonableness of their calculations.	Rounding decimals to a given place value and to a given number of decimal places, with and without the number line. Rounding decimal numbers to a given number of significant figures. Estimate the results of calculations to check the reasonableness of answers.	Rounding decimal numbers to a required place value, number of decimal places, and significant figures. Estimate the results of calculations to check the reasonableness of answers.	Make estimates of numbers and quantities. Approximate numbers by rounding to the nearest whole, to specified place value, numbers of decimal places and significant figures. Estimate the results of calculations to check the reasonableness of calculator answers.	Give answers to reasonable accuracy in the context of the given problem. Calculate the percentage error of the approximation/estimation. Find lower and upper bounds of derived values given the degree of accuracy.	Obtain appropriate upper and lower bounds to solutions of simple problems give data to a specified accuracy.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Order of Operations	Apply an order of operations mnemonic (BOMDAS)/(BODMAS) or “Bless My Dear Aunt Sally” to evaluate arithmetic expressions with two or more operations, involving whole numbers and common fractions. Identifying true arithmetic statements. Insert operations and/or brackets to obtain true statements.	Apply an order of operations mnemonic (BIMDAS)/(BIDMAS), “Please Excuse My Dear Aunt Sally” or (PEMDAS)/(PEDMAS) to evaluate arithmetic expressions with two or more operations, involving integers, common fractions and decimals. Identifying true arithmetic statements. Insert operations and/or brackets to obtain true statements.	Use an appropriate order of operations mnemonic to evaluate arithmetic expressions with at least three operations, involving integers, common fractions and decimals. Identifying true arithmetic statements. Insert operations and/or brackets to obtain true statements.	Use an appropriate order of operations mnemonic and a scientific calculator to evaluate arithmetic expressions with at least three operations, involving integers, common fractions, decimals, powers and roots.	Apply the correct order of operations to: Identify true arithmetic statements. Insert operations and/or brackets to obtain true statements.	Apply the correct order of operations to evaluate arithmetic involving at least four operations.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Percents and Percentages	Define percent (%) Compare and order percents. Convert percents to common fractions and vice versa. Convert percents to decimals and vice versa. Convert between common fractions, decimals and percents. Solving simple word problems involving percents. Expressing one quantity as a percentage of another. Problem solving: Expressing one quantity as a percentage of another.	Calculating a percentage of a number or quantity. Percentage increase/decrease	Percents greater than 100 and less than 1. Convert between common fractions, decimals and percents. Review expressing one quantity as a percentage of another. Review calculating a percentage of a number or quantity.	Review: Convert between common fractions, decimals and percents. Review: calculating a percentage of a number or quantity. Review: expressing one quantity as a percentage of another. Determine the increased/decreased amount as a percentage of the original.	Determining a final amount as a percentage of the original amount. Reverse percentages: finding the original amount given the final amount and the percentage.	Solve the three main percentage problems: - Expressing one number as a percentage of another - Calculating a percentage of a quantity. - Finding the original amount given final amount and the percentage increase or decrease.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Consumer Math	Convert between units of money for countries with decimal currency. Solving monetary word problems involving one of the four operations.	Solving monetary word problems involving at least two operations. Calculating profit and loss. Calculating percentage profit and profit loss and mark-up and markdown. Calculating discounts. Calculating Value Added Tax (VAT)	Use $I = \frac{PRT}{100}$ to calculate interest, rate, time or principal. Loans and investments. Calculating wages/salaries, commission, bonuses and deductions, hire purchase. Calculating taxes and exchange rates Calculating the amount due on telephone and electricity bills, given the necessary information.	Find the selling price given the cost price and the percentage mark-up. Find the sale price given the original selling price and the percentage discount/mark-down. Foreign exchange: currency conversion.	Finding the cost price given the selling price and the percentage profit/mark-up.	Compound interest for up to a maximum of three time periods.

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Ratios, Rates, Proportions & Variation	Demonstrate an understanding of the elementary ideas and notation of ratios. Use a ratio to compare two numbers or similar quantities. Determine equivalent ratios Write ratios in the form 1 : a or a : 1 (where a is a whole number). Divide a quantity in a given ratio. Determine the scale of a map. Use a map scale to calculate distance.	Use ratios to compare measurements with different units. Simplify ratios with fractional terms. Write ratios in the form 1 : a or a : 1 Share a quantity in a given ratio. Define the term proportion. Identify proportions. Solve proportions for missing terms Use proportions to find missing quantities.	Define unit rate Determine unit rates Problem solving involving quantities that are directly proportional Define rate Identify common rates Problem solving involving quantities that are indirectly proportional	Use ratios and proportions to represent quantitative relationships. Demonstrate an understanding of the basic ideas of ratios rates and proportions Solve problems involving ratios, rates and proportions	Increase and decrease a quantity in a given ratio. Distinguish between direct and inverse variation and represent graphically. Use a graph to illustrate the relationship between two quantities the vary directly or inversely. Read in interpret graphs represent the relationship between two quantities the vary directly or inversely	Direct and inverse variation: Use notation $y \propto x$ or $y = kx$ $y \propto \frac{1}{x}$ or $y = \frac{k}{x}$ Determine the constant of proportionality and unknown quantities. Word problems

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NUMBER & OPERATIONS						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Scientific Notation				Define standard form/scientific notation. Express numbers in standard form/scientific notation. Convert numbers from standard form to decimal form. Problems involving multiplication and division of numbers in standard form. Multiply and divide numbers expressed in standard form/scientific notation.	Compare and order numbers expressed in standard form. Add and subtract numbers expressed in standard form. Problems involving addition, subtraction, multiplication and division of numbers in standard form.	Powers and roots of numbers in standard form. Problem solving of numbers in standard form involving all operations.

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ALGEBRA						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Algebraic Representation	Terminology & Notation: Define & Identify Constant, Variable, Term, Like Terms, Numerical Coefficient, Expression & Equation Writing basic expressions: Sums, differences, products, & quotients. Writing simple equations involving one operation.	Translate English phrases into algebraic expressions and vice versa: up to two operations without brackets. Translate English sentences into algebraic equations.	Translate/write/create algebraic expressions with brackets. Translate/write/create algebraic equations with brackets.	Translate/write/create expressions with more than two operations, including brackets and powers. Translate/write/create equations with more than two operations, including brackets	Translate/write/create expressions and equations with two variables. Translate/write/create expressions and equations with powers of the variable.	Translate/write/create expressions and equations with one or two variables and powers of the variable(s).

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ALGEBRA						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Basic Algebraic Operations	Operating on terms, each with one symbol: Adding & Subtracting like terms Multiplying & Dividing terms Simplifying expressions by collecting like terms.	Operating on terms, involving two or more symbols and powers. Simplify expressions by collecting like terms including terms with powers.	Identify expressions that can be simplified by collecting like terms. Multiply and divide monomials without powers. Multiply and divide monomials by expanding powers.	Use addition, subtraction, multiplication and division to simply expressions.		
Exponents/Indices/Powers	Squares, cubes and other powers of variables.	Identifying the base and exponent in algebraic expressions. Rewriting expressions involving powers.	Discover and apply the laws of indices for multiplying and dividing powers of the same base. (Constant and variable bases and natural number exponents).	Discover and apply laws of definitions for zero and negative integer exponents. Discover and apply laws of indices: product, quotient, power (power of a product, power of a quotient, and power of a power).	Discover and apply definitions for fractional exponents. Apply laws of indices Solve simple exponential equations.	Solve exponential equations using laws of indices.

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ALGEBRA						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Substitution	Evaluate algebraic expressions and formulae by substituting whole numbers for symbols.	Evaluate algebraic expressions and formulae by substituting integers for symbols.	Evaluate algebraic expressions and formulae by substituting rational numbers for symbols.	Evaluate algebraic expressions and formulae by substituting real numbers for symbols (including powers & roots).	Evaluate algebraic expressions and formulae by substituting real numbers for symbols (including fractional exponents).	
The Distributive Property	Verify the distributive property using natural numbers. Multiplying a sum by a natural number.	Multiplying sums and differences by integers and variables.	Expanding products and collecting like terms to simplify expressions.	Find the product of two binomials expressions using the distributive property and/or FOIL.	Identify the pattern for the product of two binomial expressions where the coefficient of the variable is one, the perfect square and the difference of two squares.	Identify the pattern for the product of two binomial expressions where the coefficient of the variable is not one, the perfect square and the difference of two squares.
Factorization	Rewriting numerical sums and differences as products.	Rewriting sums and differences of simple algebraic term as products.	Identifying factors of monomials to determine the H.C.F. Factoring simple binomials using the H.C.F.	Determine the H.C.F. of the algebraic terms/monomials Factorizing algebraic expressions using the highest common factor	Factorize algebraic expressions by grouping. Factorize quadratic expressions of the form $x^2 + bx + c$ Difference of two squares of the form $x^2 - k^2$	Factorize quadratic expressions of the form $ax^2 + bx + c$ Difference of two squares of the form $a^2x^2 - b^2y^2$

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ALGEBRA						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Factorization <i>cont'd</i>	Rewriting numerical sums and differences as products.	Rewriting sums and differences of simple algebraic term as products.	Identifying factors of monomials to determine the H.C.F. Factoring simple binomials using the H.C.F.	Determine the H.C.F. of the algebraic terms/monomials Factorizing algebraic expressions using the highest common factor	Factorize algebraic expressions by grouping. Factorize quadratic expressions of the form $x^2 + bx + c$ difference of two squares of the form $x^2 - k^2$	Factorize quadratic expressions of the form $ax^2 + bx + c$ difference of two squares of the form $a^2x^2 - b^2y^2$
Algebraic Fractions		Multiplying and dividing simple algebraic fractions.	Add and subtract algebraic fractions with constant and variable denominators. Multiplication and division of algebraic fractions with monomial numerators and denominators	Find the L.C.M of Monomials. Add and subtract algebraic fractions with monomial denominators. Multiplying and dividing algebraic fractions with monomial numerators and denominators by expanding powers.	Find the H.C.F. of binomials and trinomials. Simplify an algebraic fraction by factoring its numerator and denominator and eliminating the common factor(s). Multiplying and Dividing Algebraic fractions	Find the L.C.M of Binomials and trinomials. Add and subtract algebraic fractions with binomial and trinomial numerators and denominators.

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Equations	The idea of simple linear equations. Create one step linear equations from word problems and solve by inspection. Solve one-step equations involving: addition, subtraction, multiplication, division using inverse operations, and balancing equations. Use one-step linear equations to solve word problems.	Solve two step equations. Solve simple linear equations involving brackets and equations with variables on both sides. Use two-step linear equations to solve word problems.	Review solution of simple linear equations involving brackets and equations with variables on both sides. Use linear equations to solve word problems.	Solve word problems using simple linear equations involving brackets and variables on both sides. Solve fractional equations with constant, variable and monomial denominators.	Solve simultaneous linear equations algebraically. Problem solving involving simultaneous linear equations. Solving $x^2 = k$ Solve quadratic equations given in the general form $ax^2 + bx + c = 0$, by factorization. Solve quadratic equations given in the general form $ax^2 + bx + c = 0$, by formula. Problem solving involving quadratic equations.	Solving linear-quadratic simultaneous equations Solve quadratic equations given in the general form $ax^2 + bx + c = 0$, by factorization. Solve quadratic equations given in the general form $ax^2 + bx + c = 0$, by formula. Understand that the discriminate, $b^2 - 4ac$, determines the type of solution of the quadratic equation $ax^2 + bx + c = 0$

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CONCEPTS/ TOPICS	7	8	9	10	11	12
Transposition of Formulae		Change the subject of simple formulae with one operation.	Change the subject of simple formulae with no more than two operations and the subject appearing once.	Change the subject of formulae, including squares and square roots, cubes, and cube roots and the subject appearing once.	Change the subject of formulae, including squares and square roots, cubes, and cube roots and the subject appearing more than once.	Change the subject of formulae including powers and roots and the subject appearing more than once.
Inequalities	Identify the solution sets of simple inequalities. Represent the solution sets of simple inequalities on the number line.	Describe and interpret sets of integer using inequality symbols.	Translating English phrases to inequalities and vice versa. Describe and interpret sets of real numbers using inequality symbols. Solving simple linear inequalities involving one operation. Illustrate the solution set on the number line. Graphing simple inequalities in the Cartesian plane.	Solving linear inequalities. Illustrate the solution set on the number line. Graphing linear inequalities in two variables.	Solve problems involving inequalities. Graphing systems of linear inequalities.	Graphing systems of linear inequalities. Describing shaded regions using systems of linear inequalities. Deriving linear inequalities that define shaded regions on a coordinate plane.

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CONCEPTS/ TOPICS	7	8	9	10	11	12
Sets & Venn Diagrams	Define a set. Use upper case letters to name sets. Use set braces (curly brackets, $\{ \}$) to indicate a set. List the elements of sets when given precise English descriptions of the sets. Identify descriptions that do not describe unique sets. Describe a set using words that indicate precisely which elements belong to the set.	Define and identify proper and improper subsets of given sets Identify and use the following symbols: $\subset$ is a proper subset of $\not\subset$ is not a proper subset of $\subseteq$ is a proper or improper subset of $\not\subseteq$ is not a proper nor improper subset of List all the subsets of sets with up to four elements. Show that the formula 2^n (where n is the number elements in a set) can be used to calculate the total number of different subsets for a given set.	Define and identify Equal and Equivalent sets. Define, identify and determine Complements of sets that are subsets of given universal sets. Define, identify, and determine unions and intersections of two sets. Draw Venn diagrams to illustrate up to two sets that are subsets of a given universal set.	Identify and use set language and notation for the following: - Set braces - Set names - Set membership - Number of elements in a set - The Empty set - Complement of a set - The Universal set - Is a proper and/or improper subset - Union and intersection - Finite and infinite sets - Equal and equivalent sets - Set builder notation	Use Venn diagrams to show relationships between three sets within a universal set Use set notation to describe and shade regions in Venn diagrams with up to three subsets of the universal set. Read, interpret, draw, and use Venn diagrams to solve problems involving up to three subsets of a universal set. Read, interpret, draw and use Venn diagrams to solve problems involving up to two subsets of the universal set.	Apply formulas or use Venn diagrams to determine cardinal numbers of complements, unions, and intersections of sets. Draw Venn diagrams and apply algebraic techniques to solve problems involving up to three subsets of a universal set.

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Sets & Venn Diagrams <i>cont'd</i>		Draw Venn diagrams to illustrate sets and the relationship between two sets. Draw, shade and use Venn diagrams to determine unions and intersections of two sets. Read and interpret Venn diagrams showing cardinal numbers for up to three sets	Draw, shade and Use Venn diagrams to determine complements of sets, unions, and intersections of two sets. Draw and use Venn diagrams to solve simple problems involving universal sets that have one or two subsets.	Draw Venn diagrams to show relationships between two sets within the universal set. Use set notation to describe and shade regions in Venn diagrams with up to two subsets of the universal set. Read, interpret, draw and use Venn diagrams to solve problems involving up to two subsets of the universal set.		
Patterns, Relations and Functions	Define and recognize a relation. Describe a relation in words. Use arrow diagrams and sets of ordered pairs to represent relations.	Identify the domain and range of a relation from an arrow diagram or a set of ordered pairs.	Use tables, equations and graphs to represent relations.	Define a relation and describe types of relations. Draw and use arrow/mapping diagrams.	Define a function Use function notation. Evaluating functions	Determine the inverse of a one to one function. Determine and evaluate composite functions

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CONCEPTS/ TOPICS	7	8	9	10	11	12
Patterns, Relations and Functions <i>cont'd</i>		Identify the different types of relations: one to one, many to one and one to many. Identify types of relations from arrow diagrams.		Describe the relationship between two sets of numbers or identify the rule in a given mapping diagram.	Find the corresponding domain element given the range element.	
Coordinate Geometry & Graphs	Graphing and Identifying points in the Cartesian plane, integer coordinates only. Graphing and identifying horizontal and vertical lines. Determining lengths of horizontal and vertical line segments.	Construct/complete table of values for a linear function. Graphing lines from a table of values, integer coordinates only.	Construct/complete table of values for a linear function. Graphing lines from a table of values, including rational coordinates.	Construct/ complete tables of values for linear ($y = ax + b$), quadratic ($y = \pm x^2 + bx + c$) and simple reciprocal ($y = \frac{a}{x}$), functions. Draw, identify and interpret the graphs of linear, quadratic and simple reciprocal functions. Determine whether a point lies on a graph with a given equation.	Find the gradient/slope of a straight line (a) By drawing a triangle to determine rise over run (b) Using the coefficient of x when the equation is written in the form $y = mx + c$ (c)	Construct/comple te tables of values for quadratic functions of the form $y = ax^2 + bx + c$ Draw, identify and interpret the graphs of such functions. Determine the features of a parabola from its graph and its equation.

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Coordinate Geometry & Graphs <i>cont'd</i>				Use the equation of a line to determine the x and y intercepts and sketch its graph.	(c) Using the coordinates of two points on the line $m = \frac{y_2 - y_1}{x_2 - x_1}$ Gradients of parallel and perpendicular lines Determine the equation of a line given (a) The gradient and y – intercept (b) Two points on the line (c) The graph of the line. Use the slope and the y-intercept to graph a line. Use graphical method to solve systems of linear equations.	Estimate the gradient of a curve at a given point by drawing a tangent at the point. Use the graphs to solve, or estimate the solutions of, associated equations.
Differentiation						Find the derivative of a function. (use of the rule $dy/dx = anx^{n-1}$ for $y = ax^n$) Derivatives of constant and linear functions

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CONCEPTS/ TOPICS	7	8	9	10	11	12
Differentiation <i>cont'd</i>						Differentiating polynomial and other functions involving rational exponents. Calculate the gradient of a curve at a given point. Find the coordinates of a point where a curve has a given gradient. Calculate the maximum and minimum values of a function at turning points. Calculate the maximum and minimum values of a function at turning points. Derive the equation of a tangent line at a point on a curve.
Matrices				Use matrices to display data and solve problems. Identify and define types of matrices.	Multiply a row matrix by a column matrix Multiplying a square matrix by a column matrix.	Identify the operations that are similar to the properties of matrix operations that are similar to the properties of real numbers.

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CONCEPTS/ TOPICS	7	8	9	10	11	12
Matrices <i>cont'd</i>				State matrix size/order and position of elements. Determine the compatibility of two matrices for addition and subtraction. Add and subtract matrices. Multiply by a matrix by a scalar. Solve simple matrix equations involving addition, subtraction, and scalar multiplication.	Multiplying compatible matrices. Verify the associative laws for matrix addition and multiplication. Solving matrix equations involving the multiplication of two matrices.	The identity matrix for matrix multiplication and inverse matrices. Find the determinant and the inverse of a non-singular matrix square matrix. Identify singular matrices. Use an inverse matrix to solve a matrix equation for an unknown matrix. Use matrices to solve simultaneous equations.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Geometric Terminology & Notation	Define and Identify: - Plane - Plane figure - Point - Line - Line segment - Ray - Angle - Vertex - Space - Space figure - Types of Lines in a plane: - Intersecting - Perpendicular - Parallel Use 3 letters or a single letter to name an angle. Recognize physical examples of geometric objects.	Define and identify Complementary and supplementary angles. Define and identify angles at a point.	Define and identify adjacent angles and vertically opposite angles. Define and identify angles formed by parallel lines and a transversal: corresponding angles, alternate angles, co-interior angles.	Review basic geometrical terms: (point, line, plane, angle, angle types, parallel, perpendicular, etc.). Define bearings Define compass direction, bearings from north/south and three figure bearings.	Three figure bearings involving a change of direction Define back (reverse) bearings.	Define space Define and identify: Lines in space: - intersecting - perpendicular - parallel - skew Angle between two planes Angle between a line and a plane Normal lines Oblique lines

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Angle Properties	Describe and draw different types of angles as fractions of a revolution: • Revolution • Right • Straight • Acute • Obtuse • Reflex Define a degree Identify the different types of angles based on their degree measure. Recognize physical examples of angles. Draw and measure angles less than 180 degrees with a protractor and straight edge.	Review Measure and draw angles using a protractor and straight edge. Draw and determine the measure of a reflex angle. Determine complements and supplements of angles. Calculate the size of a missing angle at a point.	Identify and determine vertically opposite and adjacent angles. Identify and determine angles formed by parallel lines and a transversal – corresponding angles, Alternate angles, co-interior angles. Determine missing Adjacent complementary and adjacent supplementary angles	Sketching the position of one point from another using compass direction, bearing from north/south and three figure bearings. Determining the compass direction, north/south bearings and three figure bearings of one point relative to another from a diagram. Describe and apply angle properties related to: • Complementary & supplementary angles. • Angles on a line • Angles at a point • Vertically opposite angles • Angles between parallel lines and a transversal.	Sketching diagrams involving bearing from at least two points using compass direction, bearings from north/south and three figure bearings. Determine back (reverse) bearings using compass direction, bearings from north/south and three figure bearings.	Describe and identify relationships between lines, planes, lines in planes.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Polygons: Triangles, Quadrilaterals and Other Polygons	Define polygon Identify and name polygons with up to ten sides Classify triangles according to angles and sides Angles: Acute, Right, Obtuse Sides: Scalene, isosceles, equilateral Classifying quadrilaterals according to angles and sides • Parallelogram • Rhombus • Rectangle • Square • Trapezium/trapezoid • Kite	Informally prove that the sum of the interior angles of any triangle is equal to 180°. Determine the size of a missing interior angle of a triangle. Properties on equilateral and isosceles triangles. Informally prove that the sum of the interior angles in any quadrilateral is equal to 360°. Determine the size of the missing interior angle of a quadrilateral.	Define an exterior angle of a polygon. Recognize that adjacent interior and exterior angles are supplementary. Informally prove that an exterior angle of a triangle is the sum of the remote interior angles. Informally prove that the sum of the exterior angles of any triangle and any quadrilateral is 360° Determine the size of missing angles of triangles and quadrilaterals.	Describe and use the properties of triangles and quadrilaterals. Identify and name polygons up to 12 sides Informally prove that the sum of the exterior angles of any polygon is 360° Determine the sum of the interior angles of polygons.	Define a regular polygon Define and identify isosceles trapezium/trapezoid. Determine the size of an interior angle in a regular polygon Define a tessellation and determine which regular polygons tessellate the plane Properties of isosceles trapezium/trapezoid Use interior and exterior angle properties of to solve problems involving regular or irregular polygons.	Define and identify convex and non-convex (re-entrant) polygons. Problem solving involving convex and non-convex polygons.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Circles	Define a circle Define and identify parts of a circle: • Centre • Radius • Diameter • Circumference • Arc • Chord Explain the relationship between radius and diameter. Discover Pi as the ratio of a circle's circumference to its diameter. Determine the diameter given radius and vice versa	Define and identify parts of a circle: • Centre • Radius • Diameter • Circumference • Arc • Chord • Quadrant • Semi-circle	Define and identify parts of a circle: • Centre • Radius • Diameter • Circumference • Arc • Chord • Quadrant • Semi-circle • Sector • Segment	Define and identify parts of the circle - major and minor arcs, segments, and sectors - tangents. Drawing and measuring angles formed by chords or arcs: at centre and at circumference, at circumference in a semi-circle, at the circumference in the same segment. Drawing and measuring angles between tangents and radius, angles in cyclic quadrilaterals. Discover the relationships between angles subtended by chords or arcs. Discover the relationship between angles formed in circles.	Draw and measure angles to verify circle theorems. Apply circle theorem to find the size of angles: • At centre & circumference • At the circumference in a semicircle • In the same segment. • Between tangents and radius • In a cyclic quadrilateral.	Draw and measure angles between tangents and chords. Determine that the angle between a tangent and a chord is equal to the angle the chord forms in the alternate segment. Determine that the angle between a tangent and a chord is half the angle the chord subtends at the centre. Determine that from any point outside a circle just two tangents to the circle may be drawn and they are of equal lengths.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Constructions & Scale Drawings	Construct circles of given radii and diameters using a pair of compasses.	Bisect line segments and angles using straight edge and compasses.	Construct and bisect angles of 60° and 90° . Construct triangles given: (1) One side and two angles (2) Two sides and an angle. (3) Three sides including equilateral	Use a pencil, ruler and a pair of compasses only to construct: 90° angle at a point and 120° angles - Perpendicular bisector - A perpendicular from a point to a given line. - Construct triangles - Draw given diagrams of simple geometrical shapes to scale.	- A line through a point, parallel to a given line. - Construct quadrilaterals. - Draw or construct scale diagrams involving bearings	- Construct polygons. - Draw or construct scale diagrams involving bearings

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Solid Shapes	Identify and describe common solids shapes. • Cubes • Cuboids • Spheres • Cylinders • Cones • Prisms • Pyramids Recognize the nets of common solid shapes. Draw nets and make cubes and cuboids. Explain the similarities and differences between cubes and cuboids. State the number of faces, vertices and edges of cubes and cuboids.	Recognize the nets of common solid shapes. Draw nets and make cubes, cuboids, cylinders and cones. Recognize the nets of prisms and pyramids. Make pyramids and prisms from nets. Determine the number of faces, vertices and edges of prisms and pyramids. Discover Euler's formula for prisms and pyramids.	Recognize the nets of platonic solids. Determine the number of faces, vertices and edges of platonic solids. Make platonic solids from nets. Verify that Euler's formula holds for platonic solids.	Identify and sketch nets of cubes, cuboids, cylinders and other solids.	Identify and sketch nets of prisms and solids of uniform cross-section. Sketch cubes, cuboids, cylinders, and other solids of uniform cross-section.	Identify and sketch nets of pyramids and cones. Sketch cubes, cuboids, cylinders, and other solids.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Similarity and Congruency	Define and recognize congruent figures.	Define and recognize similar figures.	Define and recognize congruent and similar figures. Determine the ratio of corresponding sides in similar figures	Define and recognize congruent and similar figures. Determine the ratio of corresponding sides in similar figures.	Identify and state properties of (a) Similar triangles (b) Congruent triangles (SSS, SAS, ASA, AAS, RHS) Use the properties of similar and congruent triangles to find the measure of missing sides and angles.	Determine the ratio of corresponding sides/area/volume of similar objects. Find: (a) the length of sides. (b) the area (c) volume of similar shapes and objects.
Vectors				Definition and notation Represent vectors as directed line segments and as column matrices Identify types of vectors: equal, parallel and opposite vectors. Add and subtract vectors Multiply vectors by scalar quantities.	Calculate the magnitude and determine the direction of a vector. Use the position vectors of a point relative to the origin. Unit vectors Express a vector as the sum or difference of two vectors.	Use the properties of vectors to determine the geometrical relationships between line segments. Identify the properties of vectors operations that are similar to the properties of real numbers. Express vectors in terms of other related vectors.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Transformations & Symmetry	Define transformation Define reflection and mirror line Recognize and draw reflections in horizontal and vertical lines. Define line/reflective symmetry and the axis of symmetry Recognize and draw lines of symmetry so that a given horizontal/vertical line is the axis of symmetry. Complete a shape so that a given horizontal or vertical line is the axis of symmetry.	Recognize and draw reflections. Recognize and draw all the lines of symmetry in a given shape. Define rotation Recognize rotations of 90° and 180° clockwise and anticlockwise about a given point. Complete a shape so that a given line is the axis of symmetry.	Identify and draw reflections in the x-axis, y-axis and horizontal/vertical lines. Recognize and draw lines of symmetry of shapes in the Cartesian plane. Identify rotations about the origin. Define and identify translations. Describe the movement of a shape under translation Translate objects given the description of the movement.	Determine the properties of reflections. Identify reflections and reflect shapes in the Cartesian plane in the x-axis, y-axis and horizontal/vertical lines. Recognize and complete shapes with reflective symmetry. Identify rotations and rotate objects about the origin through multiples of 90° clockwise and anticlockwise.	Identify the properties of each type of transformation. Identify, describe fully, and perform the following transformations: • Reflections in the x-axis, y-axis and horizontal/ vertical lines. • Rotations about the origin through multiples of 90°, clockwise and anticlockwise. • Translations using column vectors • Enlargements centered at the origin, with natural number scale factor. Recognize shapes that have both line symmetry and rotational symmetry.	Identify, describe fully and perform the following transformations: • Reflections in lines inclined 45° to the axes. • Rotations about any point, through multiples of 90°. • Translations using column vectors. • Enlargements centered at any point, including fractional and negative scale factors. Define point symmetry. Recognize shapes with point symmetry. Deduce the order of rotational symmetry in shapes that have point symmetry.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Transformations & Symmetry <i>cont'd</i>		Complete a shape so that given horizontal and vertical lines are both axes of symmetry.	Complete a shape so that the x-axis, y-axis or a given horizontal or vertical line is the axis of symmetry. Complete a shape in the Cartesian plane so that the x-axis and y-axis or given horizontal and vertical lines are both axes of symmetry.	Define rotational symmetry and order of rotational symmetry, whole number scale factor. Recognize shapes with rotational symmetry and determine the order of rotational symmetry Complete a shape given its order of rotational symmetry. Recognize and perform a translation through a given vector. Develop the concept of enlargement. Enlargement from the origin by a positive.	Deduce the relationship between the number of lines of symmetry and the order of rotational symmetry of regular polygons. Complete shapes that have both reflective and rotational symmetry.	

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Trigonometry				Standard notation for labeling vertices, sides and angles of right triangles. Verify the Pythagorean theorem in given right triangles. Apply Pythagoras' theorem to find a missing side in a right triangle.	Definitions and notations for the sine, cosine and tangent ratios of acute angles in right triangles. Use a scientific calculator to find: • Trigonometric ratios of acute angles. • Acute angles with given trigonometric ratios. Determine the sine, cosine and tangent of acute angles in right triangles. Use the sine, cosine or tangent ratios to calculate the length of a side or the size of an angle of a right triangle.	Use a scientific calculator to find the values of trigonometric ratios for θ such that $0^\circ \leq \theta \leq 360^\circ$. Find two values for θ, $0^\circ \leq \theta \leq 360^\circ$ that are solutions of basic trigonometric equations. Verify the sine rule and the cosine rule in given triangles. Use sine and cosine rules to find missing sides and angles in oblique triangles. Use the sine and cosine rules to solve problems involving lengths/distances, angles of elevation/depression and bearings.

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GEOMETRY & SPATIAL SENSE						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Trigonometry <i>cont'd</i>					Use trigonometric ratios to solve problems involving lengths/distances, angles of elevation/depression and bearings.	Use one of the following formulas to find the area of a triangle: - Given the base and the altitude, $A = \frac{1}{2} \times \text{base} \times \text{height}$ - given the three sides, $A = \sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{1}{2}(a+b+c)$ - Given two sides and the included angle $\text{Area} = \frac{1}{2} ab \sin C$ $\text{Area} = \frac{1}{2} ac \sin B$ $\text{Area} = \frac{1}{2} bc \sin A$ Solve problems in three dimensions, including angle between a line and a plane.

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MEASUREMENT						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Units of Measurement	Define length, mass and capacity Define and determine benchmarks for imperial units of length, mass and capacity. Estimate and measure lengths using appropriate imperial units. Estimate mass and capacity using appropriate imperial units. Converting between imperial units of length, mass and capacity. Define and determine benchmarks for metric units of length, mass and capacity.	Convert units of time Adding and subtracting mixed units of time. Convert 12-hour time to 24-hour and vice-versa. Calculating elapsed time Problem solving involving calendars, schedules and time duration. Comparing temperatures in degrees Fahrenheit and Celsius. SPEED: Define and calculate average speed.	Converting between metric units of length, mass and capacity. Problem solving involving 12-hr and 24-hr time. Reading schedules Problem solving involving elapsed time. Interpret travel and conversion graphs. Converting from degrees Fahrenheit to degrees Celsius and vice versa.	Adding and subtracting mixed units of time. Calculating start time, elapsed time and end time.	Draw and interpret travel and conversions graphs. Draw and interpret distance-time speed-time graphs	Draw and interpret speed-time and distance-time graphs.

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MEASUREMENT						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Units of Measurement <i>cont'd</i>	Estimate and measure lengths using appropriate metric units. Estimate mass and capacity using appropriate metric units. Converting between metric units of length, mass and capacity. Use rough equivalents to convert between imperial and metric units of capacity Define and convert between units of time. Reading calendars and schedules Read and illustrate time on the 12-hour and 24-hour clocks Elapsed time on the 12-hour clock. Reading thermometers marked in degrees Fahrenheit and/or Celsius.					

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MEASUREMENT						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Perimeter and Area	Define perimeter Calculate perimeter of polygons. Discover Pi as the ratio of a circle's circumference to its diameter Deduce an equation relating the circumference and diameter of a circle. Define area Determine area by counting squares. Calculate area of squares, rectangles and triangles.	Calculate perimeters of simple compound shapes involving squares, rectangles and triangles. Explore the value of pi. Calculate the circumference of circles. Apply formulas for areas of squares, rectangles, triangles and parallelograms.	Apply the formula for area of circle given the radius or the diameter. Include problems with semi-circles and quadrants. Apply the formula for computing the area of a trapezium. Calculate areas of borders including determining missing lengths. Calculate the perimeter and area of compound shapes composed of rectangles, triangles, parallelograms trapeziums and circles. Define surface area. Calculate the surface area of cubes and cuboids	Perimeters and areas of compound shapes, including semi-circles and quadrants. Calculate surface areas of cubes, cuboids and cylinders. Converting between metric units of area	Solve problems involving perimeters and areas of triangles, quadrilateral, circles and compound shapes. Solve word problems involving surface areas of cubes, cuboids, cylinders, prisms and other solids with uniform cross-sections. Converting between metric units of area	Calculate arc length and area of a sector. Calculate the area of segments. Surface area of spheres pyramids and cones. Converting between metric units of area

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MEASUREMENT						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Volume/ Capacity	Define volume Determine volume of cubes	Determine volume of cubes and cuboids.	Understand the difference between volume and capacity Define litre Calculate the capacity of containers that are cubes and cuboids. Converting cubic units and litres.	Volumes and capacity of cubes, cuboids and cylinders. Converting between metric units of volume	Solve word problems involving volumes and capacity of cubes, cuboids, cylinders, prisms and other solids with uniform cross-sections. Converting between metric units of volume	Volume and capacity of sphere, pyramids and cones Solve word problems involving volume and capacity. Converting between metric units of volume

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STATISTICS AND PROBABILITY						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Collecting, Organizing, and Analyzing Data	Read and interpret tables, pictograms, vertical and horizontal bar charts, line graphs, and pie charts.	Define and calculate mean, median, mode and range of a data set.	Interpret, select and draw an appropriate type of graph to display data.	Define and explain the terms: data, raw data, and qualitative (categorical) data and quantitative (numerical): discrete and continuous data.	Define and explain the terms: data, frequency table, class, lower/upper class limits, lower/upper class boundary, class interval, mid-point, class width.	Construct and use cumulative frequency tables to estimate the mean, median and mode of grouped data.
	Define and identify raw data: categorical and discrete numerical.	Solve problems involving mean, median, mode and range.	Calculate mean, median, mode and range from a set of data displayed in an ungrouped frequency table.	Construct grouped and ungrouped frequency tables from secondary data.	Construct grouped and ungrouped frequency tables from secondary data.	Draw cumulative frequency curves (ogives).
	Conduct simple surveys to collect categorical and numerical data.	Define and collect categorical discrete and continuous numerical data.	Determine the modal interval and the interval containing the median from a grouped frequency table.	Draw histograms and frequency polygons from ungrouped frequency tables	Estimate median, upper and lower quartiles as well as interquartile range from cumulative frequency curves.	
	Organize raw data (categorical and numerical) using tally charts.	Use tally charts and frequency tables including intervals to organize primary and secondary data.		Interpret histograms and frequency polygons of ungrouped data.	Draw histograms and frequency polygons from grouped and ungrouped frequency tables	Estimate percentiles (multiples of 10, the 25 th and 75 th) from cumulative frequency curves.
	Representing data using frequency tables, vertical and horizontal bar graphs,	Draw and interpret pictograms, vertical and horizontal bar charts, line graphs.			Interpret histograms and frequency polygons of grouped and ungrouped data.	
		Define and construct pie charts.				
		Read and interpret pie charts.				

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STATISTICS AND PROBABILITY						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Collecting, Organizing, and Analyzing Data <i>cont'd</i>	Draw bar charts, and pictograms to display data.			Calculate the measures of central tendency (mean, median, mode) and range from ungrouped frequency tables.	Estimate the measures of central tendency (mean, median, and mode) and the range from grouped and ungrouped frequency tables Calculate the measures of central tendency (mean, median, mode) and the range from a frequency distribution of ungrouped and grouped data. Make deductions about data, given one or more measures of central tendency and the range. Construct and interpret histograms from equal and unequal intervals.	

THE MINISTRY OF EDUCATION CURRICULUM DIVISION
SCOPE AND SEQUENCE
JULY 2019

STATISTICS AND PROBABILITY						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Probability	Define and explain the terminology associated with probability: experiment, outcomes, event, chance, likely, unlikely, certain, impossible, odds. Assign a value from 0 to 1 for the likelihood of given events. Identify values that represent probabilities. Determine the set of all possible outcomes for the following experiments with equally likely outcomes: tossing a coin, rolling a die, selecting/drawing a letter/number/object from a set of letters/numbers/ objects, spinning a spinner.	Express probabilities of single events as common fractions, decimals, and percents. Determine the probability that an event does not happen. Deduce the following relationship for complementary events: $P(\text{event A happens}) + P(\text{event A does not happen}) = 1$ Calculate the probability that an event does not happen using: $P(\text{event A does not happen}) = 1 - P(\text{event A happens})$	Distinguish between Experimental and Theoretical Probabilities. Compare experimental and theoretical probabilities for the following experiments: tossing a coin, rolling a die selecting/drawing a letter/number/object from a set of letters/numbers/objects, spinning a spinner.	Determine probabilities of single events and their complements, writing results as a fraction, decimal or percent. Constructing tables to represent possibility spaces and determine probabilities from them. Multiply probabilities of single events to calculate probabilities of compound events: $P(A \text{ and } B) = P(A) \cdot P(B)$ Compare probabilities obtained possibility spaces with those obtained by multiplying.	Draw and interpret 2 stage probability tree diagrams for the following experiments: tossing two coins, rolling a pair of dice, selecting/drawing letters/numbers/objects from two sets of letters/numbers/objects, tossing a coin twice, rolling a die twice, spinning a spinner twice, tossing a coin and rolling a die, etc. Apply the sum and product laws. $P(A \text{ or } B) = P(A) + P(B)$ $P(A \text{ and } B) = P(A) \cdot P(B)$	Determining if given events are: (a) mutually exclusive, (b) independent, (c) dependent. Determine conditional probabilities when drawing without replacement. Draw and interpret tree diagrams with more than 2 branches and more than 2 branches per stage and at most three stages. Solving word problems involving selecting/drawing objects with or without replacement.

THE MINISTRY OF EDUCATION CURRICULUM DIVISION
SCOPE AND SEQUENCE
JULY 2019

STATISTICS AND PROBABILITY						
CONCEPTS/ TOPICS	7	8	9	10	11	12
Probability <i>cont'd</i>	Use the following definition and notation to express probabilities as common fraction: $P(E) = \frac{\text{Number of Event Occurrences}}{\text{Total Number of Observations}}$ Using odds versus probabilities to describe the chances of events occurring.	Use probabilities to estimate the number of times an event is likely to happen when experiments are repeated.	Drawing tables to represent possibility spaces for the following experiments: tossing two coins, rolling a pair of dice, selecting/drawing letters/ numbers/ objects from two sets of letters/ numbers/ objects, tossing a coin twice, rolling a die twice, spinning a spinner twice, tossing a coin and rolling a die, etc. Determining probabilities from tables representing probability spaces.			



COMMONWEALTH OF THE BAHAMAS
MINISTRY OF EDUCATION

SCOPE OF WORK

JUNIOR HIGH SCHOOL MATHEMATICS

GRADES 7 – 9

DEPARTMENT OF EDUCATION
JULY 2019

GRADE

7

SCOPE OF WORK ‘
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
THE REAL NUMBER SYSTEM & NATURAL AND WHOLE NUMBERS	Types of Numbers Identify the set of: a) Natural/Counting numbers b) Whole numbers c) Odd & Even numbers d) Prime and Composite Numbers e) Square, Cube and Triangular numbers. Identify place value of a digit in a given number. Identify that our number system is a base ten system.	The numbers used to count are called the Natural Numbers/ Counting Numbers. 1 is the smallest counting number. The whole numbers are made up of 0 and the set of counting numbers. 0 is the smallest whole number. Integers are the counting numbers, their opposites and zero. Odd Numbers are natural numbers that are not even. Even numbers are numbers that can be divided exactly by 2. A prime number has only two factors, itself and 1. A composite number is a whole number that has factors other than one and itself.	Use the “Sieve of Eratosthenes” to identify prime numbers between 1 and 100. Students will count how many prime numbers are there between 1 and 100. Use a rope and a “Human Number Line” Two students hold the rope at each end. Number cards are passed out to students in the class. Students stand in the correct position on the number line when the command is given (Will the prime numbers stand in position? Will all odd numbers stand in position?) Use base 10 blocks or base 10 strips to represent values of different numbers. Explore the powers of 10 with students by using a place value chart and substitute ten in exponential form for each place. (e.g. ones column 10^0, tens column 10^1 etc.)	The Sieve of Eratosthenes (for Prime numbers) 100 and 200 charts. Decimalize (place-value chart) Success in Maths for the Caribbean Book1	Worksheet where students apply the definition of the types of numbers to integers. Students are given various numbers and have to write yes or no in each blank to tell whether they belong to the category of even, odd, prime, composite, whole natural and integer. Students graph positive and negative numbers on the number line.

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
THE REAL NUMBER SYSTEM & NATURAL AND WHOLE NUMBERS <i>cont'd</i>	Recognize and identify place value up to the million periods. Exponential notation (exponent/index, power, base). Express numbers in expanded form using powers of ten. Write numbers in words and vice- versa. Order and compare whole, natural, integers and rational numbers. Compare and order whole numbers using $<$, $>$ or $=$. Perform calculations using addition, subtraction, multiplication and division.	A square number is the number we get when we multiply a number by itself. Square numbers are numbers, which can be represented by a pattern of dots in the shape of a square. A cube number is the number we get when we multiply a number by itself three times. A triangular number or triangle number are numbers, which can be represented by a pattern of dots in the shape of an equilateral triangle. Our number system is called the decimal system. It is a system of grouping by tens and powers of ten. The place value of a digit is determined by its position in a number.	Use place value chart to determine the value of digits in numbers. Use flash cards with two decks. One deck contains the terms and mathematical symbols for sum, difference, product and quotient. The second deck is a set of digit cards and an operation word or symbol from the first deck. Students must create a number sentence to solve the problem. Complete missing number puzzle. Create a “Math Dictionary”. Students use the math vocabulary and their own definition. Your town landfill is home to a large quantity of discarded plastic bottles. If each student in your class uses five water bottles per week, how many water bottles does your class use in a week? A month? A year? 10 years? 30 years? A life time (80 years)?	Place-value chart Success in Maths for the Caribbean Book 1 STP Caribbean Mathematics Book 1	Test Quiz Worksheets Journal Writing

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
THE REAL NUMBER SYSTEM & NATURAL AND WHOLE NUMBERS <i>cont'd</i>	Identify and use the mathematical terms: sum, difference, product and quotient. Express remainders as fractions. Use multiplication tables from 2 to 12 to solve problems.	Expanded form shows the number expanded into an addition statement. <i>Eg. $376 = 300 + 70 + 6$</i> Exponential (Power) notation is the number of times the base is used as a factor. Expressions written with exponents are called Indices. <i>Eg. 8^3</i> There are various ways to write an ordinary number in expanded form. E.g. Write 26,097 in expanded form using the various form. <i>Using multiples of 1, 10, 100, ...</i> $20,000 + 6,000 + 90 + 7$ <i>Using 1, 10, 100, ...</i> $(2 \times 10000) + (6 \times 1,000) + (9 \times 10) + (7 \times 1)$	If you were to recycle these water bottles instead of throwing them away, estimate how many trash cans full of water bottles you would save from going into the landfill in a week. A month? A year? 10 years? 30 years? A lifetime? Explain how you determined your findings. Complete missing number puzzles. Have students begin in September to create their own “Math Dictionary”. Use math vocabulary words with their own definitions. Encourage them to alphabetize and illustrate. In June, students can bind their books. Give students questions such as, “The sum of two numbers is 50. One number is 27. What is the other number?” Have students explain the meaning of vocabulary terms in their own words in their journal.		Test Quiz Worksheets Journal Writing

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS												
THE REAL NUMBER SYSTEM & NATURAL AND WHOLE NUMBERS <i>cont'd</i>		Using $10^0, 10^1, 10^2, \dots$ $(2 \times 10^4) + (6 \times 10^3)$ $+ (9 \times 10^1) + (7 \times 10^0)$ <table><tr><th>Exponenti al Form</th><th>Expanded Form</th><th>Value</th></tr><tr><td>10^5</td><td>$10 \times 10 \times 10 \times 10 \times 10$</td><td>100,000</td></tr><tr><td>3^4</td><td>$3 \times 3 \times 3 \times 3$</td><td>81</td></tr><tr><td>3^0</td><td>1</td><td>1</td></tr></table>	Exponenti al Form	Expanded Form	Value	10^5	$10 \times 10 \times 10 \times 10 \times 10$	100,000	3^4	$3 \times 3 \times 3 \times 3$	81	3^0	1	1			
Exponenti al Form	Expanded Form	Value															
10^5	$10 \times 10 \times 10 \times 10 \times 10$	100,000															
3^4	$3 \times 3 \times 3 \times 3$	81															
3^0	1	1															
FACTORS AND MULTIPLES	Discover divisibility rules for determining numbers by 2, 3, 5, & 10. List the set of factors of a given number. Write down multiples of a given number. Use indices to write products of repeated factors. Express a number as a product of its prime factors. (Apply divisibility rules)	The factors of a number are those numbers, which divide exactly into the number. Factors are numbers that, when multiplied together, form a new number called product. A multiple of a number is the answer obtained when that number is multiplied by a whole number. Prime factorization of a number is the process of finding the set of prime numbers which multiply together to give the original integer.	Patterns in the hundreds chart for multiples of 2, 3, 5 & 10. Create factor tree for various numbers using construction paper. Division by prime numbers. “Divisibility Path”- use divisibility rules to get through a maze.	Bahamian Mathematics Student Workbook Level A STP Caribbean Mathematics Book 1	Test Quiz Worksheets												

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FACTORS AND MULTIPLES <i>cont'd</i>	Use prime factorization of whole numbers.		Divisibility rules activities. Students list 10 different numbers and tell whether they are divisible by 2, 3, 5, 6 and 10 by writing yes or no.		
DIRECTED NUMBERS	Use directed numbers to recognize opposite situations. Represent integers on the number line. Order and compare integers using the number line. Add and subtract on the number line.	To add integers on the number line, move to the right. To subtract integers on the number line, move to the left.	Practical situations – temperature & tide level. The following is a record of Jerry's change in mass per month: Jan. Lost 4 kg Apr. Gained 2 kg Feb. Lost 2 kg May Gained 1 kg Mar. Lost 3 kg June Lost 2 kg If Jerry's mass was 65 kg before the diet, what was his mass after the 6-month diet?	STP Caribbean Mathematics Book 1 Number Line	Test Quiz Worksheets

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS																																																
FRACTIONS	Define the term fraction	A fraction can be used to name a part of a whole or a part of a set of objects. A fraction has a numerator and a denominator.	Divide shapes into fractional parts.	STP Caribbean Mathematics Book 1	Test																																																
	Graph and locate fractions on a number line				Quiz																																																
	Identify the numerator and the denominator.	The numerator , the top number in a fraction, tells how many equal parts are used	“Equal Fractions Bingo” Fraction Bingo cards. The teacher calls a fraction and students cover the equivalent fraction on the card.	Nelson Caribbean Mathematics Book 1	Worksheets																																																
	Identify types of fractions: proper, improper, mixed.		Find your fractional partner game.		Journal Writing																																																
	Write fractions in words and vice versa.	The denominator , the bottom number in a fraction, tells the number of parts a whole is divided into or the size of each part.	Fraction bars	Success in Maths for the Caribbean Book 1																																																	
	Write a fraction to represent a part of a whole.		Multiplication matrix																																																		
			<table><tr><td>×</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>2</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td></tr><tr><td>3</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td><td>21</td></tr><tr><td>4</td><td>4</td><td>8</td><td>12</td><td>16</td><td>20</td><td>24</td><td>28</td></tr><tr><td>5</td><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td><td>30</td><td>35</td></tr></table>	×	1	2	3	4	5	6	7	1	1	2	3	4	5	6	7	2	2	4	6	8	10	12	14	3	3	6	9	12	15	18	21	4	4	8	12	16	20	24	28	5	5	10	15	20	25	30	35	Fraction blocks/tiles	
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5	5	10	15	20	25	30	35																																														
Write and identify equivalent fractions.	Note: the fraction bar means division.			Fraction BINGO																																																	
Write whole numbers and mixed numbers as improper fractions and vice versa.	The denominator is the number of parts a whole is divided into.		‘Equal Fractions Bingo’ game. Game cards contain fractions on them.																																																		
Reduce fractions to lowest terms.	Proper fractions are less than one whole.		‘Find Your Fractional Partner’ game.																																																		

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>	Order a set of fractions according to magnitude. Compare fractions using the symbols $>$, $<$ or $=$. Add and subtract like and unlike fractions. Add and subtract mixed fractions. Multiply and divide fractions. Multiply and divide mixed numbers. Write the reciprocal of fractions and whole numbers.	Improper fractions are fractions whose numerator is larger than the denominator. Equivalent fractions are fractions that have the same value. A mixed number contains a whole number with a fraction. A fraction in lowest terms means the numerator and denominator have no factors in common. Fractions must be of the same kind (same denominator – use LCD to write equivalent fractions with common denominators) when placing in order and in order to compare the fractions. Fractions are simplified by dividing the numerator and denominator by the Highest Common Factor. The highest common factor is the largest number that evenly divides into the numerator and the denominator.	Write equivalent fractions on cards. Students with a card with an equivalent fraction find their partners. In pairs students use index cards with proper fractions written on them. Each student draws a card and has to add or subtract the two fractions showing the work on paper. Have students write problems and trade with a partner to solve.		Quiz Worksheets End of unit test

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>	Solve problems involving the four rules of fractions.	E.g. $\frac{15}{20}$ (divide the numerator and denominator by their greatest common factor) $\frac{15 \div 5}{20 \div 5} = \frac{3}{4}$ A reduced fraction is an equivalent fraction written in a different form. Cancellation is also a method used to simplify fractions. Cancelling a fraction is finding an equivalent fraction with the smaller numbers. E.g. $\frac{15}{20}$ (divide the numerator and denominator by their greatest common factor) $\frac{15 \div 5}{20 \div 5} = \frac{3}{4}$ Fractions must be rewritten as like fractions (that is, the same denominators) before adding and subtracting.			

SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>		E.g. $\frac{1}{4} + \frac{3}{8}$ (write equivalent fractions with LCM as the common denominator) $\frac{1}{4} \times \frac{2}{2} = \frac{2}{8} \text{ and } \frac{3}{8} \text{ remains the same}$ The fractions can now be added: $\frac{2}{8} + \frac{3}{8} = \frac{5}{8} \text{ so, } \frac{1}{4} + \frac{3}{8} = \frac{5}{8}$ Multiplying Fractions To multiply fractions, - Simplify the fractions if not in lowest terms. - multiply the numerators together for the product numerator and - multiply the denominators together for the product denominator. E.g. $\frac{1}{2} \times \frac{3}{5} = \frac{1 \times 3}{2 \times 5} = \frac{3}{10}$ Dividing Fractions To divide fractions: - Leave the first fraction in the equation alone. - Turn the division sign into a multiplication sign.			

		iii.			
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SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>		iii. Flip the second fraction over (find its reciprocal). iv. Simplify the fractions if not in lowest terms. v. Multiply the numerator (top numbers) of the two fractions together. This result will be the numerator (top portion) of your answer. vi. Multiply the denominators (bottom numbers) of the two fractions together. The result will be the denominator of your answer. vii. Simplify your fraction by reducing it to the simplest terms if possible. E.g. $\frac{1}{5} \div \frac{2}{3} = \frac{1}{5} \times \frac{3}{2} = \frac{3}{10}$ Mixed numbers must be changed to improper fractions before performing multiplication and division.			

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SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>		E.g. $7\frac{1}{3} \div 6\frac{1}{9} = \frac{22}{3} \div \frac{55}{9}$ $\frac{22}{3} \times \frac{9}{55}$ (divide 22 & 55 by 11) (divide 9 & 3 by 3) $= \frac{2 \times 3}{1 \times 5} = \frac{6}{5} = 1\frac{1}{5}$			
DECIMALS	Change fractions with denominators of 10, 100, 1000 to decimals. Graph and locate decimals on a number line. Compare and order decimals. Add and subtract decimals with and without regrouping.	A Decimal is another way to write a fraction. A decimal point separates the whole number part from the fractional part of a number written in decimal form. The digits behind the decimal point represent fractions with denominators of 10, 100, 1000 etc. When comparing decimals compare the digits in the same position in the number. Decimal points must be in alignment when adding or subtracting.	“Decimal Dominoes” Students use dominoes with decimal numbers and decimal names on them. Students match the decimal numbers with the corresponding decimal name. Have students write then solve application	STP Caribbean Mathematics Book 1 Nelson Caribbean Mathematics Book 1 Success in Mathematics Book 1	Quiz Worksheets End of unit test

			problems involving money.		
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DECIMALS <i>cont'd</i>	Multiply and divide decimals by powers of 10. Multiply and divide decimals by whole numbers. Multiply and divide a decimal by a decimal. Solve problems using operations on decimals.	When multiplying decimals or dividing by powers of 10, move the decimal point the number of places according to the power of 10 – right for multiplication and left for division. Multiplying by Powers of 10 (i) $0.49 \times 10 = 4.9$ (Move the decimal point one step to the right (10 has one zero). ii) $0.49 \times 100 = 49$ (Move the decimal point two steps to the right (100 has two zeros). Dividing by Powers of 10 (i) $0.49 \div 10 = 0.049$ (Move the decimal point one step to the left (10 has one zero). (ii) $0.49 \div 100 = 0.0049$ (Move the decimal point two step to the left (100 has two zero). The number of digits after the point is called the number of decimal places. When multiplying a decimal number by a whole number, multiply as with whole numbers and insert the decimal point; the number of decimal places in the answer is the	Calculate each of the following. a. $9.72 + 4.563$ b. $2.94 - 1.97$		

		same as the number of decimal places in the decimal number.			
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DECIMALS <i>cont'd</i>		Examples: Multiply: 12.4×5 $\begin{array}{r} 12.4 \\ \times 5 \\ \hline \end{array}$ Step 1: Multiply as you would with whole numbers. $\begin{array}{r} 12.4 \\ \times 5 \\ \hline 620 \end{array}$ Step 2: Count how many digits you have after the decimal point. Step 3: Place the decimal point in the answer (product) so that the number of decimal places is the same as the number of decimal places in the number being multiplied. $\begin{array}{r} 12.4 \\ \times 5 \\ \hline 62.0 \end{array}$ When multiplying a decimal number by another decimal number, multiply as you would with whole numbers. Count the number of decimal places in each number. Insert the decimal point so that the number of decimal places in the answer is the equal to the sum of the decimal places in the	Without calculating the answer, place the decimal point in the correct position. a. $4.9 \times 5.9 =$ 2891 b. $2.58 \times 0.47 =$ 12126 Multiply each of the following. a. 56×2.7 b. 54×4.5		

		numbers being multiplied. Write in zeros, where necessary to have the required number of decimal places in the answer.			
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DECIMALS <i>cont'd</i>		Divide Decimals by Whole Numbers 1. Multiply the divisor and the dividend by an appropriate power of 10 to make the divisor a whole number. 2. Line up the decimal point in the quotient and divide by the whole number. If there is a non-zero remainder write zeros in the dividend and continue dividing until the remainder is zero, there are repeating digits in the quotient, or the required number of decimal places is obtained.			

ROUNDING, APPROXIMATION & ESTIMATION	Estimate and approximate with whole numbers. Round to the nearest: - Ten - Hundred - Thousand Round numbers and use mental arithmetic skills to estimate answers to addition, subtraction, multiplication and division problems involving whole numbers.	Use the number line to round whole numbers. Discuss why numbers are rounded up versus rounded down. To round a whole number to a given place, look at the digit to the right of that place; if the digit to the right is 5 or greater, round up the digit in the given place by adding 1. If the digit to the right of the given place is less than 5, the digit in the given place remains the same. Replace each digit to the right of the given place with zeroes.	‘Estimation Derby’ Real life creative estimation questions. Round whole numbers to nearest 10, 100 etc.	STP Caribbean Mathematics Book 1 Bahamian Mathematics Student Workbook Level A Success in Maths for the Caribbean Book 2	Test Quiz Worksheets End of Unit Test
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ORDER OF OPERATIONS	Apply BODMAS to evaluate expressions with more than one operation.	Order of Operations is a rule that explains which procedure should be done first. 1. Parentheses (Brackets) 2. Exponents 3. Multiplication and Division <i>All multiplication and division operations are carried out first, from left to right, in the order they occur.</i> 4. Addition and Subtraction <i>All addition and subtraction operations are carried out, from left to right, in the order they occur.</i>	Perform the correct order of operations. Because the shift key of the keyboard did not work, none of the brackets appeared in these problems. If the student has the right answer to both problems, identify where the	Success in Maths for the Caribbean Book 1 www.softschools.com/math/order_of_operations/games/	Quiz Worksheets

			brackets must have been. a. $4 + 6 \times 8 - 3 = 77$ b. $26 - 4 \times 4 - 2 = 18$		
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SCOPE OF WORK
GRADE: 7
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERCENTAGES	Define the word “percent” Identify the (%) symbol. Convert percentages to: (i). fractions in their lowest terms. (ii). decimals	Percent means out of 100, that is, a fraction whose denominator is 100. To convert a percentage to a fraction, write the percentage as a fraction over 100 and reduce/simplify where possible. To convert a percentage to a decimal, divide the percent by 100 (the same as moving the	Convert the following percentages to fractions in their lowest terms: a) 30% b) 75% Convert the following percentages to decimals: a) 25% b) 67%	STP Caribbean Mathematics Book 1 Nelson Caribbean Mathematics Book 1 Bahamian Mathematics Student Workbook Level A	Students complete a table with missing percent, decimals and fraction quantities. Changing fractions to percent worksheet and changing decimals to percent worksheet.

	Solve problems involving percentages. Calculate a percentage of a given quantity. Express one quantity as a percentage of another. Solve simple word problems involving percentages.	decimal point two (2) places to the left. To express one number as a percentage of another, write the first quantity as a fraction of the second. Convert the fraction to a decimal by writing the first quantity as a fraction of the second, and then multiply it by 100%. To calculate a percentage of a quantity, convert the percent to a fraction or decimal and then multiply by the given quantity.	Students use mental math to find 10% and 50% of quantities. Students will see that 50% is half of a quantity. Work word problems including percentages. Express one quantity as a percentage of another.		Students draw up a table of commonly used fractions with equivalent decimal and percentage.
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSUMER MATH	Add and subtract money values. Multiply money values using one- and two-digit whole numbers.	Money is written as a decimal with dollars to the left of the decimal point and cents to the right of the decimal point. Money may be written in several different ways. Cents may be written with the ¢ sign and dollars can be written with the dollar sign (\$). Example: Five dollars and fifty-three cents is written as \$5.53 Adding or subtracting money that is expressed in either dollar or cents just involves adding or subtracting the amounts and placing the proper sign on the answer.	Write money in decimal form. Calculating Bills Finding change from given amounts of money.	Nelson Caribbean Mathematics Book 1 STP Caribbean Mathematics Book 1	Calculate shopping bills

	Divide money values using a single digit. Solve monetary word problems involving the four rules.	Multiplying money follows the same steps as multiplying decimals. Placing the larger factor (the number with more digits) on top, and the smaller factor (the number with less digits) on the bottom makes multiplying easier. Example: Multiply \$ 5.23 by 12 $ \begin{array}{r} \$ 5.23 \\ \times 12 \\ \hline 1046 \\ 5230 \\ \hline \$ 62.76 \end{array} $			
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIO AND PROPORTION	Demonstrate an understanding of the elementary ideas and notation of ratio. Define the term “ratio”. Identify and write ratios in three ways: a:b; a/b; a to b.	Ratio is the relationship between two or more numbers or quantities that have the same units. Ratio are written in three (3) forms: a) as a fraction, E.g. $\frac{3}{4}$ b) using the colon E.g. 3: 4 c) using the word “to” E.g. 3 to 4 To simplify a ratio, you may divide both sides by the highest common factor.	Working in pairs each student will print the full name of their partner with 3 questions that deal with the ratio of the letters in his/her name. Write a ratio on a white board. Give	A Maths Dictionary for CSEC STP Caribbean Mathematics Book 1 Students whiteboard	Equivalent ratio worksheet. End of Unit Test

	Compare quantities using ratio. Express ratio in simplest form (like terms).		your white board to someone in the room. They need to write an equivalent ratio. Keep switching until you have 5 equivalent ratios. Identify different ratios, and ask students to write each ratio using words, a fraction, and a colon.	Fundamental Mathematics for the Caribbean Book 2	
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIO AND PROPORTION <i>cont'd</i>	Write equivalent ratios Use ratios to find missing quantities.	Equivalent ratios are two ratios that express the same relationship between numbers. When ratios are equal, they are said to be proportional. You can find equivalent ratios by multiplying or dividing both sides by the same number. E.g.: Consider the ratio 6 : 4,			

		$\frac{6}{4} = \frac{6 \times 2}{4 \times 2} = \frac{12}{8} \quad (12:8)$ $\frac{6}{4} = \frac{6 \times 3}{4 \times 3} = \frac{18}{12} \quad (18:12)$ $\frac{6}{4} = \frac{6 \times 4}{4 \times 4} = \frac{24}{16} \quad (24:16)$ And so on. All these are equivalent-ratio of $\frac{6}{4}$. If $a : b$ and $c : d$ are two equivalent-ratios, we write $a/b = c/d$			
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SCOPE OF WORK

GRADE: 7

UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
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PROPORTION	Define the term proportion. Identify proportions by comparing cross products. Calculate simple direct proportions using the unitary method. Use ratio and proportion to solve real life problems.	Two quantities are in proportion when corresponding pairs are always in the same ratio. It can be written in two ways: i. two equal fractions, $\frac{a}{b} = \frac{c}{d}$ ii. using a colon, $a : b = c : d$ When two ratios are equal, then the cross products of the ratios are equal, that is, for the proportion $\frac{a}{b} = \frac{c}{d}$ $a \times d = b \times c$ E.g. $\frac{2}{5} = \frac{4}{10}$ $2 \times 10 = 5 \times 4$ $20 = 20$ Two quantities are in direct proportion when one is always the same multiple of the other. Unitary Method: If 5 candies cost 25¢, how much will 7 candies cost? 5 candies cost 25¢ 1 candy cost $25 \div 5 = 5\text{¢}$ Therefore, 7 candies cost $7 \times 5 = 35\text{¢}$	Working in groups use a recipe with whole number amounts, find the amount of each ingredient you would need to serve a. twice as many people, b. half as many people, c. $1\frac{1}{2}$ times as many people etc.	Fundamental Mathematics for the Caribbean Book 3	Use ratio and proportion worksheet as a quiz. “Direct Proportions” worksheet using real life problems.
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SCOPE OF WORK
GRADE: 7
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
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ALGEBRAIC REPRESENTATION	Define and identify the following: • Term • Coefficient • Variable • Constant • Expression • Equation Translate phrases into mathematical sentences and vice versa. Identify types of expressions: monomials, binomials, polynomials	Term: a number, a letter or number and letter combined, to make up an expression. Coefficient: the numerical part of a term. Variable: the letter used to represent an unknown value Constant: the numerical value in an expression. Expression: a collection of algebraic terms connected with arithmetic operations without an equal sign. Equation: two expressions connected by an equal sign. Use letters to represent numbers. Mathematical terms indicate the appropriate operation to be used. Examples: (a) Increase y by 8 $\Rightarrow y + 8$ (b) Double p $\Rightarrow 2 \times p = 2p$	Vocabulary concentration. Students write definitions in their math journals. Students recall the definitions by matching. Students explain the differences between an expression and an equation; a variable and a constant. Group Activity: Students collaborate to complete a cloze exercise. <i>Data Bank</i> 1. John is six years older than Sue. 2. I have nine fewer nickels than dimes. <i>Fill in the blanks.</i> 1. Sue is 39 years old. John age is _____. 2. I have 23 nickels. I have _____ dimes.	Caribbean Maths Connect Book 2 Success in Maths Book 2 Mathematics Plus Grade 7 Bahamian Mathematics Student Workbook Level A	Math Journal End of Unit Test True/false Questions Multiple Choice Questions Mental /Oral Testing Worksheets Discussion with reference to real life situations
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SCOPE OF WORK

GRADE: 7

UNIT: ALGEBRA

SCOPE OF WORK
GRADE: 7
UNIT: ALGEBRA

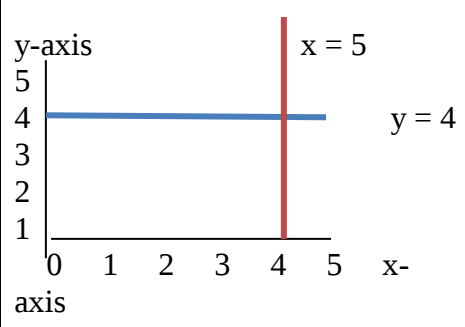
CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
EXPRESSIONS & BASIC ALGEBRAIC OPERATIONS <i>cont'd</i>		Monomial: an expression with one term ($6x$, 23, xy) Binomial: an expression representing the addition or subtraction of two distinct/different terms ($3x - 4z$; $7b + 9$) Polynomial: an expression containing two or more terms ($5x + 7$; $3x^2 + 4x - 7$)	match phrases and expressions. Describe mathematical phrases or sentences. Critical Thinking Question: Mary stacked n pumpkins. Vicky stacked 3 more pumpkins than Maura. Tom stacked 4 more than Vicky. Use an algebraic expression to show the number of pumpkins in the value of n. “Hands on Equations” Students work in groups, interchangeably using values to evaluate a given expression. Make it a game. Who has the most correct answers out of 5? (a) $15m + 20m + 7m$ (b) $9x - 4x + 8y - 5y$ (c) $3a \times 4b$ (d) $6a \div 3$	Mathematics. A Complete Course with CXC Questions Volume 2	Discussion with reference to real life situations
SUBSTITUTION	Calculate the numerical values of algebraic terms and expressions by substituting whole numbers for unknowns.	To evaluate is to find the value of an expression by substituting and replacing the variable with a numerical value and then simplifying.	Write in math journals the distinction between like terms and unlike terms. Use examples to support your responses.	Bahamian Mathematics Student	Math Journal End of Unit Test
EXPRESSIONS & BASIC ALGEBRAIC OPERATIONS	Differentiate between like and unlike terms. Apply the rules of arithmetic to algebra: - combine like terms to simplify expression - multiply and divide terms to simplify	Like terms: groups of terms with the same letters (variables) or powers. E.g. If $N = T + G$, find N when $T = 3$ and $G = 7$. Unlike terms: terms containing different combinations of variables. $N = T + G$ $N = 3 + 7$ $N = 10$ To simplify, write the shortest possible form by adding or subtracting the coefficients of like terms.	Complete an exercise simplifying expressions using the arithmetic operations where appropriate.	Workbook Caribbean Maths Connect Book 1 STP Caribbean Mathematics Book 1	Math Journal Mental /Oral Testing End of Unit Test Worksheets True/False Questions Discussion with reference to real life situations Mental /Oral Testing Worksheets

SCOPE OF WORK

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SUBSTITUTION <i>cont'd</i>			Alphabet Soup – Substitution Each letter of the alphabet is worth an amount of money. Find the value of the fruit by using the value of its letters and then finding the sum. APPLE = (1 + 16 + 16 + 12 + 5)cents		
EQUATIONS	Solve simple linear equations using the four operations. (One-step equations) Develop simple equations to depict and solve word problems.	Isolate the unknown by using inverse operations on both sides of the equal sign. Example: $6x = 36$ $\frac{6x}{6} = \frac{36}{6}$ $x = 6$ Write a descriptive statement using operations on a letter which stands for an unknown number and gives a certain result.	✓ Hands on Equations; Lab Gear; ✓ Flow Charts -Use circular or rectangular pieces of paper to show a pictorial of how to solve equations. ✓ ‘Equations Come True’ Students discuss the concept of balance and how it is used to help to solve equations. Solve: Joe has x marbles and Jane has three times as many. If Jane has 36 marbles, how many does Joe have?	Mathematics Plus Grade 7 Caribbean Maths Connect Book 1 STP Caribbean Mathematics Book 1	Math Journal End of Unit Test Mental /Oral Testing Worksheets

GRADE: 7 UNIT: ALGEBRA

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
COORDINATE GEOMETRY	Identify x and y axes and origin. Number the positive x and y axis. Identify and label points in the Cartesian plane. Plot and read points using the positive quadrant. Draw lines parallel to the x and y axes. Plot and join points to form shapes/figures.	The Cartesian plane is formed using two perpendicular lines. The horizontal line is called the x-axis (with x-values) and the vertical line is called the y-axis (with y-values). The point of intersection of the axes is called the origin. Coordinates are used to locate position on the plane. They are written in the form (x, y). The coordinates (4, 3) indicates movement across the x-axis (4 units to the right from the origin) followed by movement along the y-axis (3 units upwards). A line parallel to an axis is named according to the value on the alternate axis. The line y = 4 is the line drawn through the value 4 on the y-axis and is parallel to the x-axis.	Each student draws a pattern and gives the coordinates to his partner to check to see the correctness of the drawings. “Helping the Detectives” Draw the following lines on the graph provided. 	Graph paper STP Caribbean Mathematics Book 1	Write down the coordinates of the points from the graph. (STP pg. 274) Draw a set of axes and give them scales from 0 to 10. Mark the given points. (STP pg. 274) Identify lines that are parallel and lines that are perpendicular to a given line. $x = 7, y = 7;$ $x = 5; x = -5;$ $y = -7$

		Similarly, $x = 5$ is the line drawn through the value 5 on the x-axis and is parallel to y-axis.			
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SCOPE OF WORK

GRADE: 7

UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
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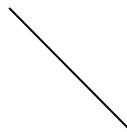
GEOMETRICAL TERMS AND PROPERTIES	Define geometrical terms: ❖ Identify basic geometrical figures of rays, lines, points, line segments and angles. ❖ Identify kinds of line – straight and curve. ❖ Recognize positions of lines and line segment – vertical, horizontal and oblique. ❖ Identify types of lines- parallel, intersecting and perpendicular. ❖ Draw parallel and perpendicular lines. ❖ Define and identify the vertex of an angle.	A point is a position. It has no length, width or height. Points can be used to show the position of towns, buildings or even pinpoints. Points may be represented by dots. A line has no end point. It goes on forever in both directions. It has length, but no width. Straight lines are usually just called lines. Curved lines are usually just called curves. Line Segment is the distance between two points. It represents length but not width. A ray has one endpoint. It goes on forever in one direction only.	1. Take students outside into the community or remain in the classroom and let students make a list of all types of geometric terms and examples of these terms they can find. For example: - Point- center edge of the door - Line segment- edge of the door - Plane- chalkboard - Angle- corner of the desk - Ray- one hand of the clock 2. Identify the following geometrical figures:  (a) (b) (c) (d)	www.quizlet.com Nelson Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1 Merrill General Mathematics www.math-drills.com www.superteacherworksheets.com	Create a geometry dictionary. Journal Writing
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SCOPE OF WORK

GRADE: 7

UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
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GEOMETRICAL TERMS AND PROPERTIES <i>cont'd</i>		A plane is a flat surface that goes on forever in all directions. When two straight lines meet at a point an angle is formed. A vertex is a point where two or more edges meet. Parallel lines are lines in the same plane that do not intersect. They will never meet. Perpendicular lines- intersecting crossing to form right angles. Intersecting Lines - lines that cross at some point.	3. Identify objects in the classroom whose positions can be described as vertical, horizontal or oblique. In relation to the floor for each of the lines drawn, draw another line to produce the types of lines indicated in brackets.  (Parallel) (Perpendicular)  (Intersection)		
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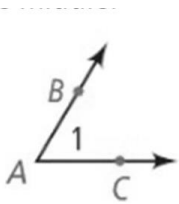
SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLES PROPERTIES	Define, describe, draw and label the different types of angles: ❖ Acute ❖ Right ❖ Obtuse ❖ Straight ❖ Reflex ❖ Use 3 letters or single letter to name the angle such as B or $\angle ABC$. Use a protractor to draw and measure angles which are less than 180° in size.	An angle measures the amount of turn between two lines that are at a point. Angles are measured in degrees. A protractor is used to measure angles. Acute angles are less than 90°. Obtuse angles are greater than 90° but less than 180°. Right angles measure exactly 90°. Straight angles measure exactly 180°. Reflex angles are greater than 180°, but less than 360°.	1. Give students coffee stirrers of straws and pipe cleaners to construct angles. Use the arms to show different sizes of angles. Teacher can demonstrate and ask questions like “Show me a 50°-degree angle” show me an angle that is less than 10 degrees. 2. Instruct students to stand. As the teacher calls out a type of angle, the students should use their body parts to create the angles. Give each group of students a different picture. Students must identify and measure angles in the picture and compare answers. Use the same picture with all groups and rotate pictures, sharing answers with the group or with the class. Students discuss their findings and write results in their journals. Picture sources can be found in local newspapers or in free tourist brochures.	Success in Maths for the Caribbean Book 2 Nelson Caribbean Mathematics Book 1 Mathematics for Caribbean Schools Book 1 Merrill General Mathematics www.math-drills.com www.superteacherworksheets.com STP Caribbean Mathematics Book 1	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations. Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

SCOPE OF WORK

GRADE: 7

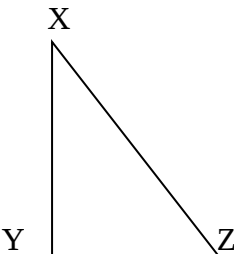
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLES PROPERTIES <i>cont'd</i>		When using three letters to name an angle the letter at the vertex is always placed in the center. Angles are named either with one small letter, $\angle a$, with or three capital letters $\angle BAC$. You can name angles by - The vertex - A point on each ray and the vertex - A number  $\angle A$ $\angle BAC$ $\angle CAB$ $\angle 1$	Give students exercise involving angles. For example: - Draw and label an obtuse angle. - In a journal or test question, students write their own definitions and examples of types of different types of angles.		
TRIANGLES	Classify triangles according to angles and sides.	A triangle is a three-sided polygon whose interior angles add up to 180°. Triangles are classified by either the measurement of their sides or measurement of the angles.	Concentration game using triangle words and shape. Students must turn cards over in order to match the shape to its vocabulary word. “Forming Polygons”- using congruent triangles to make other polygons.	Nelson Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1	End of Unit Test Mental /Oral Testing

SCOPE OF WORK

GRADE: 7

UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
TRIANGLES <i>cont'd</i>	Angles: ❖ right angled triangle ❖ obtuse angled triangle ❖ acute angled triangles (Isosceles, scalene, equilateral) Name triangles using letters. Measure angles and line segments (i.e. sides) of triangles.	A right-angled triangle contains one right angle 90° a small square is used to mark is right angle. An obtuse-angled triangle contains one obtuse angle (greater than 90°, but less than 180°). An acute-angled triangle has three angles that are acute (less than 90°).	In cooperative groups, give students a bag of different triangles and tell students to sort and classify the shapes (Teacher does not give the name of the shapes nor tell students how to sort them). After shapes have been sorted, discuss reasons for sorting them. Students can justify their discussions through writing reasons and discussing reasons for sorting. Be sure to discuss how a triangle is still a triangle if turned upside-down. Students write their own definitions and drawings of the different triangle names in their journals.  a. Name the above triangle. b. Measure in three angles and sides of the triangle. c. Classify the triangle by its sides and angles.	STP Caribbean Mathematics Book 1 Mathematics: The Basic Skill Mathematics for Caribbean School Book 1 Fundamental Mathematics for the Caribbean Book 2 Merrill General Mathematics	Math Journal Worksheets Discussion with reference to real life situations

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
POLYGONS	Define the term “quadrilateral” and classify different types according to the characteristics of the angles and the line segments. ❖ Square ❖ Rectangle ❖ Kite ❖ Parallelogram ❖ Rhombus ❖ Trapezium Name quadrilaterals using letters. Measure lengths of sides.	A polygon with four sides is called a quadrilateral. There are lots of special quadrilateral A trapezium has one pair of opposite sides parallel. A kite has two pairs of adjacent sides equal, one pair of opposite angles equal. Parallelogram- opposite angles are equal, opposite sides are equal and parallel. Square- all angles 90°, all sides equal, opposite sides parallel. A square is a rectangle with all sides equal.	Give students various 4-sided shapes and have students build or create a 2-D,3-D object or picture. Alternate activity: Students draw or create a picture using only 4-sided shapes labeling each one and telling how many of each shape they have used. Have students make a family tree of quadrilaterals to show the relationships among them. In cooperative groups, give students a bag of different 4-sided shapes and tell students to sort and classify the shapes. (With no assistance from the teacher). After shapes have been sorted, discuss reasons for sorting them. Students can justify their decisions through writing reasons and discussing reasons for sorting.	Caribbean Maths Connect Book 1 STP Mathematics for the Caribbean Book 1 Success in Maths for the Caribbean Book 1 www.superteacherworksheets.com	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations In math dictionary, or journal students write their own definitions and drawings for quadrilaterals learned.

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
POLYGONS <i>cont'd</i>		Rectangle- All angles 90°, opposite sides are equal and parallel. Rhombus- opposite angles equal, four equal sides, opposite sides parallel. A rhombus is a parallelogram with all sides equal.	Using magazines and newspaper, students find different quadrilaterals, name them and identify them in different pictures. Using quadrilateral vocabulary, students create a poem, story or acrostic.		
CIRCLE	Define a “circle” and identify its parts: ❖ Radius ❖ Diameter ❖ Arc ❖ Chord ❖ Quadrant ❖ Tangent ❖ Segment ❖ Sector ❖ Center ❖ Semicircle ❖ Circumference Explain the relationship between radius and diameter.	A circle contains many parts. Each part is given a special name. Circles are not polygons because they are bounded by only one curved side. Circumference the perimeter of a circle. Radius a line from the center of a circle to its circumference. The plural of radius is radii.	Have students find circular objects in the environment. Give students a sheet with a circle. Radii and diameter are drawn in on the circles in different locations. Some circles leave the radius and diameter out. Students must measure radii and diameters, compare and discuss the 2 lengths and establish a relationship between the two. Have students create/draw circular patterns using the compasses circle.	Success in Maths for the Caribbean Book 2 Caribbean Maths Connect Book 1 Mathematics for the Caribbean School Book 1 Nelson Caribbean Mathematics Book 1 www.superteacherworksheets.com	Give students a circle with the parts for them to label. Have students formulate a word sentence and a number sentence to represent the formulas for finding radius and diameter. Draw a circle on paper and cut it out.

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CIRCLE <i>cont'd</i>	Find the length of the diameter given the radius and vice-versa. Construct circles of given radii and diameters using a pair of compasses.	The diameter is a line segment that passes through the center of the circle and has its two endpoints on the circle. The radius only goes half across from the center to the circumference. Chord a line joining any two points on the circumference. An arc is any part of the circumference. A segment is the region bounded by a chord and an arc. A semicircle is the sector bounded by a diameter and half the circumference, i.e. a half circle. A sector is a region bounded by two radii and an arc. A tangent is a straight line that just touches the circumference of a circle at one point. Diameter: a line from one side of a circle to the other going through the center. Diameter is twice the radius. If the radius is 4cm- the diameter is 8 cm. if the D=12cm, then radius = 6 cm. Note. The compasses must be opened to the length of the radius.	Draw two circles of radii 4 cm and 6 cm respectively, using the same center marked. Shade the area between the circumferences of the circle. Given that the diameter of a circle is 12.38 cm, find its radius. Give students a table showing radius and diameter columns. Fill either the radius length or the diameter length and have the student determine the other. Give students an exercise where they must use the compasses to construct circles given the following measurements. I. Radius = 2cm II. Diameter = 5cm Can these 2 measures be in the same circle? Why or why not?	Bahamian Mathematics Student Workbook Level A	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CIRCLE <i>cont'd</i>	Explain Pi as the ratio of a circle's circumference to its diameter.	Pi is a special name given to the ratio of a circumference to its diameter. Its value is always equal to $22/7$ which as a decimal (3.14) goes on forever and has a special symbol (π)	Have students bring in round flat objects (not oval). Put students in groups and have them measure and record the diameter, circumference and (C divided by D) of each object. Make a class chart of the entire C divided by D results in decimal form. The class should notice that all results are approximately 3.14. C – Circumference D – Diameter	www.superteacherworksheets.com Merrill General Mathematics Bahamian Mathematics Student Workbook Level A	a) What fraction of the diameter is a radius? b) How many diameters are there in a circle? c) How many chords are there in a circle? d) Is the diameter a chord? Give reason for your answer.
TESSELLATION	Define "Tessellation". Identify whether a given shape will tessellate.	A pattern that covers a plane by transforming the same figure or set of figures so that there are no overlapping or empty spaces is called a tessellation.	Students will discuss various drawings. Tessellations of Regular Polygons – Model and Analyze Study a set of pattern blocks to determine which shapes are regular. Make a tessellation with each type of regular polygon. 1. Which shapes in the set are regular? 2. Write an expression for the sum of the angles at each vertex of the tessellation.	http://mathforum.org/sum95/suzanne/active.html geometric blocks safety scissors craft paper glue	

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS																					
TESSELLATION <i>cont'd</i>			3. Copy and complete the table below. <table><thead><tr><th>REGULAR POLYGONS</th><th>MEASURE OF ONE INTERIOR ANGLE</th><th>DOES IT TESSELLATE?</th></tr></thead><tbody><tr><td>Triangle</td><td></td><td></td></tr><tr><td>Square</td><td></td><td></td></tr><tr><td>Pentagon</td><td></td><td></td></tr><tr><td>Hexagon</td><td></td><td></td></tr><tr><td>Heptagon</td><td></td><td></td></tr><tr><td>Octagon</td><td></td><td></td></tr></tbody></table> Make a translation tessellation by tracing a pattern on colorful paper, then sliding it to a new position and tracing it again. Have students create different kinds of tessellations by turning (rotating), or by flipping over (reflecting) the pattern to a new position before copying it again.	REGULAR POLYGONS	MEASURE OF ONE INTERIOR ANGLE	DOES IT TESSELLATE?	Triangle			Square			Pentagon			Hexagon			Heptagon			Octagon				
REGULAR POLYGONS	MEASURE OF ONE INTERIOR ANGLE	DOES IT TESSELLATE?																								
Triangle																										
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Hexagon																										
Heptagon																										
Octagon																										
PLATONIC SOLIDS	Identify and describe the platonic solids.	There are 5 platonic solids which are made from other geometric shapes.	Write the names of each face, number of sides, number of faces, number of corners and edges for each platonic solid below: ❖ Tetrahedron ❖ Cube ❖ Octahedron ❖ Dodecahedron ❖ Icosahedrons	Caribbean Maths Connect Book 1 Bahamian Mathematics Students Workbook Level A	Using beads for vertices and straws for edges. Students can form their own shape on platonic solids.																					

SCOPE OF WORK
GRADE: 7
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SYMMETRY	Define symmetry. Identify and draw lines of symmetry in simple plane shapes, letters, and natural objects. Identify axes of symmetry in given shapes.	A <u>line of symmetry</u> divides a shape into two identical parts. A shape has line symmetry if you can fold one half exactly on to the other. The fold line is the line of symmetry. One half is a mirror image or reflection of the other. A shape can have more than one line of symmetry.	Use sheets of paper to cut out/fold shapes to determine lines of symmetry. How many lines of symmetry are in the following? A F H Draw a shape of your choosing. Draw a line somewhere near the shape, but not through it. Draw your shape reflected over that line. Students are given various diagrams, using the dotted lines of symmetry to complete how the image would look by drawing in its reflection. Use a map of The Bahamas or New Providence to find points. Settlements and locations according to ordered pairs.	Caribbean Maths Connect Book 1 www.superteacherworksheets.com STP Mathematics for the Caribbean Book 1 https://sites.google.com/a/spartanpride.net/edwards/Home/math-classroom-website/6th-grade-symmetry-online-learning/symmetry-final-assessment	Give blank x any y axes sheets for students to label axes and draw lines. I. $X=2$ II. $Y=3$ III. $X=0$ IV. $Y=0$

SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION/ PRACTICAL GRAPHS	LENGTH: define length Imperial units – Define and determine benchmarks for inch, foot, yard, mile Estimate and measure lengths using appropriate units: inches, feet, yards, miles Draw and measure line segments using imperial and metric units. Converting between imperial units of length Metric Units – Define and determine benchmarks for metre, millimeter, centimeter, kilometre. Estimate and measure lengths using appropriate units: metres, millimeters, centimetres, kilometres Converting between metric units length	There are many different types of measurement, but we use the standard systems e.g. the British system which is called Imperial and is based on Inches, Pound and Pints or the French system which is called Metric. The base unit for length is Metres, weight/Mass Kilogram and capacity is Litre. Emphasis for our purpose will be on the Metric System. The Metric System is referred to as the decimal system. To convert units in the metric system we use powers of tens. Read and illustrate time on the 12 and 24-hour clock.	Students can research and write history of the need for the metric system. Students can create their own measuring tool rulers, container and weights. Using scales students can weigh themselves in Pounds and Kilograms and discover the relationship between the two. Draw and measure line segments using imperial and metric units of length. Draw steps or stairways to show the gradient of the units on the stairs. Demonstrate the movement on the stairs to show multiply by 10 or divide by 10. Use the rhyme to help students remember the order of the units Km Hm Dm M dm cm mm (King <u>H</u>enry <u>D</u>on't Mind <u>d</u>ark <u>c</u>hocolate <u>m</u>ilk).	Caribbean Maths Connect STP Mathematics for the Caribbean Book 1 Bahamian Mathematics Student Workbook Level A	

SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION/ PRACTICAL GRAPHS <i>cont'd</i>	Imperial vs Metric units Use rough equivalents to convert between imperial and metric units of lengths MASS: define mass Imperial units – Define and determine benchmarks for ounce, pound, ton Estimate mass using appropriate units: ounces, pounds, tons Converting between imperial units mass Metric Units – Define and determine benchmarks for gram, milligram, centigram, kilogram, tonne Estimate mass using appropriate units: grams, milligrams, centigrams, kilograms, tones Converting between metric units of mass Imperial vs Metric units Use rough equivalents to convert between imperial and metric units of mass.		Estimate length/weight/ capacity of given objects and the find the actual measure of these items. Given objects students can name the best unit to find the length/weight/ capacity of them. Discuss time movie start and finish at the galleria cinema read and calculate time elapsed between shows.		

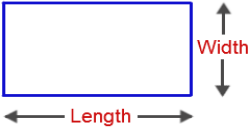
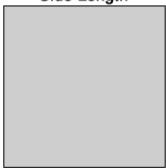
SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION/ PRACTICAL GRAPHS <i>cont'd</i>	CAPACITY: define capacity Imperial units – Define and determine benchmarks for fluid ounce, cup, pint, quart, gallon Estimate capacity using appropriate units: fluid ounces, cups, pints, quarts, gallons Converting between imperial units of capacity Metric Units – Define and determine benchmarks for litre, millilitre, centilitre, and kilolitre. Estimate capacity using appropriate units: litres, millilitres, centilitres, and kilolitres. Converting between metric units of capacity Imperial vs Metric units - Use rough equivalents to convert between imperial and metric units of capacity TIME: Define and convert between units of time seconds, minutes, hours, days, weeks, months, years, decades, century, and millennia.		Use an airplane flight schedule to see when flights take off and land. Calculate time between each flight take off. Invite people to talk or take students on a field trip to meet people who use the 24-hour clock as part of their job e.g. pilots ship captains. Solve problems involving the 24-hour clock and the 12 hour clock.		

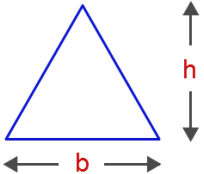
SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION/ PRACTICAL GRAPHS <i>cont'd</i>	Reading calendars and schedules Read and illustrate time on the 12-hour and 24-hour clocks Elapsed time on the 12-hour clock. TEMPERATURE: Reading thermometers marked in degrees Fahrenheit and/or Celsius SPEED: Estimate and measure Length, mass and Capacity in basic units- Emphasis is on milli, centi, kilo and the base units. Conversion of units within the metric system • Length • Mass • Capacity Read and illustrate time on the 12 and 24-hour clock. Explain the relationship among length, area and volume.				

SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERIMETER & AREA	Draw and measure line segments using imperial and metric units. Discover Pi as the ratio of a circle's circumference to its diameter. Calculate perimeter of regular and irregular polygons. Calculate area of rectangles, squares and triangles by counting squares. Derive the formula for finding the area of a rectangle. Determine the units of area.	Perimeter is the distance around any figure. It is found by adding the lengths of all the sides. Area is the space occupied by an object/shape. It is measured in square units. <u>Area of a rectangle:</u>  $A = length \times width$ <u>Area of a square:</u>  $A = side \times side$	Students can use rulers or trundle to find the perimeter of given shapes, the classroom, the desk top or an exercise book cover. Some of this can be done as group work. Use the formula to calculate the perimeter of regular shapes square and rectangles (2 length + 2 width) for rectangles and 4 lengths for a square. Calculate the measure of the missing sides given the perimeter and all of the other sides. Give students squared paper and a leaf or they can use their foot and trace it on the square paper to estimate and calculate the area of the leaf or foot or any other object. Students can discover the formula for finding area by drawing rectangles or squares on squared paper.	STP Mathematics for the Caribbean Book 1 Bahamian Mathematics Student Workbook Level A	

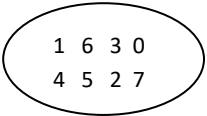
SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERIMETER & AREA <i>cont'd</i>		Area of a triangle:  A $= \frac{1}{2}(\text{base} \times \text{height})$	Use formula to calculate the area of given polygons. Find the missing measure given the area and one length. Students can bring in boxes and work in groups to estimate the volume then calculate the volume using the formula $L \times W \times H$. They can then compare the result and explain why the result varies. Calculate the volume of given cubes and cuboids using the formula.		

SCOPE OF WORK
GRADE: 7
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS																														
CUBES/ CUBOIDS	Explain the similarities and differences between “cube” and “cuboids”. ❖ Faces ❖ Edges ❖ Vertices Identify cubes and cuboids. Identify faces, edges, and vertices of cube/cuboids.	Each part of a solid has a special name. A face is the surface of a solid. Faces can be flat or curved. An edge is the line where two faces meet. Edges can be straight or curved. A vertex is a point where edges meet. The plural of vertex is vertices. A cube is a rectangle prism that has six square faces. All edges of a cube are the same length. A cuboid is a box-shaped solid object. It has six flat sides and all angles are right angles. All of its faces are rectangles. A prism is a solid object with two identical ends and flat sides. The shape of the ends gives the prism a name. The cross section is the same all along its length. The sides are parallelograms.	Name three everyday objects which are (i) cubes (ii) cuboids. Estimate how many one by one wooden cubes each of the following boxes will hold. <table border="1"> <tr> <td></td><td>L</td><td>W</td><td>H</td><td>G</td><td>A</td></tr> <tr> <td>BA</td><td>2</td><td>2</td><td>3</td><td></td><td></td></tr> <tr> <td>BB</td><td>4</td><td>2</td><td>3</td><td></td><td></td></tr> <tr> <td>BC</td><td>9</td><td>2</td><td>1</td><td></td><td></td></tr> <tr> <td>BD</td><td>5</td><td>2</td><td>2</td><td></td><td></td></tr> </table> L: Length W: Width H: Height G: Guess A: Answer BA: Box A BB: Box B BC: Box C BD: Box D		L	W	H	G	A	BA	2	2	3			BB	4	2	3			BC	9	2	1			BD	5	2	2			Nelson Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1 Success in Maths for the Caribbean Book 2 http://www.mathsisfun.com www.superteachersworksheets.com STP Mathematics for the Caribbean Book 1	Project- Students create their own cubes and cuboids out of cardboard and decorate it. Write the similarities and differences between them. Collect a number of solid shapes. Use them to find the number of faces, edges and the number of vertices.
	L	W	H	G	A																														
BA	2	2	3																																
BB	4	2	3																																
BC	9	2	1																																
BD	5	2	2																																

SCOPE OF WORK
GRADE: 7
UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SETS	Define a set. List the members of a given set. Write sets using proper set notation. Describe a set in words. Describe and use the following set symbols: ❖ An element of ❖ Not an element of ❖ Union ❖ Intersection ❖ Empty set ❖ Null set Write statements using set notation and vice versa. Classify sets as finite or infinite. Determine when two sets are equal. Identify empty sets and use the correct symbols for such a set.	A set is a clearly defined collection of things that have something in common. Each object in a set is called a member or element of the set. These members or elements are usually separated by commas and written down between curly brackets or braces or we may draw a ring around them. E.g. The set of whole numbers from one to seven could be shown as: {0, 1, 2, 3, 4, 5, 6, 7} or as  The symbol $\in$ means is a member or element of $a \in X$; $p \notin X$. $\in$ - is a member of $\notin$ - is not a member of $\cup$ - the union $\cap$ - the intersection ϕ - a null set $\{ \}$ - empty set	Ask students to bring in several objects. Working in groups, students must classify objects into groups explaining their reasons for classification of objects. Have students try to guess each other's classification. Collect newspaper or magazine clippings of sets of things. Have students write members of the sets found. Display flashcards with objects and have students give description of the set from the cards.	www.transum.org/software/SW/Starter_of_the_day/Students/SetNotation/ Fundamental Mathematics for the Caribbean Book 1 Newspaper clippings Fruits Playing Cards Flash Cards STP Caribbean Mathematics Book 1	Test glossary of terms Answer questions based on experiments done and data collected. Exercises calculating probability of events occurring or not occurring. Concept Quiz Math Journal End of Unit test Worksheets

SCOPE OF WORK

GRADE: 7

UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SETS <i>cont'd</i>		An infinite set has an infinite, i.e. unlimited number of elements. E.g. The set of whole numbers, $\{0, 1, 2, 3, 4, \dots\}$ is an infinite set. The number of elements in a finite set can be counted and written down as a number. E.g. The set {letters of the alphabet} is a finite set but the set {whole numbers} is not because it has an infinite number of elements. Equal sets have exactly the same number of members. If $X = \{1, 2, 3\}$, $Y = \{c, a, b\}$ therefore $X = Y$. The empty set is the set with no members. It is denoted by the symbol ϕ or $\{ \}$.	Infinite Activity 1. State, whether the given set is infinite or finite: (i) $\{3, 5, 7, \dots\}$ (ii) $\{1, 2, 3, 4\}$ (iii) $\{\dots, -3, -2, -1, 0, 1, 2\}$ (iv) $\{0\}$ (v) Set of trees in the world (vi) Set of prime numbers (vii) Set of leaves on a tree 2. Have students come up with their own examples of finite and infinite sets.		

SCOPE OF WORK
GRADE: 7
UNIT: DATA MANAGEMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ORGANIZING AND ANALYZING DATA	Draw bar charts, pie charts and pictographs to illustrate statistical data. Read and analyze pictograms, tables, vertical and horizontal bar charts, line graphs, pie charts, histograms. Organize statistical data in a frequency table. Define and calculate the mean, median, mode and range of raw data. Solve problems involving mean, median, mode and range. Define, collect organize data collection. (Sample may be random or a convenient sample.)	Large quantities of information can be can be made sense of by grouping it and putting it into a frequency table. The frequency of a group is the number of items in that group. Frequency tables can be represented by bar charts or pie charts. The heights of the bars correspond to the frequency of the groups. The slices on a pie chart represent the fractions that the groups are of the total.	Measure the heights and weights of the students in the class. In groups, students can investigate the favorite food, movie, color etc. of teachers in their school. The same can be done with classmates. In groups or individually students can stand at a particular point and observe and evaluate the colors of vehicles that pass in a given time frame and use a tally chart to represent the information. Students can calculate their mean average in math class so far. Students can calculate the median and the modal of shoe sizes of the members in their group. Calculate the modal birth month of the students in the class.	STP Mathematics for the Caribbean Book 1	Worksheets Quiz End of Unit Test Group Project

SCOPE OF WORK
GRADE: 7
UNIT: DATA MANAGEMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS																		
ORGANIZING AND ANALYZING DATA <i>cont'd</i>	Collect, organize, analyze and display raw data. (Tally chart)	The <u>arithmetic average or mean</u> of a set of numbers is the sum of the numbers divided by the number of figures in the set. The <u>mode</u> is the number that appears most often. The <u>median</u> is the middle number after the numbers have been placed in order. The <u>range</u> is the difference between the highest and the lowest number. A <u>tally chart</u> is a table with tally marks to show a valuable data set. Tally marks are frequencies, occurrences, or total numbers being measured for a specific category in a data set. e.g. Mode of transportation to school <table><tr><th><i>Method of Travel</i></th><th><i>Tally</i></th><th><i>Frequency</i></th></tr><tr><td>Walk</td><td> </td><td>9</td></tr><tr><td>Bike</td><td> </td><td>3</td></tr><tr><td>Car</td><td> </td><td>6</td></tr><tr><td>Bus</td><td> </td><td>12</td></tr><tr><td colspan="2">TOTAL</td><td>30</td></tr></table>	<i>Method of Travel</i>	<i>Tally</i>	<i>Frequency</i>	Walk		9	Bike		3	Car		6	Bus		12	TOTAL		30	Calculate the range of their individual math grades so far and the range of the entire class math scores.		
<i>Method of Travel</i>	<i>Tally</i>	<i>Frequency</i>																					
Walk		9																					
Bike		3																					
Car		6																					
Bus		12																					
TOTAL		30																					

SCOPE OF WORK
GRADE: 7
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY	Define probability. Define and explain the following terms associated with probability (certain, outcome, event, impossible, odds, likely, chance, independent, experiment, sample space, predict, unlikely, random, and dependent). Describe and calculate the probability of an independent event. Express probability with the notation $P(\text{event}) =$	Probability is the measure of how likely an event is. It is often measured by a fraction, decimal or percentage. The probability of event A is written $P(A)$. Probabilities are always numbers between 0 and 1, <u>inclusive</u>.  An experiment is a situation involving chance or probability that leads to results called outcomes. <i>A spinner has 4 equal sectors colored yellow, blue, green, and red. What are the chances of landing on blue after spinning the spinner?</i> e.g. The experiment is spinning the spinner.	Have students do the following experiment and record the outcomes of each experiment ❖ tossing a coin ❖ rolling a six-faced die, ❖ tossing a coin AND rolling a six-sided die. A card is chosen at random from a deck of 52 cards. It is then replaced and a second card is chosen. What is the probability of choosing a jack and an eight?	http://www.cimt.plymouth.ac.uk/projects/mepres/allgcse/as5act1.pdf STP Mathematics for the Caribbean Book 1 Die Coins Playing cards Spinner wheel Marbles Spinner	Put students in groups. Students write definitions for the terms in their own words. Answer questions based on experiments done and data collected. Exercises calculating probability of events occurring or not occurring. Concept Quiz

SCOPE OF WORK
GRADE: 7
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY <i>cont'd</i>		Outcome is a single, specific possible result of an <u>experiment</u>. e.g. the possible outcomes are landing on yellow, blue, green, or red. Event: A <u>set</u> of possible <u>outcomes</u> resulting from a particular <u>experiment</u>. e.g. the event being measured is landing on blue	Watch the local weather forecast each day and notice how accurate it is. For every day that the forecasters get it right reward them with one point, if they get it wrong you get the point. Use the results to work out a probability for the forecast being right. HAT TRICK There are strips of papers numbered 1- 10 in a hat. ❖ If you pick a strip of paper without looking, what is the probability you will pick an even number? ❖ What is the probability that you will pick a prime number? ❖ What are the odds you will pick a prime number?		

SCOPE OF WORK
GRADE: 7
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY <i>cont'd</i>		Odds: Away of representing the likelihood of an event's occurrence. A sample space is the <u>set</u> of all possible <u>outcomes</u> of an <u>experiment</u>. Two events are independent if the occurrence of one does not change the probability of the other occurring. An example would be rolling a 2 on a die and flipping a head on a coin. Rolling the 2 does not affect the probability of flipping the head. If events are independent, then the probability of them both occurring is the product of the probabilities of each occurring. Therefore, to find the probability of two independent events, simply MULTIPLY the probabilities of the two events, and simplify the product. Specific Multiplication Rule Only valid for independent events $P(A \text{ and } B) = P(A) \times P(B)$ Probability of events = $P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$	Name professions that use probability. Give an example. Many scientists and social scientists use probability, including epidemiologists, psychologists, economists, and statisticians. They predict outcomes of events, such as the incidence of diseases and the strength of the stock market.		

GRADE

8

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCE S	ASSESSMENTS
The Real Number System & Natural and Whole Numbers	Use prime factorization to find H.C.F. and L.C.M. .	The highest common factor (H.C.F.) of two or more numbers is the largest number that is a factor of all of them, for example 5 is the H.C.F. of 15 and 20 Using prime factorization to find H.C.F.: Write out the prime factorizations for each. Calculate the product of the prime factors that are common to both factorizations. The lowest common multiple (LCM) of two or more numbers is the smallest number that is a multiple of all of them. E.g. the LCM of 6 and 8 is 24. Using prime factorization to find L.C.M.: Write out the prime factorizations for each. Then multiply each factor the greatest number of times it occurs in either number.	Solve the following problems: - Two of the lights at the local stadium are flickering. They both just flickered at the same time. One of the lights flickers every 7 seconds and the other light flickers every 8 seconds. How many seconds until both lights will flicker at the same time again? - Fabric is sold in stores from bolts that are 45 or 60 inches wide. What is the width of widest strips of fabric you can cut from either bolt without wasting any of the fabric if each strip has the same width? - A fruit salad made on a TV cooking program requires chunks of cantaloupe and honeydew. What is the greatest number of servings you can make using all of the fruit if you have 30 chunks of cantaloupe and 42 chunks of honey dew?	Mathematics Today Book 8 STP Caribbean Mathematics Book 1	

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ORDER OF OPERATIONS	Apply an order of operations mnemonic (BIMDAS)/(BIDMAS), “Please Excuse My Dear Aunt Sally” or (PEMDAS)/(PEDMAS) to evaluate arithmetic expressions with two or more operations, involving integers, common fractions and decimals. Identifying true arithmetic statements. Insert operations and/or brackets to obtain true statements.		Arithmetic expressions with mixed operations. Real life problems on temperature. Ask students to create some expressions of their own. In pairs or groups, students evaluate each other's expressions and see if there is agreement on the value of each expression. Note that students may agree on an incorrect value due to a misconception in the order of operations.	Success in Maths for the Caribbean Book 3 Mathematics for Caribbean Schools Caribbean Maths Connect Book 2 GCSE Mathematics Foundation Level http://illuminations.nctm.org/Lesson.aspx?id=2583 STP Caribbean Mathematics Book 1	Worksheet Have students evaluate several expressions that contain several operation symbols. Give students a list of numbers with no operation symbols and ask them to place the symbols so that a specific result occurs. Example: Given the list of numbers 1 2 3 4 5, can you write in the symbols +, −, × and ÷ so that the value of the expression equals 8? Any of the symbols may be used more than once and all of the symbols don’t have to be used. Answer: $1 + 2 \times 3 - 4 + 5$

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PRIME FACTORIZATION	Express prime factors in index form. Use prime factorization to find the H.C.F. and L.C.M. Calculate the H.C.F. and L.C.M. of three or more numbers.	The highest common factor (H.C.F.) of two or more numbers is the largest number that is a factor of all of them, for example 5 is the HCF of 15 and 20 The lowest common multiple (L.C.M.) of two or more numbers is the smallest number that is a multiple of all of them. E.g. the L.C.M. of 6 and 8 is 24.	Solve the following problems: - Two of the lights at the local stadium are flickering. They both just flickered at the same time. One of the lights flickers every 7 seconds and the other light flickers every 8 seconds. How many seconds until both lights will flicker at the same time again? - Fabric is sold in stores from bolts that are 45 or 60 inches wide. What is the width of widest strips of fabric you can cut from either bolt without wasting any of the fabric if each strip has the same width? - A fruit salad made on a TV cooking program requires chunks of cantaloupe and honeydew. What is the greatest number of servings you can make using all of the fruit if you have 30 chunks of cantaloupe and 42 chunks of honey dew?	Mathematics Today Book 8 STP Caribbean Mathematics Book 1	

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURC ES	ASSESSMENTS
SQUARES AND SQUARES ROOT	Define what is meant by the square of a number. Identify the square root symbol. Use prime factorization to find the square root of numbers (square numbers).	The factors multiplied to form perfect squares are called square roots. Squaring is raising a number to the power of 2. Finding the square root and squaring are inverses of each other.	$3^2 = 9$. is the square number and 3 is the root. $5^2 = 25$. is the square number and 5 is the root. Define <i>root</i> and provide a visual model. Use prime factorization to find the square root of square numbers.	Success in Maths for the Caribbean Book 1 Modern Mathematics for the Bahamas 7	Have students explain the sentence: "Squaring and finding square roots are inverse operations." They should use models, algebra, and math vocabulary. Compare and contrast a perfect square and what we mean by a <i>not-so-perfect square</i>. How do you know when a square is perfect?
DIRECTED NUMBERS	Use the number line to add integers. State and use the laws that govern directed numbers over addition, subtraction, multiplication and division.	Positive numbers and negative numbers are called directed numbers. The sign tells which direction to go from zero to reach the position of the number on a number line. To add integers with the same sign, add and keep the sign. To subtract an integer, change the subtraction sign to addition and change the sign of the integer to its opposite.	Arrange integers in order from least to greatest. Compare integers using either $>$ (greater than) or $<$ (is less than) to make true statements. Add and subtract positive numbers. Add and subtract negative numbers. Multiply and divide integers.	Mathematics for Caribbean Schools Book 1 Caribbean Maths Connect Book 2 STP Caribbean Mathematics Book 2	Provide opportunities for students to work with signed numbers by asking them to make up problems for each other, and then evaluating answers found by their peers. Worksheets Quizzes Ask students to evaluate expressions with more than two integers: 1) $3-5+8$ 2) $-10+5+9$ 3) $7-4-1-6$

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
INTEGERS	Use the number line/rules to add, subtract, multiply and divide integers. Problem solving involving addition and subtraction, multiplication and division.				
FRACTIONS	Order simple fractions in ascending and descending order. Apply the four rules to like and unlike fractions. Solve simple word problems involving fractions.	When comparing two fractions with the same denominator, the numerator with the larger value is the larger. To compare unlike fractions, first make equivalent fractions with a common denominator then compare the numerators. One number is the reciprocal of another if their product is 1. For example, the reciprocal of $\frac{5}{6}$ is $\frac{6}{5}$ since $\frac{5}{6} \times \frac{6}{5} = 1$ The <u>reciprocal of a fraction</u> is obtained by interchanging the numerator and the denominator, i.e. by inverting the fraction.	Compare fractions using <, > and =. Add and subtract fractions and mixed fractions.	STP Mathematics for the Caribbean Book 1	Worksheet Quizzes Mental/Oral Computations

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
FRACTIONS <i>cont'd</i>		Example: the reciprocal of $\frac{3}{5}$ is $\frac{5}{3}$ The reciprocal of 5 is $\frac{1}{5}$ To find the <u>reciprocal of a mixed number</u>, change it into an improper fraction and then invert it. Example: Find the reciprocal of $1\frac{1}{3}$ $1\frac{1}{3} = \frac{4}{3}$ Therefore, the reciprocal of $1\frac{1}{3}$ is $\frac{3}{4}$	Find your Fractional Partner game. Write equivalent fractions on cards and pass out to students. Students hold up a card and another student having the equivalent fraction must find their partner. Add and subtract fractions and mixed fractions. Multiply and divide fractions and mixed fractions.		
RATIONAL NUMBERS AS DECIMALS	Decimal place value: billions to ten thousandths. Change common fractions to decimals and vice versa.	To change a fraction to a decimal, divide the numerator by the denominator. E.g. $\frac{4}{5} = 4 \overline{)5} = 0.8 \text{ (divide the top by the bottom)}$ Sometimes when dividing, the division will never stop as there is always a remainder. $\frac{2}{3} = 0.666 \dots$ E.g. $\frac{2}{3} = 0.666 \dots$	Learn and Apply Rhyme when rounding. Rhyme: <i>5 or more add one more, 4 or less, let it rest.</i>	Mathematics Today Book 8 STP Mathematics for the Caribbean Book 1	Worksheet Quizzes Mental/Oral Computations

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIONAL NUMBERS AS DECIMALS	Identify rational numbers as terminating and recurring (repeating) decimals using the dot (.) and bar (–) notation above single repeated digits and blocks of repeated digits. Comparing and ordering decimals with and without the number line. Add, subtract, multiply and divide decimals. Problem solving involving at least two of the operations, addition, subtraction multiplication and division	It is clear that if 2 is divided by 3, then the sixes in the answer never stop. This is an example of a recurring decimal. This is written as: $0.666\overline{6}$ The dot above 6 means that it is repeated indefinitely (i.e. forever). An alternative notation involves placing a bar above the repeating digit(s) in the quotient (i.e. answer). $\frac{2}{3} = 0.666\overline{6}$ or $\frac{9}{11} = 0.81\overline{81}$ When writing decimals in ascending or descending order, compare digits in the same place value position starting at the left Writing Decimals in ascending or descending order 1. If there is a whole number, look and compare the whole number(s) first 2. Set up a table with the decimal point in the same place for each number. 3. Write in each number. 4. Fill in the empty places/squares with zeros. 5. Compare using the first column on the left.		Mathematics: The Basic Skills 5 th Edition	

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
		6. If the digits are equal move to the next column to the right until one number wins. The number of figures after the point is called the number of decimal places			
ROUNDING. APPROXIMATION & ESTIMATION	Rounding decimals to a given place value and to a given number of decimal places, with and without the number line. Rounding decimal numbers to a given number of significant figures. Estimate the results of calculations to check the reasonableness of answers.	To round, look at the digit to the right of the place to which you are rounding and if the digit to the right is 5 or greater, round up. If the digit to the right of the place to which you are rounding is less than 5, round down. When rounding to a place at the left of the decimal point, replace digits at the right of it with zeros, up to the decimal point. The decimal point and digits to the right of the decimal point are dropped. When rounding to a place at the right of the decimal point all digits to the right of that place are dropped. When rounding to a given number of significant figures, start counting significant figures at the first non-zero digit at the left of the number.			

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERCENTAGES	Calculating a percentage of a number or quantity. Calculate percentage increase and percentage decrease. Solve word problems involving percentage increase and percentage decrease.	Percent increase and percent decrease are measures of percent change, which is the extent to which a variable gains or loses intensity, magnitude, extent, or value. The figures are arrived at by comparing the initial (or before) and final (or after) quantities according to a specific formula. To calculate percentage increase, add the amount of the increase to 100% and find this new percentage of the given quantity. E.g. Increase \$64.50 by 8%. $8 + 100 = 108\%$ $\frac{108}{100} \times 64.50 = \\69.66 Or $64.50 \times 1.08 = \\$69.66$ To calculate percentage decrease, subtract the amount of the decrease from 100% and find this new percentage of the given quantity. E.g. Decrease \$75 by 15%. $100 - 15 = 85\%$ $\frac{85}{100} \times 75 = \\63.75 Or $75 \times 0.85 = \\$63.75$	ST(P) Caribbean Mathematics Book 1 Puzzle Page 226 Find newspaper clippings of sale items. Bring ads to class and have the students write application problems using these real sales. http://www.transum.org/Software/SW/Starter_of_the_day/starter_February16.ASP	https://www.skillsyouneed.com/num/percent-change.html Newspaper Clippings STP Caribbean Mathematics Book 1	Investigate supply and demand and its effect on consumer product prices. Ask students to write a journal entry about what it means to have a percent less than 1 or a percent greater than 100. When does it not make sense to have a percent less than 1 or greater than 100? Ask them to write down at least three things they think are the most important when solving problems involving percent. "Giving 110%" has become a fairly common expression. Have students explain why it's impossible. Then they should find other common, but mathematically-impossible, expressions.

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSUMER MATH	Solving monetary word problems involving at least two operations. Calculating profit and loss. Calculating percentage profit and profit loss and mark-up and mark-down. Calculating discounts. Calculating Value Added Tax (VAT) Calculate shopping bills. Solve real life problems related to discounts.	Discount is the amount deducted from the marked price. A profit is made when you sell an item for more than it cost. Profit = Selling Price – Cost Price $\% Profit = \frac{Profit}{Cost Price} \times 100$ A loss is made when you sell an item for less than it cost. Loss = Cost Price – Selling Price $\% Loss = \frac{Loss}{Cost Price} \times 100$	Calculate bills. Solve problems with profit and loss.	Fundamental Mathematics for the Caribbean Book 1 Caribbean Maths Connect Books 1 & 3 Fundamental Mathematics for the Caribbean Book 3	Worksheet End of Unit Test

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIO AND PROPORTION	Use ratios to compare measurements with different units. Simply ratios with fractional terms. Write ratios in the form 1 : a or a : 1 Share a quantity in a given ratio. Define the term proportion. Identify proportions. Solve proportions for missing terms Use proportions to find missing quantities. Share a quantity in a given ratio.	To simplify ratios, divide all terms by the H. C. F. Units must be the same before simplifying. (Convert larger amount to smaller amount). <i>Eg.</i> $5mm : 2cm (\times 10)$ $= 5mm : 20mm$ $= 1 : 4$ Fractional terms must be multiplied by the L. C. M. in order to eliminate the denominator before simplifying. <i>Eg.</i> $\frac{1}{3} : \frac{3}{4} (\times 12)$ $= 4 : 9$ To share a quantity in a given ratio, divide the quantity by the total number of portions to find the value of one, and then multiply to find the value for each of the terms in the ratio. Example: Share \$30 in the ratio 6:4 $6 + 4 = 10$ (add the numbers in the ratio) $30 \div 10 = 3$ (divide to find each part) $6 \text{ parts} = 6 \times 3 = \\18 $4 \text{ parts} = 4 \times 3 = \\12 Check: $\\$18 + \\$12 = \\$30$	Have students bring in grocery store items from home along with their prices. Express the size of the item as a ratio to its price. (e.g. 16 oz.: \$3.58 for a bottle of Listerine) have students simplify the ratio. Often, we purchase items available in large and small sizes. Bring examples of these items with the cost per item. Work in pairs, have students determine which item is the better buy. Puzzle – STP Caribbean Mathematics Book 1, Page 339	Nelson Caribbean Mathematics Book 1 STP Caribbean Mathematics Book 1	Worksheet End of Unit Test Model real life problems

SCOPE OF WORK
GRADE: 8
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIO AND PROPORTION <i>cont'd</i>	Calculate direct proportion using the fractional method. Use ratio and proportion to solve real life problems.	If two varying quantities are directly proportional, they are always in the same ratio. Divide the quantities to find the single unit. Example: If 2 ring pops cost 0.80¢, how much will 5 ring pops cost? 2 ring pops cost 0.80¢ 1 ring pop costs $0.80\text{¢} \div 2 = 0.40\text{¢}$ Therefore, 5 ring pops cost $5 \times 0.40\text{¢} = \2.00			
SEQUENCES	Identify patterns in sequences of natural numbers to list more terms. Identify patterns in sequences of natural numbers, whole numbers and integers to list more terms. Identify special sequences and list more terms (even, odd, prime, triangular, square and cube numbers, Fibonacci Sequence).	A number sequence is a list of numbers arranged according to a rule or law or pattern. Each quantity or number in the sequence is called a term. Examples: 1, 4, 9, 16... (square numbers) 5, 10, 15, 20, ... (multiples of 5)	State the rule for given sequences. Determine missing terms in sequences. Students are to find out why Pascal and Fibonacci are important names in mathematics. Find out as much about their discoveries Use toothpicks to create sequence of patterns.	Mathematics A Complete Course Volume 1 Toothpicks	Worksheet End of Unit Test

SCOPE OF WORK
GRADE: 8
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ALGEBRAIC REPRESENTATION	Translate English phrases into algebraic expressions and vice versa: up to two operations without brackets	Identify the constant(s), unknown and the arithmetic operation(s) in the statements. Use a variable to represent the unknown values. Form and combine the algebraic terms to write an algebraic expression.	Express the perimeters of polygons using variables and simplify Students work in pairs. Make up story problems. Exchange and write expressions or equations	Caribbean Maths Connect Book 1 Caribbean Maths Connect Book 2 https://courses.lumenlearning.com/prealgebra/chapter/translating-algebraic-expressions-from-words/	Math Journal End of Unit Test Mental /Oral Testing Worksheets
BASIC ALGEBRAIC OPERATIONS	Operating on terms, involving two or more symbols and powers. Simplify expressions by collecting like terms including terms with powers.	To simplify ✓ add or subtract the coefficients of like terms and combine constants; ✓ group positive and negative terms/ group like signs; ✓ multiply the coefficients and multiply the variables; ✓ write division in fraction form and reduce terms or cancel; ✓ use the order of operations when expressions have a mixture of operations (BODMAS/PEMDAS).	Simplify the following. (a) $5x^2 - 6y - 13x^2 - 4y + 2$ (b) $3ab \times 4b$ (c) $\frac{40pq^2}{8pq}$	Caribbean Maths Connect Book 2 STP Caribbean Mathematics Book 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

SCOPE OF WORK
GRADE: 8
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SUBSTITUTION	Evaluate algebraic expressions and formulae by substituting integers for symbols variables.	Replace the variable with a numerical value and then simplify. Where negative numbers are substituted for letters, place them in brackets. The rules about operating with integers should be applied.	Hands On Equations	Hands On Equations STP Caribbean Mathematics Book 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets
EXPONENTS/ INDICES/ POWERS	Identifying the base and exponent in algebraic expressions. Rewriting expressions involving powers.	Exponents are shorthand for repeated multiplication, just like multiplication is a shortened form of repeated addition. The exponent tells how many times a number (the base) is used as a factor. For example, $2^5 = 2 \times 2 \times 2 \times 2 \times 2$ 2 is called the base and 5 is called the exponent. 2^5 can be read as "2 raised to the fifth power" or "2 raise to the power 5" or "2 raised by the exponent of 5" or "2 to the 5".	Rewrite the following using exponents. (a) $a \times a \times a$ (b) $2a \times 3ab$ (c) $s^3 \times s^2$	STP Caribbean Mathematics Book 1 Success in Maths for the Caribbean Book 2 Caribbean Math Connect Book 2 https://www.flocabulary.com/unit/exponents/ https://www.onlinemathlearning.com/exponent.html https://www.homeschoolmath.net/worksheets/exponents.php http://www.softschools.com/manage/themes/knowledgetest2	Worksheets Quizzes

SCOPE OF WORK
GRADE: 8
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DISTRIBUTIVE PROPERTY	Multiplying sums and differences by integers and variables.	The distributive property is used to expand brackets. Each term in the bracket must be multiplied by the term outside the bracket. E.g. $2(x + 7) = 2(x) + 2(7)$ $= 2x + 14$	Matching exercise Hands On Equations; Lab Gear	STP Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1 Success in Maths for the Caribbean Book 2	Worksheets Quizzes
FACTORIZATION	Rewriting sums and differences of simple algebraic term as products.	- Find the HCF of the terms - Divide each term by the HCF - Write the quotients inside brackets as an expression with the same original operations - Write the HCF as a factor immediately at the front of the bracket. Example: $6m + 15$ $= 3(2m + 5)$		Transum Factoring Levels 1 -3 https://www.transum.org/software/SW/Starter_of_the_day/Students/Factorising.asp?Level=1	
ALGEBRAIC FRACTIONS	Multiplying and dividing simple algebraic fractions.	To multiply simple algebraic fractions: - multiply the numerators together, - multiply the denominators together - cancel down if necessary. *where possible reduce/cancel before multiplication	Calculate the following: $\frac{3}{s} \times \frac{s}{7}$ $\frac{3x^4}{4} \div \frac{9x}{10} = \frac{5x^3}{6}$	Transum starter Levels 1, 2 and 5 https://www.transum.org/software/SW/Starter_of_the_day/Students/Algebraic_Fractions.asp?Level=5	Interactive Practice Worksheet

SCOPE OF WORK
GRADE: 8
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ALGEBRAIC FRACTIONS <i>cont'd</i>		To divide simple algebraic fractions: - keep the first fraction the same - turn the division sign into a multiplication sign - write the reciprocal of the second fraction - multiply the new expression.			
EQUATIONS	Solve simple linear equations including more than one operation.	Place the variable on one side and constants on the other side using inverse operations. Steps to solving a two-step equation: (Goal: Get the variable on one side of the equation by itself). 1. Do the inverse operation for addition or subtraction. 2. Do the inverse operation for multiplication or division. 3. Check your answer	Hands On Equations; Lab Gear; Flow Charts 'Is It Magic': <i>Replace the variables in the square with their values. Say whether the square is magic.</i> (Activity sheet # 4)	STP Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

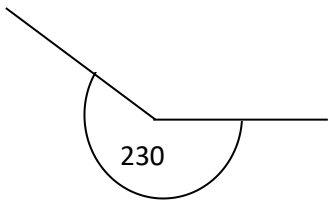
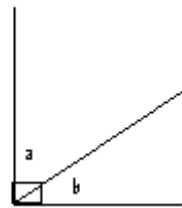
SCOPE OF WORK
GRADE: 8
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
EQUATIONS <i>cont'd</i>	Develop simple equations to describe and solve word problems.	E.g. $\begin{array}{r} 3x + 3 = 12 \\ -3 \quad -3 \\ \hline 3x = 9 \\ 3 \quad 3 \\ \hline x = 3 \end{array}$ Check: $3x + 3$ $3 \times 3 + 3$ $9 + 3 = 12$ Step 1 Add /Subtract Step 2 Multiply/divide Step 3 Check by substitution Combine like terms then isolate the unknown. E.g. $\begin{array}{r} 4x + 2 - x = 11 \\ 4x - x + 2 = 11 \\ 3x + 2 = 11 \\ -2 \quad -2 \\ \hline 3x = 9 \\ 3 \quad 3 \\ \hline x = 3 \end{array}$ Check $4 \times 3 + 2 - 3$ $12 + 2 - 3$ $14 - 3$ 11 Step 1: Simplify Step 2: Add/Subtract Step 3 Multiply/divide Step 4 Check by substitution Word problems can be solved by forming equations. Represent the unknown with a variable and then solve. Check solution by using substitution.	Solve the following equations $3a + 18 = 24$ $4y - 10 = 26$ $\frac{5x}{7} = 10$ Complete a crossword puzzle using algebraic clues Students guess ages by giving mathematical instructions: Think of your age, multiply it by 5, add 4 and take away your age, divide the result by 4 and give your result. The other student should be able to guess the age using algebra (inverse operations)	STP Caribbean Mathematics Books 1 & 2 Caribbean Maths Connect Book 1	

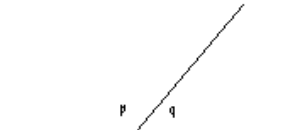
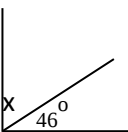
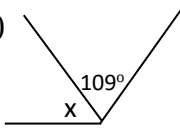
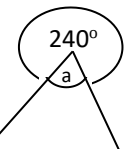
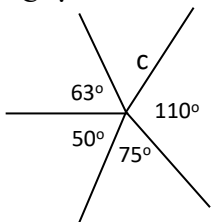
SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
COORDINATE GEOMETRY	Identify the 4-quadrants of the Cartesian plane to ❖ read and plot points using integers as values ❖ plot join and label points to form shapes.	The Cartesian plane may have 4-quadrants to include the negative values on the axes. The x-axis allows movement to the left and the y-axis allows downward movement. The sequence of the points may result in shapes being formed, preferably geometric.	Plot points in the order given and connect to form letters. What is the secret message?	Graph paper Junior High Mathematics STP Caribbean Mathematics Book 2	Plot, label and join the following coordinates. Name the geometric figure.
GEOMETRICAL TERMS AND PROPERTIES	Geometric Terms Bisect line segments and angles using ruler and compasses.	To bisect means to divide into two equal parts. We can bisect a straight line with a pair of compasses. Steps: 1. Place the compass at one end of line segment. 2. Adjust the compass to slightly more than half the length of the line segment. 3. Draw arcs above and below the line. 4. Keeping the same compass width, draw arcs from other end of line. 5. Place ruler where the arcs cross, and draw the line segment.	Draw lines having these lengths. Use ruler and compasses to bisect each line. (i) 6cm (ii) 3.5cm (iii) 8cm Draw a line AB 10cm long. Use ruler and compasses to divide AB into 4 equal parts. What is the length of each part? Use your protractor and draw an angle of 70° . Using ruler and compasses only, bisect the angle.	STP Caribbean Mathematics Book 1 Modern Mathematics for The Bahamas 7 google.com Bisecting lines and angles STP Caribbean Mathematics Book 2	Have students list the steps in bisecting a straight line. Bisect lines of given lengths. Have students draw angles using a protractor. Use compasses and ruler only to bisect the angles drawn.

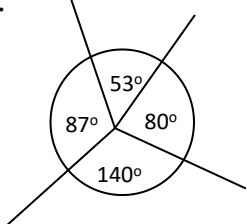
SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLE PROPERTIES	Measure and draw angles using a protractor and straight edge. Define, calculate and draw reflex angles. Identify and calculate complementary and supplementary angles. Calculate the size of missing angles at a point.	A protractor has two scales. In geometry, a protractor is a circular tool for measuring an angle or a circle. The units of measurement utilized are usually degrees. A reflex angle is greater than 180° and less than 360°.  Complementary Angles $a + b = 90^{\circ}$  Angles in a right angle add up to 90°.	Give students straws and pipe cleaners. Call out the measure of an angle and have students create it with straws and pipe cleaners. Use a protractor to see how close they are to the actual measures. Draw the following angles. (i) 70° (ii) 65° (iii) 100° Measure given angles using a protractor. 	STP Caribbean Mathematics Book 1 Mathematics The Basic Skills for The Bahamas Bahamian Mathematics Student Workbook Level A, B & C. Complementary Angles: Lesson Grade 8 Math Google	Have students draw and measure angles. Have students explain in their own words the meaning of acute, obtuse, right and reflex angles. To reinforce the work done in grade 7, have students solve problems involving acute, obtuse, right, straight and reflex angles. Worksheet on the problems involving complementary and supplementary angles. Two angles are complementary. The measure of one of the angles is 24° greater than the measure of the other angle. Find the measure of each of the angles.

SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLE PROPERTIES <i>cont'd</i>		Two or more angles that add up to 90° are called complementary angles. Supplementary Angles  Angles on a straight line add up to 180°. Two or more angles that add up to 180° are called supplementary angles. “C” of Complementary stands for “corner” (a right angle). “S” of Supplementary stands for “straight” (180° degrees is a straight line).	Give students diagrams of about 10 angles along with the reflex angle calculated. E.g. 45°, 315° Label the reflex angle. Allow students to work in pairs to study the sheet and see if they can write definitions for acute, obtuse, right and reflex angles. Calculate the value of the missing angles. a)  b)  c)  (a) Hand out a sheet with about 10 right angles split into two smaller angles a and b. Have students measure angles a and b in each case and record the results. What do you notice about a and b in each case? (They should notice that $a + b = 90^\circ$) (b) Use the same format as the previous activity except have $a + b = 180^\circ$, so that the students will now be working with supplementary angles.		Tell whether, or not the following pairs of angles are 10° and 80° 55° and 45° $36\frac{1}{2}^\circ$ and $53\frac{1}{2}^\circ$ Solve problems on angles around a point. What is angle “C”? 

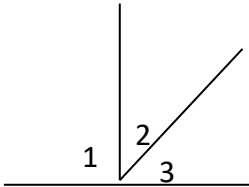
SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLE PROPERTIES <i>cont'd</i>		Angles around a point add up to 360°.  $53^\circ + 80^\circ + 140^\circ + 87^\circ = 360^\circ$	(c) Play “Mental Math Riddles”, teacher asks: Who am I? My supplement or complement is 65°. Who am I? (d) Make up a set of cards for the class that add up to 90°. Give each student a card. They must go around the room searching for their complement. Play this also with reflex and supplement angles. (e) Calculate the size of the angle marked with a letter. (f) Calculate the size of the angle marked with a letter. Ex. 11L STP Caribbean Mathematics Book 1, pg. 181		
POLYGONS	Informally prove that the sum of the angles in any quadrilateral is equal to 360° .	A polygon is a figure with three or more sides. A polygon with four sides is called a quadrilateral.	Cut out different size and types of quadrilateral for each student in class. Be sure that each student working in a group has a different type. Instruct students to tear off the four angles of their quadrilateral and glue or tape to make a circle. Have students compare their angles on a line to those of their group mates what do they notice? (Ans.: angles of a triangle equal 180°)	STP Caribbean Mathematics Book 1 Bahamian Mathematics Student Work Book Level A, B & C	On a test or quiz draw a quadrilateral and label 3 angles. Let students determine the missing angle.

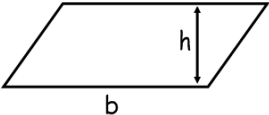
SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
POLYGONS <i>cont'd</i>	Determine the number of degrees in the missing angle of a quadrilateral given the other angle measures.	Sum of the interior angles in a quadrilateral adds up to 360° .	Find the size of angle A (an angle marked with a square is a right angle). Do the same experiment as above except give the students quadrilateral. Have each student use a ruler to draw 5 quadrilaterals on a sheet of paper. Use a protractor to measure each angle and find the sum of the degrees in the 4 angles of each quadrilateral.	STP Caribbean Mathematics Book 1	Where is the quadrilateral? Which set of angle measures below represents a real quadrilateral? 1. 30° , 120° , 70° , 50° 2. 60° , 80° , 100° , 70° 3. 50° , 180° , 50° , 80°
SYMMETRY	Recognize and complete reflective symmetry.	You can use coordinates in drawing lines of symmetry and reflecting figures. When we reflect a figure in a line, that line is a mirror line or line of symmetry	Have students find lines of symmetry with the capital letters of the alphabet. Symmetry City- seat partners across from one another and have one build a city scene using geometrical blocks that the other must copy/make symmetrical. Great hands on math! Butterfly symmetry painting - have kids use paint and a q-tip to create a design on one side of the butterfly, then fold and see what happens to the other side!	Geometric blocks Paper paint Q-Tips Scissors Construction paper	Have students make a collage of symmetrical pictures/figures

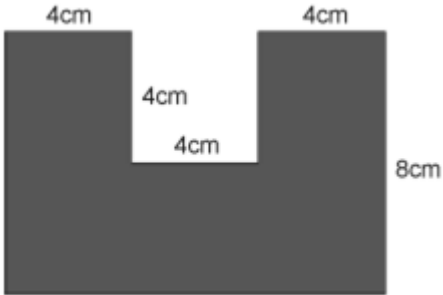
SCOPE OF WORK
GRADE: 8
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
TRIANGLES	Informally prove that the sum of the angles in a triangle is equal to 180°. Determine the number of degrees in the missing angle of any triangle.	The three angles of a triangle add up to 180°. A triangle is one of the basic shapes of geometry: a polygon with three corners or vertices and three sides or edges, which are line segments.	Cut out different size and types of triangles for each student in class. Be sure that students working in a group each have a different type. (E.g.: 1 right angled triangle, 1 equilateral, 1 scalene, 1 isosceles) Instruct students to tear off the three angles of their triangle and glue or tape them down on a straight line.  Have students compare their angles on a line to those of their group mates what do they notice? (Ans.: angles of a triangle equal 180°) Find the size of angle A (an angle marked with a square is a right angle)	STP Caribbean STP Caribbean Mathematics Book 1 Mathematics the Basic Skills for the Bahamas Bahamian Mathematics Students Work Book Level A, B & C	Where is the triangle? Which set of angle measures below represents a real triangle? 30°, 20°, 70° 60°, 80°, 100° 50°, 80°, 50° Give two angles of a triangle. Let students calculate the third angle of the triangle.

SCOPE OF WORK
GRADE: 8
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION/ PRACTICAL GRAPHS	Convert units of Time. Solve problems involving Time lapse. Use of speed, distance and time formula.	Time is measured in centuries, decades, years, months, weeks, days, hours, minutes and seconds. In the 24-hour clock 0000 hr. means midnight and 1200 hr. means midday. In the 12 hr. clock you need to write midnight or midday because 12:00 could mean either.	When you change units of time, remember that you multiply when you change to a smaller unit, and you divide when you change to a large unit. Put students in groups, each group with a calendar without labels. Ask students to determine which month it is given. Some suggestion, E.g. Names of months. Today is the 24th of the month. What was the date a week ago?	STP Caribbean Mathematics Book 1	Quiz on Conversion
PERIMETER AND AREA	Apply formulas for area of parallelograms and triangles. Explore the value of pi. Calculate the circumference of circles given its diameter or radius.	Area of a parallelogram:  $A = \text{perpendicular height} \times \text{base}$	Students can do the following discovery activity which will help students create an understanding of the area formula. Put students in pairs and give each pair parallelograms. Have them cut off the right triangle they create on one end and move it to the other. In doing so they will find that the area in a parallelogram is the same as that of the rectangle.	STP Caribbean Mathematics Book 1	Explain why area of parallelogram is really the formula for rectangles.

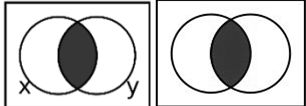
SCOPE OF WORK
GRADE: 8
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERIMETER AND AREA <i>cont'd</i>	Find the area and perimeter of simple compound shapes involving squares, rectangles and triangles.	The number π is a mathematical constant, the ratio of a circle's circumference to its diameter. It is commonly approximated as 3.14159... Circumference is the linear distance around the edge of a closed curve or circular object. Circumference of a circle: $C = \pi \times \text{diameter}$ Or $C = 2 \times \pi \times \text{radius}$ A compound shape is made up of a combination of different shapes. We calculate the total area of a compound shape by adding or subtracting the areas of the various sections. E.g. Find the area of the following shape. 			Quiz calculating the area of triangles and parallelogram with given sides. Solve word problems involving area of triangles and parallelogram.

SCOPE OF WORK
GRADE: 8
UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SETS	Write down the subsets of a given set. Identify and use the symbols $\subset$ and $\not\subset$. Show that the formula 2^n (n = number of elements in a set) works to find the number of subsets possible from a given set.	A subset is a set which contains part of (or all of) another set. $\subset$ is the symbol meaning 'is a subset of'.	Group Work: Create a universal set and form as many subsets as possible. Shade the area to describe given sets. Have 3 students stand in front of the classroom. {Paul, Chris, Ann}. Show subsets from the original set and use the notation for writing these subsets on the whiteboard	STP Caribbean Mathematics Book 1 Caribbean Maths Connect Books 1 & 2	Test glossary of terms. Answer questions based on experiments done and data collected. Exercises calculating probability of events occurring or not occurring. Concept Quiz Ask students to show that 2^n will give the number of subsets of a given set by creating an organized list of the subsets of a given set.
VENN DIAGRAMS	Identify and use the symbols for the universal set. Give a suitable universal set for a given set.	Universal set: a universal set is a set which is first defined (by list or rule) and within which all the statements that follow must be interpreted. ξ - is the symbol for the universal set .	Draw Venn Diagrams to show the intersections of these sets for students in the class. You could make a class poster. Photographs of students can be use. W = {students who walk to school} S = {students who have more than one sister}	Fundamental Mathematics for Caribbean Book 2 Pages STP Caribbean Mathematics Book 1	

SCOPE OF WORK
GRADE: 8
UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
VENN DIAGRAMS <i>cont'd</i>	Draw Venn diagrams to display given sets. Find the union and intersection of sets. Draw Venn diagrams to show the union and intersection of sets.	Venn diagrams are used to give a pictorial view of the relationships of sets and subsets within a universal set; the universal set is shown enclosed by a rectangle, and all others by circles or simple closed curves within the rectangles.  The union of 2 (or more) sets is their combination into a single set containing ALL the members of the original sets. A member found in more than one of the original sets need only be shown once in the union. $\cup$ is the symbol for the union of sets. Ex: $\{4, 7, 13, 20\} \cup \{2, 7, 10\}$ is $\{2, 4, 7, 10, 13, 20\}$ The intersection of 2 (or more) sets is the single set made containing ONLY members which are common to ALL the original sets. $\cap$ is the symbol for the intersection of sets. Ex: $\{4, 7, 13, 20\} \cap \{2, 7, 10\}$ is $\{7\}$	Use Venn Diagrams to take class attendance. Every student has a maker with their name. Each class period has a Venn Diagram on the whiteboard with categories such as: Did Homework, watch television last night, etc. Have overlaps and have the students put their names where they belong.		

SCOPE OF WORK

GRADE: 8

UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBLEM SOLVING	Use Venn diagrams to illustrate various types of sets. Include the naming of regions.	Venn diagrams are used to give a pictorial view of the relationships of sets and subsets within a universal set; the universal set is shown enclosed by a rectangle, and all others by circles or simple closed curves within the rectangles.	John, Kate, Tim, Alma and Fay play the Violin. Bruce, Alma, Tim, Perry, Waldo and Zena play Guitar. Fay, Alma, John and Colin play the Clarinet. Draw a Venn Diagrams displaying this information. List the members who play all three instruments, using set notation. Draw a Venn Diagram with overlapping sets. Carry out a survey of your classmates, finding out whether they like Chocolate Milk (C), or White Milk (W)	STP Caribbean Mathematics Book 2	

SCOPE OF WORK
GRADE: 8
UNIT: DATA MANAGEMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ORGANIZING AND ANALYZING DATA	Define, collect, organize, analyze and display qualitative and quantitative data. (Frequency tables-ungrouped data). Draw pictograms, vertical and horizontal bar charts, line graphs, pie charts, histograms. Read Pie Charts	Raw data is collected and organized in a grouped or ungrouped frequency table. Quantitative data is numerical and can be discrete or continuous. Qualitative data is described/expressed in words. Data is called raw data before it has been sorted out and organized.	From your local newspaper(s) collect examples of tables and charts. Make a wall chart and state whether each set of data is qualitative or quantitative. Using printed matter- newspapers, magazines, books research documents and any other information available; collect information that uses statistical data. Analyze the data by finding the mean, median and mode. Present your information in a suitable form, using tables, diagrams and charts. Measure the heights of the students in your class. Draw two histograms- one for boys and one for girls.	Success in Maths for the Caribbean Books 1 & 2 STP Caribbean Mathematics Book 1	Math Journal Real Life Problems Worksheets End of Unit Test

SCOPE OF WORK
GRADE: 8
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY	Calculate the probability of independent event and dependent events. Express the probabilities as fractions, decimals and percent.	Two events are independent if the occurrence of one does not change the probability of the other occurring. E.g. A card is chosen at random from a standard deck of 52 playing cards. Without replacing it, a second card is chosen. What is the probability that the first card chosen is a queen and the second card chosen is a jack? Probabilities: $P(\text{queen on first pick}) = \frac{4}{52}$ $P(\text{jack on 2}^{\text{nd}} \text{ pick given queen on 1}^{\text{st}} \text{ pick}) = \frac{4}{51}$ $P(\text{queen \& jack}) = \frac{4}{52} \times \frac{4}{51} = \frac{16}{2652} = \frac{4}{663}$ To find the probability of two independent events, simply MULTIPLY the probabilities of the two events, and simplify the product.	- A box contains 5 purple marbles, 3, green marbles, and 2 orange marbles. Two consecutive draws are made from the box without replacement of the first draw. Find the probability of each event. - P (orange first, green second) - P (both marbles are purple) - P (the first marble is purple, and the second is ANY color EXCEPT purple) - If you draw two cards from a standard deck of 52 cards without replacement, find: - P (King first, Jack second) - P (face card first, ace second) - P (2 aces)	STP Caribbean Mathematics Book 1 Die Coins Playing cards Spinner wheel Marbles	Note whether students use their knowledge of the probability of independent events as they develop winning strategies Observe whether students can successfully convert fractions to decimals and percent, and whether they use mental estimate to determine if their answers make sense. Some students, for example, might write $\frac{1}{2}$ as 20% or as 0.5% To see if students understand the term dependent, challenge them to think of events in their own lives that are dependent on other events.

SCOPE OF WORK
GRADE: 8
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY <i>cont'd</i>		E.g. A coin is tossed, and a single 6-sided die is rolled. Find the probability of landing on the head side of the coin and rolling a 3 on the die. Probabilities: $P(\text{head}) = \frac{1}{2}$; $P(3) = \frac{1}{6}$ $P(\text{head and } 3) = \frac{1}{2} \times \frac{1}{6} = \frac{1 \times 1}{2 \times 6} = \frac{1}{12}$ Two events are dependent if the outcome or occurrence of the first affects the outcome or occurrence of the second.	3. Bag A contains 9 red marbles and 3 green marbles. Bag B contains 9 black marbles and 6 orange marbles. Find the probability of selecting one green marble from bag A and one black marble from bag B. Who wants a happy birthday Slurpee? A student is picked at random. What is the probability that the student birthday falls on either seventh or eleventh day of the month? Write your answer as a fraction, a decimal rounded to the nearest thousandths and a percent rounded to the nearest tenth		

GRADE 9

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
THE REAL NUMBER SYSTEM	Use prime factorization to find Cube Roots. Solve problems using HCF, LCM, Square Roots and Cube Roots.	A cube number is the number we get when we multiply a number by itself three times. Cubing is raising a number to the power of 3. The cube root of a number is a number which multiplied by itself three times, gives the original number.	Problem solving using HCF and LCM. Finding cube roots of cubed numbers. Create a chart of cubes and cube roots of the first twenty-five numbers.	Mathematics for Caribbean Schools Book 1 Nelson Caribbean Mathematics Book 1 Bahamian Mathematics Student Workbook Level C	Pre-Test on prime factorization, H.C. F., L. C. M, and Square Roots. Testing of Squares and Cubes
PROPERTIES OF NUMBERS	Use associative and commutative properties of addition and multiplication and the distributive property over whole numbers.	Commutative Property You can change the order of two addends, and the sum is always the same. <i>Eg. $a + b = b + a$</i> Or You can change the order of two factors and the product is always the same. <i>Eg. $ab = ba$</i> Associative Property You can change the grouping of addends, and the sum is always the same. <i>Eg. $(a + b) + c = a + (b + c)$</i>	Complete an exercise to determine whether a problem indicates the property. Make up numerical examples which will make use of each law and try them on a classmate. Show by several examples that the associative law does not hold for (a) subtraction and (b) division. There is an exception to this rule! What is it?	Mathematics Today Book 7 Nelson Caribbean Mathematics Book 1 Fundamental Mathematics for the Caribbean Book 3	worksheets

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROPERTIES OF NUMBERS <i>cont'd</i>		You can group factors differently, and the product is always the same. Eg. $(a \ b) \ c$ $= a \ (b \ c)$ Distributive Property You can multiply a single term and two or more terms inside a set of brackets Eg. $5(4 + 6) = 5$ $\times 4$ $+ 5$ $\times 6$ $= 20 + 30$ $= 50$	Write some number sentences that illustrate each property of multiplication: a) Commutative b) Associative c) Distributive Find out whether order is important in cooking, for example when making a pastry or a pound cake. Does the commutative law apply in science experiments? Can you mix chemicals in any order? Discuss		
INTEGERS	Use the rules for adding, subtracting multiplying and dividing integers. Powers of integers.	Adding a negative number has the same effect as subtracting the corresponding positive number. E.g. $-4 + (-8) = -12$ $-4 - 8 = -12$	123 Switch! (Adding and Subtracting Integers Card Game) a-sea-of-math.blogspot.com/2014/06/123-switch-game-to-practice.html?m=1	Success in Maths for the Caribbean Book 3 www.transum.org/Software/SW/Starter_of_the_day/Similar.asp?ID_Topic=49 STP Caribbean Mathematics Book 2	Worksheets

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DIRECTED NUMBERS <i>cont'd</i>		When integers have the same sign, add the integers. The sum will have the same sign as the integers. $+ 7 + +8 = +15$ $-9 + -4 = -13$ When integers have different signs, find the difference between the two numbers. The sum will have the sign of the integer with the largest absolute value. $+8 + -5 = +3$ $+4 + -9 = -5$ Subtracting a negative number has the same effect as adding the corresponding positive number. When subtracting integers, the additive inverse must be used. The additive inverse of +8 is -8 ($-8 + 8 = 0$). $-6 - (+8) = -6 + (-8) = -14$ Powers of integers 1. The powers of an even exponent are always positive. That is: $(+)^{even} = +$ $(-)^{even} = +$ E.g. (i) $2^2 = 2 \times 2 = 4$ (ii) $-2^2 = (-2) \times (-2) = 4$	123 Switch! (Adding and Subtracting Integers Card Game) a-sea-of-math.blogspot.com/2014/06/12/3-switch-game-to-practice.html?m=1	Caribbean Maths Connect Book 2	Worksheets Unit quiz

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DIRECTED NUMBERS <i>cont'd</i>		2. The powers of an odd exponent have the same sign of the base. That is: $\begin{aligned} (+)^{odd} &= + \\ (-)^{odd} &= - \end{aligned}$ E.g. (i) $2^3 = 2 \times 2 \times 2$ 8 (ii) $-2^3 = (-2) \times (-2) \times (-2)$ -8			
FRACTIONS	More addition, subtraction, multiplication and division of up to three fractions and/or mixed numbers and two operations. More problem-solving involving addition, subtraction multiplication and division of up to three fractions and two operations. Locate/graph points on a number line.	$4\frac{2}{9} + \frac{3}{4} - 2\frac{2}{12}$ $\frac{48}{60} \times \frac{24}{36} \div \frac{2}{3}$	Review order of operations and the use of the acronym PEMDAS. Review four rules over fractions. Complete several practice problems in pairs.	STP Caribbean Mathematics Book 3 Bahamian Mathematics Student Workbook Level C	
DECIMALS	Decimal place value: billions to millionths. Add, subtract, multiply and divide decimals.	State the value of 5 in the following numbers: (i) 0.456 (ii) 13.275	Make place value strip.	STP Caribbean Mathematics Book 1	Worksheets Quiz

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
DECIMALS <i>cont'd</i>		Review four rules over decimals. (i) $0.50 + 3 + 17.009$ (ii) $9 - 5.456$ (iii) $1.11 * 9$ (iv) $0.87 * 0.2$ (v) $3.45 / 0.5$			
ORDER OF OPERATIONS	Apply the rules of order of operations with whole numbers, fractions, decimals, brackets and indices. Solve word problems. Locate/graph on a number line. Round decimals to a given number of decimal places.	Order of Operations is a rule that explains which procedure should be done first. 1. Parentheses and Brackets 2. Exponents 3. Multiplication and Division <i>All multiplication and division operations are carried out first, from left to right, in the order they occur.</i> 4. Addition and Subtraction <i>All addition and subtraction operations are carried out, from left to right, in the order they occur.</i>	Allow students to create their own problems and solve them. Have students create a PEMDAS foldable.	Mathematics for Caribbean Schools Book 1 STP Caribbean Mathematics Book 2	Have students identify the PEMDAS components. Then have students write the following equation on a note card: $5 - 3[23 - 5 + 7(-3)]$ Have each student solve the equation individually and turn it in as an exit ticket. If time permits, allow students to solve the equation using the whiteboard.

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERCENTAGES	Simple interest: define the terms principal, rate, interest and amount. Calculate Hire Purchase	Simple Interest (SI) – the amount of money paid on a sum of money over a period of time. Principal (P) –the sum of money borrowed /invested. Rate (R) - annual interest rate (usually given as a percent). Time (T) - is the time that the principal amount is either borrowed or invested. It is usually given in years. $SI = \frac{Principal \times Rate \times Time}{100}$ Hire Purchase (HP) - a system by which one pays for an article/item in regular installments while having the use of it.	Mount a classroom display of newspaper articles showing different uses of percentages – prices, population, etc. Try to find as many different applications as possible. Set up situations for the students involving savings and loans that require the calculation of simple interest. Real life problems that involve Hire Purchase. Work in pairs/group of 4. Visit a local bank and find out the mortgage terms on a house for sale in your area.	Nelson Caribbean Mathematics Book 2 Fundamental Mathematics for the Caribbean School Book 2 STP Caribbean Mathematics Book 1 Bahamian Mathematics Student Workbook Level C	

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
RATIO, PROPORTION & RATE	Direct and inverse proportion. Common measures of rate. Share in a given ratio.	Two quantities are said to be in proportion when corresponding pairs of values are always in the same ratio. Two quantities are said to be in direct proportion if they increase or decrease using a constant multiplier. When two quantities are related so that one quantity decreases as the other increases, one quantity is in inverse proportion to the other.	Real life problems. Find out how to measure someone's pulse, and then count how often their pulse beats in 30 seconds. How often does your own pulse beat in 1 minute? Record this as a number of beats per minute. If you fold an A4 sheet of paper in half (the fold must be parallel to the shorter sides) you will have divided the rectangle into two similar rectangles (A5 size). Using this fact alone what is the ratio of length to the width of the paper? (No measuring allowed!)	Success in Maths for the Caribbean Book 3 Mathematics for Caribbean Schools Book 2	
ROUNDING. APPROXIMATION & ESTIMATION	Rounding whole numbers Rounding to decimal places Rounding to significant figures.	To estimate means to find an answer close to the exact value. When an exact value to a math problem is not needed, or when you want to check the reasonableness of an answer, you can use estimation.	Find out about some measuring devices. How accurate is each one? Have students estimate the cost of individual items found on a typical grocery list; for example, apples, bananas, and cream.	Mathematics for Caribbean Schools Book 1 Nelson Caribbean Mathematics Bk. 2	

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ROUNDING. APPROXIMATION & ESTIMATION <i>cont'd</i>		To approximate number is to give a number close to the actual value but not completely accurate or exact. $54.9 \approx 55$ Rounding to Significant Figures Another method of giving an approximate answer is to round using significant figures. The first significant figure of a number is the first non-zero digit that occurs in the number, reading from left to right. The first significant digit has the highest place value.		Mathematics Application and Concepts Course 1 STP Caribbean Mathematics Bk. 1 Bahamian Mathematics Student Workbook Level C www.transum.org/software/SW/Starter_of_the_day/Students/RoundingDP.asp	Have students estimate the cost of all the items on a grocery list you design and get a total cost of those items at an accuracy rate of at least 80 percent. Evaluate each student's ability to correctly round decimal prices to the nearest whole dollar.

SCOPE OF WORK
GRADE: 9
UNIT: NUMBER & OPERATIONS: NUMBER THEORY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSUMER MATH	Bills Wages and Salary	Salary- money earned when a person has a long-term job and is paid regularly, usually by the month. Wage- money earned when a person is paid by the hour, often for short-term or part-time work. Overtime- work done outside normal prescribed working hours. Some hourly rate for overtime can be: • Double time = $2 \times$ regular rate • Time and half = $1 \frac{1}{2} \times$ regular Time and quarter = $1 \frac{1}{4} \times$ regular rate Gross pay/earnings – the amount receives before any deductions are made. • Net pay/earning – the amount of money left after deductions have been made.	Find out how much you can expect to earn in your first full-time job when you leave school/college. Estimate your living expenses and draw up a weekly and monthly budget. Work in groups of three (3) and find out the annual salary for each of the following here in the Bahamas: - Policeman - Trained Teacher - Registered Nurse - Immigration Officer - Security Officer Then, calculate the monthly salary for each Find out how much your family spends on electricity, water, cable and telephone bills each year. Work out the cost per week. Suggest at least one (1) way of economizing on these bills.	Caribbean Maths Connect Book1 Fundamental Mathematics for the Caribbean Book 1 Heinemann Mathematics for CXC Pages 67-74 STP Caribbean Mathematics Book 2	

SCOPE OF WORK
GRADE: 9
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS																								
ALGEBRAIC REPRESENTATION	Translate verbal phrases to algebraic expressions and vice-versa.	Identify the variable and the mathematical operations in the problem then form the expression.	Write an expression for the following situation. <i>In a competition, the third prize was \$d; the second prize was twice as much as the third prize and the first prize was three times as much as the third prize. How much money was given in prizes?</i> Write a paragraph describing what happened to the number of people attending a party. Scenario: <i>Jason had a party. He expected e people to arrive. The table shows how many people were actually at his party during the evening.</i> <table><tr><td>Time</td><td>Number of people</td><td>Time</td><td>Number of people</td></tr><tr><td>6:00 p.m.</td><td>e-20</td><td>6:30</td><td>e - 6</td></tr><tr><td>6:10</td><td>e - 18</td><td>7:00</td><td>e - 3</td></tr><tr><td>6:15</td><td>e - 15</td><td>8:00</td><td>e</td></tr><tr><td>6:20</td><td>e - 11</td><td>9:30</td><td>e – 18</td></tr><tr><td>6:25</td><td>e - 12</td><td>11:00</td><td>e -20</td></tr></table>	Time	Number of people	Time	Number of people	6:00 p.m.	e-20	6:30	e - 6	6:10	e - 18	7:00	e - 3	6:15	e - 15	8:00	e	6:20	e - 11	9:30	e – 18	6:25	e - 12	11:00	e -20	Caribbean Maths Connect Book 2 Fundamental Mathematics for the Caribbean Book 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations
Time	Number of people	Time	Number of people																										
6:00 p.m.	e-20	6:30	e - 6																										
6:10	e - 18	7:00	e - 3																										
6:15	e - 15	8:00	e																										
6:20	e - 11	9:30	e – 18																										
6:25	e - 12	11:00	e -20																										

SCOPE OF WORK
GRADE: 9
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS	
BASIC ALGEBRAIC OPERATIONS	Apply the order of operations to simplify algebraic expressions.	When an expression contains mixed operations including brackets and indices, use the distributive law to clear the brackets, simplify exponential terms and then combine like terms.	Group work: Write five questions of the form $a(by + c)$ with the following answers. (a) $12y - 36$. (b) $-24y + 72$ (a, b , and c are integers) Simplify the following. (a) $3 + 5(2x + 3)$ (b) $4(x + 5) + 6(x + 3)$ (c) $8y(4y^2 - 5y) + 3y^3$ (d) $-7c(-5c + 2d)$	STP Caribbean Mathematics Books 1 & 2 Caribbean Maths Connect Bk. 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations	
SUBSTITUTION	Calculate the numerical values of algebraic terms and expressions by substituting rational numbers for variables to solve problems.	Replace the variable with a numerical value and then simplifying. Follow the correct order of operations (PEMDAS or BODMAS or BEDMAS or BIDMAS) where appropriate.	Solve word problems using measurement formula. Example: A rectangle is $3l$ cm long and l cm wide. If the area of the rectangle is A cm ² , write down a formula for A . Use your formula to find the area of this rectangle if it is 5cm wide. Area = length x width $\therefore A = 3l \times l$ (substitute $l = 5$) $A = 3 \times 5 \times 5 = 75 \therefore A = 75\text{cm}^2$ Calculate the area of the rectangle using the formula. Area = $l \times w$ 5.5 cm <table border="1"><tr><td>12.7 cm</td></tr></table>	12.7 cm	STP Caribbean Mathematics Books 1& 2	Demonstrate the change in value/amount affecting the price of item(s). The change in electricity bills due to the variation in units used. The change in telephone bill based on the length of the call.
12.7 cm						

SCOPE OF WORK
GRADE: 9
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
INDICES	Identify and use the laws of indices to simplify expressions.	The laws of indices may be used as an alternative to expansion. The laws as applied to whole numbers are: $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$ $a^0 = 1$ and $a^1 = a$ $a^2 = a \times a$	Simplify the following algebraic expressions. (a) $b \times b^2 \times b^3$ (b) $5m^3 \times 2n \times m$ (c) $\frac{x^3}{x^2}$ (d) $\frac{12j^{13}}{4j^8}$ (e) $4t^2(3t - 3)$	Caribbean Maths Connect Book 2 STP Caribbean Mathematics Books 1 & 2	Math Journal End of Unit Test True/false Questions Multiple Choice Questions Mental /Oral Testing Worksheets Discussion with reference to real life situations Select appropriate law to simplify expressions with indices.

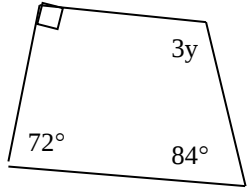
SCOPE OF WORK

GRADE: 9
UNIT: ALGEBRA
SCOPE OF WORK

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
BRACKETS	Simplify an expression by removing the brackets (distributive property) and combining like terms – including integers.	Sometimes brackets are used to hold two quantities together. Example: Multiply the sum of x and 3 by 4 is written as $4(x + 3)$. All terms in the brackets are multiplied by the factor 4. $4 \times x + 4 \times 3 = 4x + 12$ To simplify expressions with brackets, remove the brackets (expansion), then collect like terms to simplify.	Matching exercise Hands On Equations; Lab Gear Simplify the following expressions. (a) $5(x + 6)$ (b) $2x + 4(x + 1)$ (c) $-2(2x + 5)$ (d) $-7(9p - 6)$ (e) $7a + 6a - 3(a + 3a)$	STP Caribbean Mathematics Books 1 & 2 Caribbean Maths Connect Book 1 Success in Math for the Caribbean Book 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion the impact of brackets in an expression
EQUATIONS	Solve linear equations with variables on both sides and include brackets. Solve practical problems by forming equations or using formula.	<u>Steps to Solving Equation</u> Place the variables on one side and constants on the other side using inverse operations. Combine like terms then isolate the unknown. Remove brackets using the distributive law. With variables on one side and constants on the other use inverse operations and solve.	Solve the following by forming an equation in each case. Explain in words or by diagram what your letters stand for. (a) Buns cost x cents each and a cake costs twice as much as a bun. I buy two buns and three cakes and pay 160 cents altogether. How much does each bun cost?	STP Caribbean Mathematics Book 1 Caribbean Maths Connect Book 1 Mathematics for GCSE	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

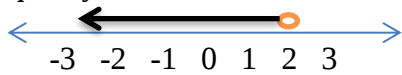
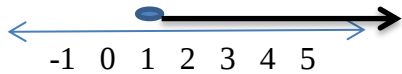
GRADE: 9
UNIT: ALGEBRA

SCOPE OF WORK

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
EQUATIONS <i>cont'd</i>		Determine what is being required, identify the variable and the supporting information then form the equation and solve it.	(a) In triangle ABC, $\angle A = x^\circ$, $\angle B = 70^\circ$ and $\angle C = 20^\circ$ more than $\angle A$. Draw a diagram and find $\angle A$. (b) Hands On Equations; Lab Gear; (c) Flow Chart (d) Use the sum of the angles in a quadrilateral to write down an equation in y. Solve your equation to find the value of y. 		
TRANSPOSITION	Change the subject of simple formula with no more than two operations and the subject appearing once only.	The subject of the formula is the letter on its own on one side of the equal sign. To change the subject of a formula, solve it for the letter that is to be the new subject. Use inverse operations.	Journal Entry: Rewrite the formulas $A = lw$ for length and width; and $C = \pi d$ for radius and diameter. Change the subject of each formula to the letter in the brackets. $S = \frac{d}{t} (t)$ $y = mx + c (x)$ $p = 2l + 2w (l)$	STP Caribbean Mathematics Book 2	

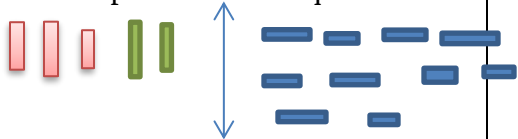
GRADE: 9
UNIT: ALGEBRA

SCOPE OF WORK

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
TRANSPOSITION <i>cont'd</i>			PROBLEM: A recipe called for 200°C. The oven readings were in degrees Fahrenheit. How do we use the formula to find out this equivalence? $C = \frac{5(F - 32)}{9}$ Transform the formula to make F the subject and hence find the equivalent amount. <i>Note: The reverse situation could be used.</i> 360°F – change to Celsius $F = \frac{9C}{5} + 32$	STP Caribbean Mathematics Book 2 Exploring Mathematics Bk8 p100	Change the subject of each formula to the letter in the brackets. 4. $S = \frac{d}{t} (t)$ 5. $y = mx + c (x)$ 6. $p = 2l + 2w (l)$
INEQUALITIES	Define the term inequality. Read and write inequality statements. Identify and use the four mathematical signs/symbols for inequality to show simple relationships.	<u>Inequality</u> : a number sentence indicating that two quantities are not necessarily equal.	Appendix PFA-14 grade 7 Appendix PFA-1 Appendix PFA-13 from grade 7, include inequalities. Use the number line to write the inequality. 1.  2. 	Mathematics for Caribbean Schools Book 2 Caribbean Maths Connect Book 2 STP Caribbean Mathematics Book 2 Mathematics Plus 7	Math Journal End of Unit Test Mental /Oral Testing Worksheets Discussion with reference to real life situations

GRADE: 9
UNIT: ALGEBRA

SCOPE OF WORK

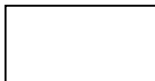
CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
INEQUALITIES <i>cont'd</i>	Describe range of values using inequality symbols and interpret range as an inequality. Represent Inequalities on number lines. Solve simple linear inequalities in one unknown and illustrate the solution on the number line.	Special words are used to indicate relationships that are not equal (over, under, less than, greater than). $<$ means 'is less than' $>$ means 'is greater than' $\leq$ means 'is less than or equal to' $\geq$ means 'is greater than or equal to' A number line can be extended to any length indicating negative and positive numbers. An open circle on the number line means the number underneath is not included in the solution of the inequality. A number line can be extended to any length indicating negative and positive numbers. An open circle on the number line means the number underneath is not included in the solution of the inequality.	Draw a number line to illustrate the following. (a) $x > 7$ (b) $x < -4$ (c) $x \geq 3$ 1. Write an inequality to describe the relationship between two quantities.  $3p + 2g < 10b$ 2. Solve inequalities. (a) $c + 5 < 12$ $c + 5 - 5 < 12 - 5$ $c < 7$ (since the solution is $c < 7$, 0, 1, 2, 3, 4, 5 and 6 would be the positive integers satisfy this statement.		

GRADE: 9
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
INEQUALITIES <i>cont'd</i>		A closed circle means the number is included. Solving an inequality is finding the range of values of the unknown for which it is true. Inequalities are solved by using inverse operations. An inequality remains true when the same number is added to, or subtracted from, both sides. It remains true when both sides are multiplied or divided by the same positive number.			
ALGEBRAIC FRACTIONS	Add and subtract algebraic fractions with numerical denominators Simplify algebraic fractions by multiplying and dividing.	The L.C.M is the term that can be rewritten as a product of the given numbers (denominators). To add or subtract algebraic fractions rename each fraction using the common denominator. Similar steps taken with whole numbers should be applied.		Caribbean Maths Connect Book 2 STP Caribbean Mathematics Books 1 & 2	Math Journal End of Unit Test Mental /Oral Testing Worksheets

SCOPE OF WORK

GRADE: 9
UNIT: ALGEBRA
SCOPE OF WORK

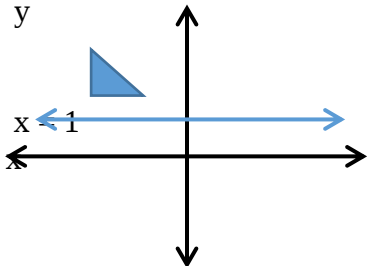
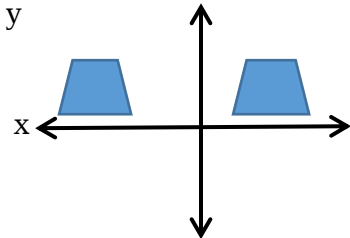
CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS										
ALGEBRAIC FRACTIONS <i>cont'd</i>	Solve simple equations involving brackets and fractions.	Multiply the numerators and multiply the denominators, cancel, reduce or simplify terms. To divide, use the multiplicative inverse or reciprocal. Balance the equation by transposition (doing the inverse operations), form brackets, clear brackets, simplify and solve. Alternately, multiply all terms in the equation by the L.C.M to eliminate the denominators, clear the brackets and solve.	Group work: The following table shows the age of each member of a family. (i) Write an expression for the sum of their ages. (ii) Simplify the expression for the sum of the ages. <table><tr><td>Name</td><td>Age in years</td></tr><tr><td>Mr. Jones</td><td>a</td></tr><tr><td>Mrs. Jones</td><td>$7a/8$</td></tr><tr><td>Mary</td><td>$a/2$</td></tr><tr><td>Peter</td><td>$a/3$</td></tr></table> Simplify the following expressions. (a) $\frac{2x}{8} + \frac{3x}{4}$ (b) $\frac{16t}{6} - \frac{6t}{3}$(c) $\frac{2x+7}{5} + \frac{5x-2}{3}$ Given the dimensions of a rectangle, as shown in the diagram below, (i) write an expression for the area (ii) simplify the expression $\frac{2x}{y}$  $\frac{y}{x}$ Simplify the following expressions. (a) $\frac{2c}{5} \times \frac{10}{3c}$(b) $\frac{6z}{25} \div \frac{4z^2}{5}$	Name	Age in years	Mr. Jones	a	Mrs. Jones	$7a/8$	Mary	$a/2$	Peter	$a/3$		Discussion with reference to real life situations
Name	Age in years														
Mr. Jones	a														
Mrs. Jones	$7a/8$														
Mary	$a/2$														
Peter	$a/3$														

GRADE: 9
UNIT: ALGEBRA

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ALGEBRAIC FRACTIONS <i>cont'd</i>			The lengths of the sides of the triangle are shown on the diagram. (a) If the perimeter is 48cm, find the value of x. (b) Hence find the length of each side. $\frac{x}{2}$ cm $\frac{x}{4}$ cm $\frac{x}{3}$ cm  Find the value of x. (a) $\frac{5x}{3} + 7 = 21$ (b) $\frac{5x-6}{7} = \frac{x}{2}$ (c) $\frac{6+3x}{5x} = \frac{2}{3}$		

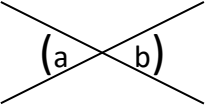
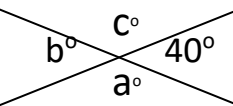
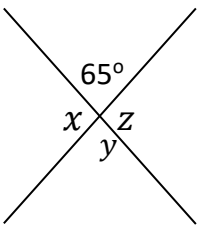
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
COORDINATE GEOMETRY	Demonstrate reflective symmetry in a Cartesian plane. Perform transformations in the Cartesian plane.	An object is symmetrical if it can be divided into two equal parts. An object and its image demonstrates Reflexive symmetry when all corresponding points are equal distances from the axis or line of symmetry. Transformation is the movement of points to a new location. An object may be transformed under certain conditions. Enlargement- the object is made bigger by increasing the values by a given scale factor and center of enlargement. Reflection- the image of an object is the same distance away from the mirror line or axis of reflection. Rotation- the movement of the object through a given angle in a particular direction (clockwise/ anti-clockwise).	1. Reflect the object in the given line of symmetry.  2. Draw in the line of symmetry.  Students participate in an online game moving the object by various transformations. Draw a large letter (F) on a sheet of paper and use a Mira to draw the reflection.	Graph paper Mira Bahamian Mathematics Student Workbook Levels A & C www.mathsonline.co.uk Junior High Mathematics Fundamental Mathematics Book 2	Class assignments List the characteristics of each type of transformation. Complete an assignment on graph paper demonstrating the ability to transform a given object under the four circumstances.

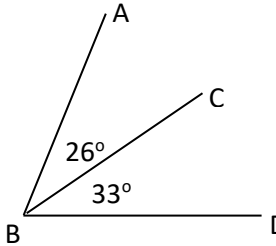
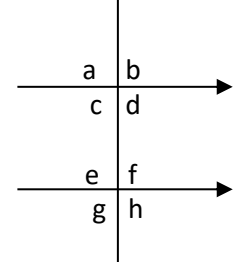
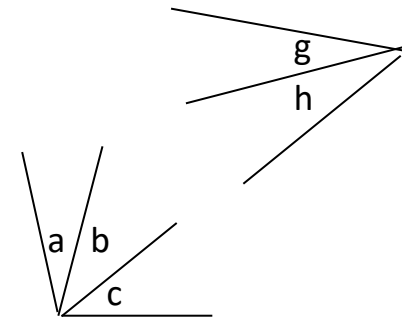
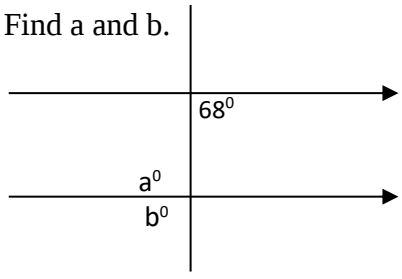
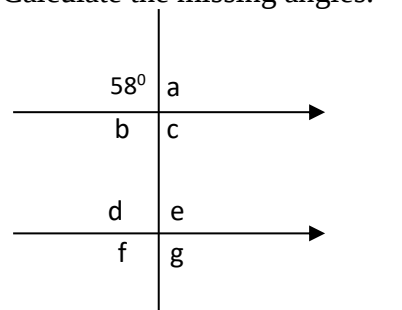
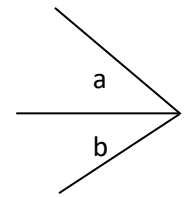
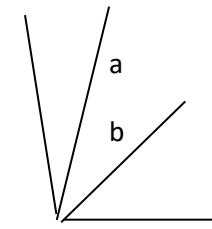
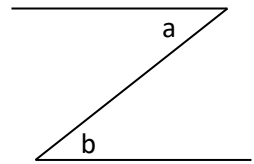
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
COORDINATE GEOMETRY <i>cont'd</i>		Translation - the displacement of the object - movement of the object in a horizontal followed by a vertical movement indicated by a vector (direction and distance).	Trace a figure and draw a half-turn or quarter turn clockwise or anticlockwise rotation. Write down the coordinates of an image after following specific directions.		
GEOMETRICAL TERMS AND PROPERTIES			Research on Geometrical Terms and Properties.		Pre-Test on Geometrical Terms and Properties.
ANGLES PROPERTIES	Identify and calculate vertically opposite and adjacent angles. Identify and calculate angles formed by parallel lines and a transversal: corresponding, alternate and co-interior angles.	Vertically Opposite angles are the angles opposite each other when two lines intersect.  Vertically opposite angles are equal $a^\circ = b^\circ$ (in fact they are congruent angles)	Find angles a° , b° and c° .  Calculate the missing angles. 	Mathematics the Basic Skills for the Bahamas Bahamian Mathematics Student Work Book Level C STP Caribbean Mathematics Books 1 & 2 Mathematics the Basic Skills for The Bahamas	Have students solve problems involving angles properties. Unit Test Angles Properties

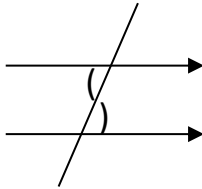
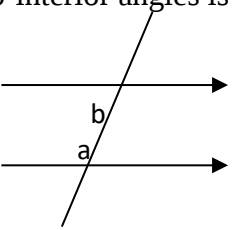
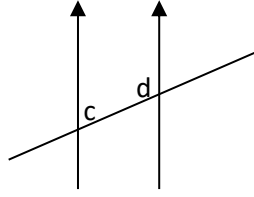
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLES PROPERTIES <i>cont'd</i>		Adjacent Angles Two angles are adjacent if they have a common side and a common vertex (corner, point).  Angle ABC is adjacent to angle CBD Because ♦ they have a common side (line CB) ♦ they have a common vertex (point B) When two lines are crossed by another line (called the Transversal) the angles in matching corners are called Corresponding Angles. 	Identify the adjacent angles.  Find a and b.  Calculate the missing angles. 		What Is and Is Not and Adjacent Angle    Unit Test Have students solve problems involving the different types of angles.

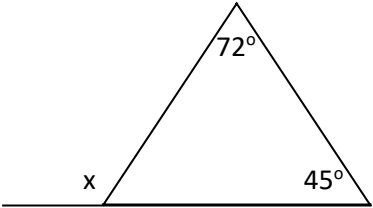
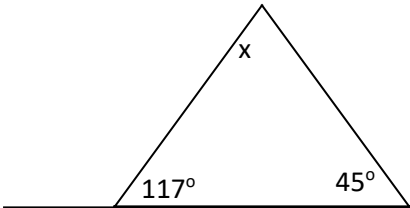
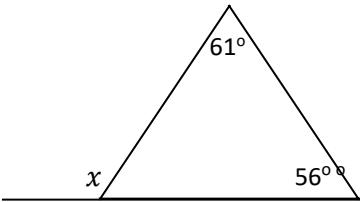
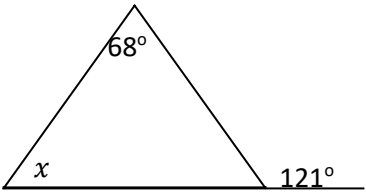
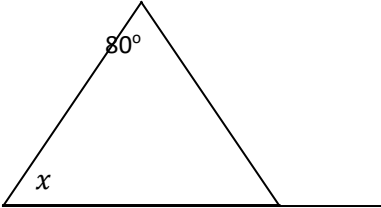
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ANGLES PROPERTIES <i>cont'd</i>		In this example, these are corresponding angles. (i) a and e (iii) c and g (ii) b and f (iv) d and h Note: If the two lines being crossed are Parallel Lines, then the corresponding angles are equal. Alternate angles are equal. The two angles are formed by the letter z.  Co-interior Angles The sum of co-interior angles is 180°.  <i>a</i> and <i>b</i> are co-interior angles $a + b = 180^\circ$  <i>c</i> and <i>d</i> are co-interior angles, so $c + d = 180^\circ$			

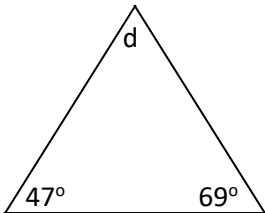
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
TRIANGLES	Calculate the exterior angles of a triangle.	Exterior angle of a triangle is equal to the sum of the two interior opposite angles.  $x = 45^\circ + 72^\circ$ $x = 117^\circ$  $x = 117^\circ - 45^\circ$ $x = 72^\circ$	Calculate the missing angles.   	Mathematics the Basic Skills for the Bahamas STP Caribbean Mathematics Book 1	Find the measure of an exterior angle at the base of an isosceles triangle whose vertex angle measure 40° .

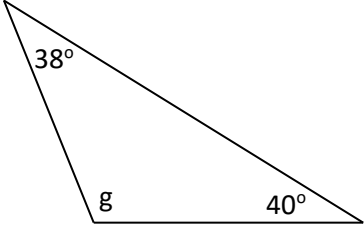
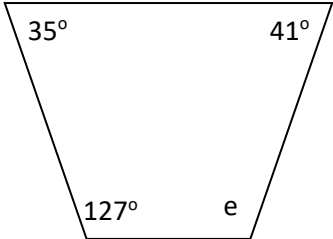
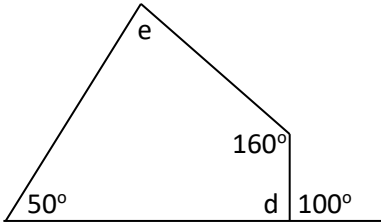
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
POLYGONS	Determine the number of degrees in the missing angle of any polygon.	A polygon is defined as a plane shape (or figure) bounded by three or more straight lines. The line segments are called sides of the polygon. A polygon is regular when all sides and all angles are equal. The <i>sum of the interior angles</i> of an n-sided polygon is $(2n - 4)$ right angles or $90^\circ(2n - 4)$ or $180^\circ(n - 2)$.	Forming Polygons In this activity students form different triangles and quadrilaterals by rearranging two congruent triangles. Put students in pair. Give each pair paper and scissors. Have students work through the following steps. 1. Cut two congruent right angled triangles from the paper. 2. Arrange them into different polygons by joining them on matching edges in all possible ways. 3. Record each shape and identify it by name. 4. Find the missing angles in the polygons below. 	Bahamian Mathematics Student Workbook Levels A, B & C	Worksheet on polygons.

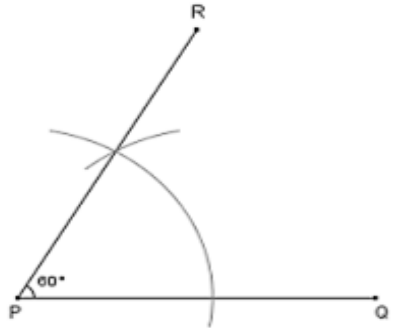
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
POLYGONS <i>cont'd</i>			  Find angles d and e. 		

SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSTRUCTIONS	Construct and bisect angles of 60° and 90° using compasses and ruler only. Construct triangles given. - One side and two angles. - Two sides and an angle. - Three sides.	Constructing a 60° angle. Step 1 Draw a line, PQ that will be one leg of the angle. Step 2 With compass on P, set its width to about half PQ. Step 3 Draw an arc from above P and Crossing PQ. Step 4 Move to where the arc crosses PQ and make an arc cross the first. Step 5 Draw a line PR from P through the arc intersection. The angle QPR has a measure of 60 degrees. 	Construct the following angles using ruler and compasses only. 60° 90° 120° 135° Bisect each angle using ruler and compasses only. Activity: - Construct triangle PQR such that PQ = 5cm, PR = 6 cm and QR = 3cm - Construct triangle PQR in which P = 60°, PQ = 6cm and QR = 5.5cm. - Construct triangle ABC in which AB = 7cm, A = 30°, B = 50°	Modern Mathematics for the Bahamas Level 7 STP Caribbean Mathematics Books 1 & 2 Bahamian Mathematics Student Workbook Level C	Have students actually construct triangles.

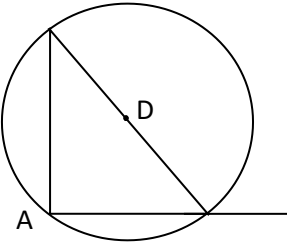
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSTRUCTIONS <i>cont'd</i>		Bisect the angle of 60°. Step 1 Construct an angle of 60°. Step 2 Label the angle RST. We can bisect it using ruler and compass. Step 3 With S as centre and a suitable radius, draw an arc to cut RS and ST at P and Q. Step 4 With P as centre and a radius greater than half PQ. Step 5 Now with Q as centre and the same radius, draw another arc to cut the first arc at c. Step 6 Join SC.			

SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSTRUCTIONS <i>cont'd</i>		Constructing a 90° angle compass and ruler only. Step 1 Mark a point D somewhere above the line and in front the end.  Step 2 Place the compass on D and set its width to the line end point A. Step 3 Draw an arc across the line to above point A. Step 4 Draw a diameter through D from where the arc crosses the line. Step 5 Draw a line from A to the endpoint of the diameter. The last line is at 90° to the given line. Bisect an angle of 90°. Use the same method in bisecting angle of 60°.			

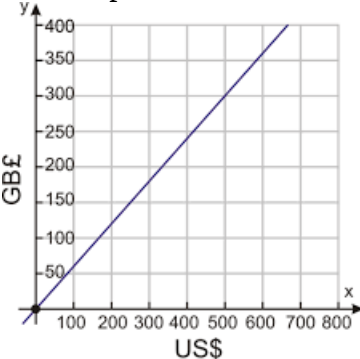
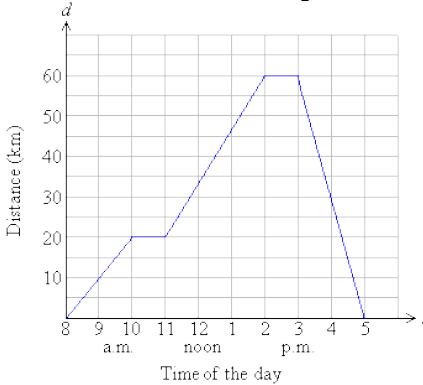
SCOPE OF WORK

GRADE: 9
UNIT: GEOMETRY & SPATIAL SENSE

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONSTRUCTIONS <i>cont'd</i>		To construct a triangle with three sides given: To construct a triangle ABC such that $AB = 6\text{cm}$, $BC = 5\text{cm}$, $AC = 4\text{cm}$. Step 1 Draw a line $AB = 6\text{cm}$. Step 2 With B as centre and a radius of 5cm, draw an arc above AB. Step 3 With A as centre and a radius of 4cm, draw another arc to cut the first arc at C. Step 4 Join BC and AC.			
PLATONIC SOLIDS	Identify the platonic solids and their duals.				

SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION & PRACTICAL GRAPHS	Convert 12-hr time to 24-hr and vice-versa. Use and interpret speed – time and distance-time graphs.	In the 24-hour clock, there are no 'a.m.' and 'p.m.' labels. The hours start at zero and go through to 23. All 24-hour clock times should be written hh:mm or hh:mm:ss, where h is the hour, m is the minute and s is the seconds. Converting from 24-hour to 12-hour times <u>Steps:</u> • If the hour is exactly 12, then label it as a <i>p.m.</i> time. • If the hour is 00, change it to 12 and label it as an <i>a.m.</i> time. • If the hour is greater than 12, then subtract 12 from the hour and label it as a <i>p.m.</i> time. • Otherwise, simply label it as an <i>a.m.</i> time and take away any leading zeros. The minutes and seconds never change when changing between 24-hour and 12-hour times.	Use the graph to convert between dollars and pounds.  Convert \$500 to pounds. Use the graph to find the distance travelled to the first stop.  How long was the stop? How long did the journey take?	Math Connect Book 2 Bahamas Mathematics Student Workbook Level C	Quiz on Conversion Work Sheet on Graphs

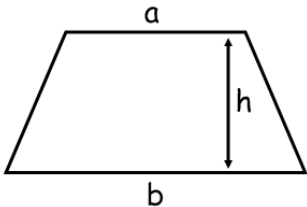
SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION & PRACTICAL GRAPHS <i>cont'd</i>		Examples: 14:36 = 2:36pm 02:12 = 2:12am 09:24 = 9:24am 17:48 = 5:48pm Converting from 12-hour to 24-hour clock Steps: • If the hour is exactly 12 <i>p.m.</i>, then remove the '<i>p.m.</i>' label. • If the hour is 12 <i>a.m.</i>, then change it to 00. • If the hour is a <i>p.m.</i> time, then simply add 12 to the hour. • Otherwise, the hour does not change. If it is less than 10, then add a zero before the digit. The minutes and seconds never change when changing between 24-hour and 12-hour times. Examples: 1:45am = 01:45 1:45pm = 13:45 4:20am = 04:20 4:20pm = 16:20 Conversion Graphs are used to convert from one unit to another. It displays a relationship that you know already between two sets of figures (units) and help you to find out what the relationship between these units are.			

SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
CONVERSION & PRACTICAL GRAPHS <i>cont'd</i>		These are usually straight-line graphs and starts from 00. When converting units e.g. gallons to litres, miles to kilometres and dollars to pounds the units are directly proportional to each other. <u>Distance, Speed and Time Graph is</u> used to show a journey or track a journey at different times. Reading the vertical and horizontal scale on the axis is very important. When no distance is travelling the graph shows a horizontal line between the movements. When travelling the steeper the line the faster the object is moving.			
PERIMETER AND AREA	Apply the formula for area of circle given the diameter or radius. Include problems with semi-circles and quadrants. Apply the formula for computing the area of a trapezium.	<u>Area of a Trapezium:</u>  $A = \frac{1}{2}(a + b) \times height$	Students can measure the length of each side of their exercise book cover or text book and hence discover the formula for perimeter or square.	Nelson Caribbean Mathematics Book 1 Caribbean Maths Connect Books 1 & 2	Written Exercise to explain how to find the perimeter of given polygons. Written test. Problem Solving Puzzles

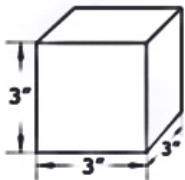
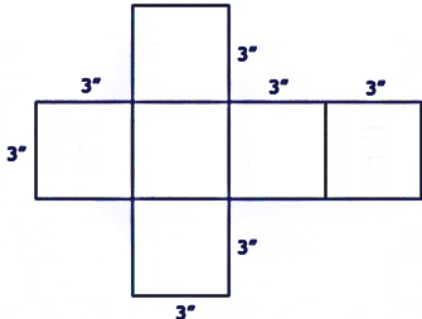
SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PERIMETER AND AREA <i>cont'd</i>	Calculate area of compound shapes composed of rectangles, etc. Calculate the perimeter and area of compound shapes composed of rectangles, triangles, parallelograms trapeziums and circles. Solve problems by applying formula to calculate area of borders.	<u>Area of a Circle:</u> $A = \pi \times radius \times radius$ <u>Area of Compound Shapes</u> is the number of square units needed to cover a region. Separate shapes into figures that you can find the area using a formula for e.g. rectangles, triangles, trapezoid and circles.	Calculate the perimeter of given polygons using formula where possible. Find perimeter of polygons involving mixed units to involve conversion of measurement. Calculate using formula the missing measure in given polygons. Using square paper with shapes on them, students can count the whole squares then the partial squares to get area of shape. Find area of each shape in the figure using formula. Add the area for each figure in the shape to find the total area of the shape. Some figures might require that the area be subtracted to get what is needed. Calculate the areas of picture frames, path around a pool or garden.		
SURFACE AREA	Calculate the surface area of cuboids.	The surface area of a solid is the total area of its exterior surfaces.	1. Have students explore the following scenario: You have two rectangular cards 12cm by 8cm and two cards 8cm by 6cm. - How many more cards would you need to make a closed box? - What size would these cards have to be?	Geo-solids Kit Ruler Cereal boxes	Written Exercise to explain how to find the surface area of cube/cuboids

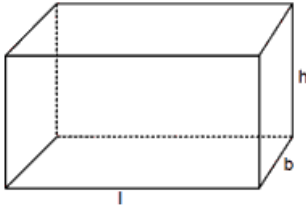
SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SURFACE AREA <i>cont'd</i>		To find the surface area of a cuboid, you can:  1. Draw a net of the polyhedron.  2. Calculate the area of each face. $ \begin{aligned} S &= 2lb + 2bh + 2hl \\ &= 2 \times 3 \times 3 + 2 \times 3 \times 3 + 2 \times 3 \times 3 \\ &= 18 + 18 + 18 \\ &= 54 \text{ square inches} \end{aligned} $ 3. Add up the area of all the faces and express the answer in square units.	2. Have students: - Estimate the surface area of given cuboids (e.g. cereal boxes, washing detergent box, etc.) - Measure the length, breath and height of these boxes in inches and centimeters. - Calculate the surface area in in^2 and cm^2. - Find the difference between the estimate and the calculated surface area.	Washing detergent boxes Net of a rectangular prism Caribbean Maths Connect 2	Create a net of a cube/cuboid Written test.

SCOPE OF WORK

GRADE: 9
UNIT: MEASUREMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
VOLUME & CAPACITY	Find the volumes of cubes and cuboids.	The volume of a solid is the amount of space it occupies. To find the volume, we need to know the measures of three sides. Volume is measured in cubic units. Volume of a cuboid:  $V = \text{length} \times \text{breadth} \times \text{height}$ $V = l \times b \times h$	- Estimate the volume of the classroom in m^3. - Measure the length, breadth and height of the classroom. - Calculate the volume in m^3. - Find the difference between the estimate and the calculated volume. - The above activity can be done with other cube or cuboid shape items. - Obtain some rectangular prism containers of different sizes. For each: - Measure the length and the breadth - Calculate the area of the base - Measure the height - Find the volume - Completely fill the container with water and carefully pour it into a large measuring cylinder. Find the volume of water in ml. Compare the capacity of the container in ml with the volume in cm^3. Calculate the volume of cubes and cuboids.	STP Caribbean Mathematics Book 1 & 2 Cube and Cuboid solid Ruler Measuring tape Cylinder Water	Written Exercise to explain how to find the volume of cuboids. Worksheet on Volume Written test.

SCOPE OF WORK

GRADE: 9
UNIT: SETS

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
SETS	Compare and contrast equal and equivalent sets. Identify and determine the complement of a set using proper set notation.	<u>Two sets are equivalent</u> if the amount of elements in each set is equal. E.g. $A = \{\text{cat, mouse, dog}\}$ $B = \{3, 6, 9\}$ Sets A and B are equivalent because they both have three (3) elements. <u>Two sets are equal</u> if they have the same elements. E.g. $L = \{3, 5, 7, 9, 11\}$ $M = \{11, 3, 9, 5, 7\}$ Sets L and M are equal because the elements in both sets are the same. The complement of a set is the set of all the elements in the universal set that are not in the set in question. The symbol A' is used to represent the complement. E.g. $U = \{3, 5, 7, 9, 11, 13, 15\}$ $M = \{3, 9, 15\}$ Then $M' = \{5, 7, 11, 13\}$		www.cimt.plymouth.ac.uk/projects/mepres/book7/bk7i1/bk7_1i3.htm Bahamian Mathematics Student Workbook Level C	Test glossary of terms. Answer questions based on experiments done and data collected. Exercises calculating probability of events occurring or not occurring. Concept Quiz

SCOPE OF WORK

GRADE: 9
UNIT: DATA MANAGEMENT

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
ORGANIZING AND ANALYZING DATA	Draw vertical and horizontal bar charts, line graphs, pie charts and histograms. Calculate mean, median, mode and range from a set of data displayed in a frequency table. Read and interpret box and whisker graphs.	The heights of the bars correspond to the frequency of the groups. The slices on a pie chart represent the fractions that the groups are of the total. The arithmetic average or mean of a set of numbers is their sum of the numbers divided by the number figures in the set. The mode is the number with the highest frequency. The median is the middle number after the numbers have been placed in ascending or descending order. The range is the difference between the highest and the lowest number.	Students can calculate their mean average in math class so far. Students can calculate the median and the modal shoe size of the members in their group. Calculate the modal birth month of the students in the class. Calculate the range of their individual math grades so far and the range of the entire class math scores.	STP Caribbean Mathematics Books 1 & 2	Quiz Worksheets End of Unit Test Group Projects

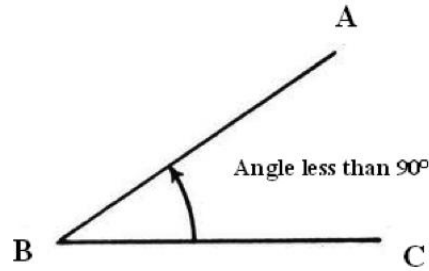
SCOPE OF WORK

GRADE: 9
UNIT: PROBABILITY

CONCEPTS/ TOPICS	OBJECTIVES	CONTENTS	ACTIVITIES	RESOURCES	ASSESSMENTS
PROBABILITY	Compare and contrast independent and dependent events.	Independent Events – Two events that do not affect each other. Dependent Events – Two events that do affect each other. <u>Probability of Two Independent Events:</u> Finding the probability of two independent events both occurring can be found by multiplying the probabilities of the two independent events. This can be expressed in the following equation: $P(A \text{ and } B) = P(A) \times P(B)$ Event B is not affected by event A in any way in an independent event. <u>Probability of Two Dependent Events:</u> When the second probability event is affected by the first an adjustment must be made dictated by the effect. This occurs in the situation in which an item is drawn from a sample space and then not returned before the second event takes place. The affect in this situation is that there is one less item to select from on the second event $P(A \text{ and } B) = P(A) \times P(B \text{ following } A)$	A number cube is rolled, and a coin is flipped. What is the probability that the number cube will show a 5 and the coin will show heads? Two blocks are pulled from a bag containing 4 blue, 5 red, and 7 green blocks without replacing the first block. What is the probability of drawing two red blocks?		

GLOSSARY

Acute Angle: An angle whose measure is greater than 0° and less than 90° .



Acute Triangle: A triangle in which all three angles are acute.

Adjacent Angles: Two angles with the same vertex and a common side.

Adjacent Vertices: Two vertices joined by a side of a polygon.

Adjacent Sides: Two sides of a polygon that intersect at a vertex of the polygon.

Algebraic Expression: A mathematical phrase that is a meaningful collection of constants, variables and operation symbols.

Angle: Two rays that intersect at their endpoints.

Arc: A section of a curve.

Arc of a Circle: A section of the circumference.

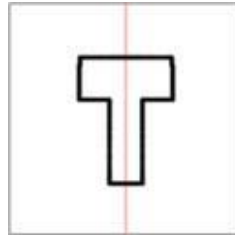
Area: A two-dimensional region or its measure in square units. The area of a plane figure is the amount of space enclosed by its boundaries.

Anticlockwise: A circular movement opposite to the direction of the movement of the hands of a clock.

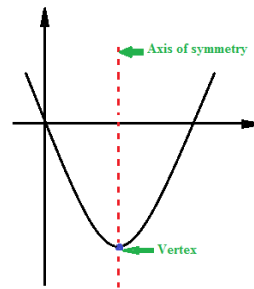


Arithmetic Expression: A meaningful collection of constants and operation symbols.

Axis of Symmetry: 1. A line that divides a shape in half and acts as a mirror line so that each half is a reflection of the other.



2. The vertical line $x = -\frac{b}{2a}$ for the parabola $y = ax^2 + bx + c$. The vertical line $x = h$ for the parabola $y = a(x - h)^2 + k$.



Base (Algebra): In the expression x^n , x is called the base.

Base (Geometry): Any side of a polygon may be called the base if given the perpendicular height with respect to that side.

Base-Ten Place Value: The value of each place or position in a numeral is a power of 10.

Binomial: An algebraic expression that is the sum or difference of two terms. A polynomial with two terms.

Boundary: A line or border that indicates the limit or extent of a region or plane figure.

Boundary Values: The limiting values that indicate the maximum and minimum values of a quantity.

Cardinal Number: 1. A whole number used to answer the question 'how many?'.

2. The cardinal number of a set indicates the number of elements in the set.

Cartesian Plane: Named after French mathematician Rene Descartes who formalized its use in mathematics.
See **Rectangular Coordinate Plane**.

Cartesian Coordinates: See **Coordinates**.

Central Angle: An angle with its vertex at the centre of a circle.

Chord: A line segment that joins two points on a circle.

Circle: A set of points at a fixed distance from a fixed point called the centre. The fixed distance is called the radius of the circle.

Circumference: 1. The set of points in a circle.
2. The perimeter of a circle.
3. The boundary line of a circular region.

Coefficient: In a term involving the product of a constant and a variable, the constant is the numerical coefficient of the variable and is frequently referred to simply as the coefficient. The numerical coefficient indicates how many times the variable appears as a term in a sum. For example: In the term $3x$, the coefficient is 3 so the variable x appears in a sum three times. $3x = x + x + x$ (Three like terms).

Common Denominator: A number that is a multiple of all the denominators of the fractions in a problem.

Common Factor: A factor that appears in two or more numbers or terms.

Common Fraction: A number in the form $\frac{a}{b}$, where a and b are integers, and $b \neq 0$. The quotient when an integer is divided by a non-zero integer.

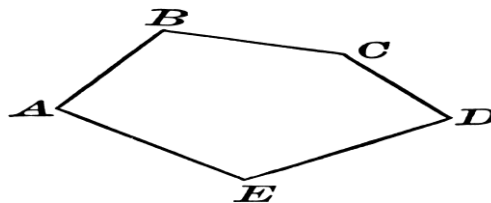
Composite Number: A natural number that has more than two factors.

Compound Interest: Interest calculated on previous interest which was added to the principal.

Congruent: Exactly the same. Identical in regard to size and shape.

Constant: A number or symbol that represents a fixed or specified value. Usually a real number or a symbol like a , b , or c , from the beginning of the English alphabet.

Convex Polygon: A closed plane figure formed by three or more line segments that intersect only at their end points and form interior angles that are less than 180 degrees.



Coordinate: A number assigned to a point on the real number line which indicates its position or location with respect to the origin.

Coordinates: The ordered pair (x, y) , assigned to each point in the rectangular coordinate plane, indicating its position in relation to the origin.

Counterclockwise: See **Anticlockwise**.

Counting numbers: The counting numbers are the numbers in the following infinite sequence: 1, 2, 3, 4, 5, 6, 7, We can also write this infinite sequence as $+1, +2, +3, +4, +5, +6, +7, \dots$. These numbers are also called the positive integers or natural numbers.

Cross Section: A shape or surface exposed by cutting through a solid object.

Cube (Algebra): The third power of a number. The result of using a base in a product three times. $x^3 = x \cdot x \cdot x$. (Three like factors)

Cube (Geometry): A regular solid with six square faces. A square prism.

Cube Root: For real numbers x and y , y is the cube root of x , ($y = \sqrt[3]{x}$), if x is the cube of y , ($x = y^3$).

Customary Units: Units of measurement such as inches, ounces, and gallons that are used for measuring length, weight, and capacity, based on the Imperial (English) system of measurement.

Curve: A continuous set of points that do not form a straight line. A smoothly-flowing path traced out by a moving point.

Data Set: A collection of numerical information.

Decagon: A polygon with ten sides and ten angles.

Decimal Fraction: A common fraction with a denominator that is a power of ten. If a decimal fraction is between zero and one, its numerator is written as the digits at the right of the decimal point when it is written as a decimal number.

Decimal Number (A Decimal): A base-ten number. A decimal point separates the whole and fractional parts of the number. A whole number can be written without a decimal point or with zero(s) after the decimal point.

Decimal Places: The places at the right of the decimal point in a decimal number. The number of digits at the right of the decimal point indicates the number of decimal places in the number. The decimal places are ordered from the decimal point.

Decimal Point: The dot used to separate the whole number and fraction parts of a decimal number. The decimal point is placed in the base line and is read as 'and' or 'point'. For example, 3.25 is read as 'three and twenty-five hundredths' or as '3 point two five'.

Decimal Place Value: See **Base-Ten Place Value**.

Degree (Algebra): The degree of a term is the exponent on the variable or the sum of the exponents on the variables. The degree of a polynomial is the highest degree of its terms. The degree of a constant polynomial is zero.

Degree (Geometry): A unit of measurement for angles that is $\frac{1}{360}$ *th* of a revolution. $1^\circ = \frac{1}{360}$ *th* of a revolution and 1 revolution = 360° .

Denominator: The bottom number in a common fraction. It indicates the number of equal parts the whole is divided into.

Dependent Variable: The variable in a function representing the elements of the range; the output values.

Diagonal: A line segment joining two non-adjacent vertices of a polygon. A diagonal joins vertices that are not already joined by a side.

Diameter: A chord that passes through the centre of a circle. The longest chord of a circle. The length of the line segment that divides the circle in half.

Difference: The result of subtracting one number from another.

Dilation: A transformation that changes the size but not the shape of the original object.

Dimension: 1. A measurable attribute such as length, area, and volume.

2. The distance between two points. A measurement of length in one direction. Examples: width, height and depth.

Disjoint Sets: Two sets with no common elements so their intersection is the empty set.

Distance: The length of the straight line segment joining two points.

Direct Variation: For real variables x and y , y varies directly as x if $y = kx$ or $\frac{y}{x} = k$ for a nonzero constant k .
 k is called the constant of proportionality.

Divisor: 1. A number that divides another number exactly.

2. A factor of a number.

3. The number doing the dividing. Written after the division sign, outside the division bracket, or in the denominator.

Dodecagon: A polygon with twelve sides and twelve angles.

Domain: The set of all the values of the independent variable (the input values) of a relation or function.

Edge: The line segment joining two vertices of a three-dimensional solid. The intersection of two faces of a solid.

Elements: Members of a set.

Enlargement: A dilation that produces an image that is larger than the original object when the scale factor is greater than 1. When the scale factor is between 0 and 1, the image is smaller than the original object

Equation: A mathematical sentence using the equal sign to state that two quantities or expressions have the same value.

Equilateral: All sides are equal.

Equivalent Equations: Two equations are equivalent if they have the same solution or solution set.

Equivalent Inequalities: Two inequalities are equivalent if they have the same solution set.

Equivalent Expression: Expressions that have the same numerical value for given values of the variables.

Evaluate: To find the numerical value of an expression.

Even Number: A number that is divisible by 2. A multiple of 2.

Exponent: In the expression x^n , n called the exponent. If n is a natural number, then x^n denotes the n th power of x , or x to the n th power, and n indicates how many times the base appears as a factor in a product.

Exponential Notation: A notation that expresses a number in terms of a base and an exponent.

Extraneous Solutions: Apparent solutions which do not satisfy the given equation; usually introduced by raising to a power or multiplying by the variable in obtaining the solution.

Face: A flat side of a three-dimensional shape.

Factor: A part of a product.

1. For integers a , b and c , a and b are factors of c if $c = ab$.
2. Similarly for functions, $f(x)$ and $g(x)$ are factors of $h(x)$ if $h(x) = f(x) \cdot g(x)$.
3. **To Factor** means to express as a product.

Factorise (or Factorize): To write a number or an expression as a product.

Formula: An equation showing the relationship between two or more quantities represented by variables.

Formulae or Formulas: Plural form of **Formula**

Fraction: A part of a whole.

Function: A function is a rule which assigns to each member of the domain (the set of inputs), one member of the range (the set of outputs).

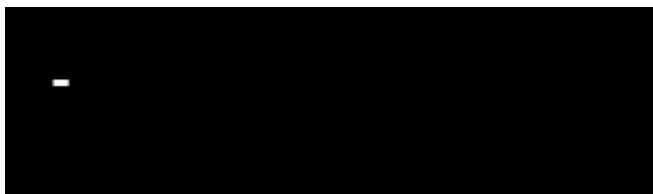
Function Notation: $f(x)$, read "f of x", used to indicate the value of the function when the input is x . $f(x)$ represents the image of x .

Gradient of a Line: A measure of the direction and steepness of a line. See **Slope of a Line**.

Graph of a Function: The pictorial representation of a function by plotting all of its input-output pairs on a coordinate system.

Greatest Common Factor (GCF): The largest number that belongs to each set of factors that divide each of the given numbers.

Height: The perpendicular line segment from a vertex to the opposite side selected as the base. Also used to refer to the length of that line segment.



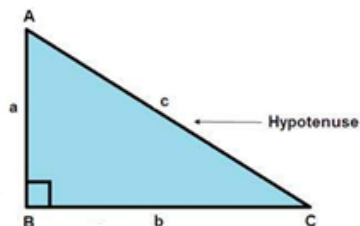
Heptagon: A polygon with seven sides and seven angles.

Hexagon: A polygon with six sides and six angles.

Highest Common Factor (H.C.F.): The largest number (or the expression) that is a factor of two or more numbers (or expressions).

Horizontal Axis: The number line that goes left and right on a graph. The x -axis on the rectangular coordinate plane.

Hypotenuse: The side opposite the right angle in a right triangle. The longest side in a right triangle.



Improper Fraction: A common fraction that is greater than or equal to 1. The numerator is greater than or equal to the denominator.

Image: 1. The output (range element) when a relation or a function is applied to an input (domain element).
2. The result of applying a transformation to an object.

Independent Variable: The variable in a function representing the elements of the domain (the input values).

Index: Indicates how many times a number is used in a product. An exponent or power.

Index Form: See **Exponential Form**

Indices: Plural form of index.

Inequality: A statement that two expressions represent different values. A statement involving an inequality symbol.

Inequality Symbols: $<$ (is less than), $>$ (is greater than), $\leq$ (is less than or equal to), $\geq$ (is greater than or equal to)

Inequation: See **Inequality**

Strict (Strong) Inequalities: Statements such as “ x is less than y ”, $(x < y)$, and “ x is greater than y ”, $(x > y)$.

Non-strict (Weak) Inequalities: Statements such as “ x is less than or equal to y ”, $(x \leq y)$, and “ x is greater than or equal to y ”, $(x \geq y)$.

General inequality: The statement “ x is not equal to y ”, $(x \neq y)$.

Imperial System: The English system of measuring length, weight, and capacity using such units as feet, pounds, and gallons.

Input Values: All the values that a relation or a function rule is applied to. The values of the domain.

Integer: A whole number or the negative of a whole number.

Integers: The collection of whole numbers and their negatives. The set negative integers, zero, and the positive integers:
 $\dots, -5, -4, -3, -2, -1, 0, +1, +2, +3, +4, +5, \dots$

Interest: Amount charged for borrowing money or amount earned from investing money. A percentage of the original principal.

Interest Rate: The amount of interest charged (or paid) on an annual basis. Expressed as a percent.

Intersecting Lines: Lines with exactly one common point.

Intersection of Sets: A set whose elements are all the elements that the given sets have in common.

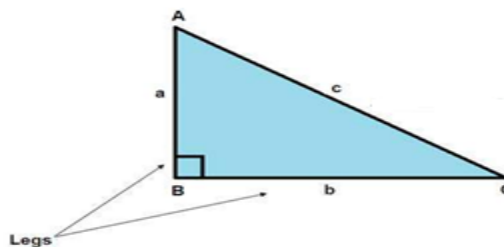
Inverse Variation: For real variables x and y , y varies inversely as x if $y = \frac{k}{x}$ or $xy = k$, where k is a non-zero constant.

Irrational Number: A number that cannot be expressed as a common fraction. A decimal number that neither repeats nor terminates.

Isosceles: Two equal sides.

Least Common Multiple: See **Lowest Common Multiple**

Legs: 1. The two equal sides of an isosceles triangle.
2. The two sides of a right triangle that form the right angle.



Length: 1. The extent of a line segment.
2. The greatest of the linear dimensions of a plane shape or the base of a space figure.

Less Than, Greater Than: The statement that “the number a is less than the number b ”, written $a < b$, means that there is a positive number x such that $b = a + x$. The number x must be $b - a$. If a is less than b , then b is greater than a , written $a > b$.

Like Terms: Algebraic terms that contain the same variables and for each variable the power is the same.

Line: A continuous set of points extending in two opposite directions. A never-ending straight path.

Line of Symmetry: See **Axis of Symmetry**.

Line Segment: Two points on a line and all the points between them.

Linear Dimensions: The measurements of line segments of a plane shape or space figure. Examples: length, width, and height.

Common Denominator (LCD): The LCM of all the denominators of the fractions in a problem.

Lowest Common Multiple (LCM): The smallest number (or expression) that is a multiple of two or more numbers (or expressions).

Major Arc: Section of the circumference determined by a central angle that is greater than 180° .

Metric System: The decimal system that uses the metre, gramme, and litre as the basic units for measuring length, weight, and capacity.

Minor Arc: Section of the circumference determined by a central angle that is less than 180° .

Mixed Number: A number that is a combination of a whole number and a fraction.

Monomial: An algebraic expression that is a single term. A polynomial with only one term.

Multiple: An integer or polynomial is said to be a multiple of any of its factors. A multiple of an integer is the result of multiplying the integer by a whole number.

Multiplicative Identity: For every number n , $n \cdot 1 = n$ and 1 is called the identity element for multiplication.

Multiplicative Inverse: The number $\frac{1}{x}$ is called the multiplicative inverse or reciprocal of x , where $x \neq 0$, because $x \cdot \frac{1}{x} = 1$.

Natural Number: A number used ‘naturally’ when counting.

Natural Numbers: The numbers that are ‘naturally’ used when we are counting. See **Counting Numbers**.

Negative Exponent: 1. If x is non-zero, then $x^{-n} = \frac{1}{x^n}$, which is the multiplicative inverse or reciprocal of x^n .

$$2. \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$$

Negative 1 Exponent: If x is non-zero, then $x^{-1} = \frac{1}{x}$, which is the multiplicative inverse or reciprocal of x .

Non-negative Numbers: Numbers greater than or equal to zero.

Numerator: The top number in a common fraction. It indicates how many of the equal parts of the whole are being considered.

Numerical Coefficient: See **Coefficient**.

Obtuse Angle: An angle whose measure is greater than 90° and less than 180° .



Obtuse Triangle: A triangle that has an obtuse angle.

Ordered pair: A pair of numbers that represent the coordinates of a point in the rectangular coordinate plane with the first number measured along the horizontal scale and the second along the vertical scale.

Ordinal Number: A number indicating the position of an object or event in a sequence or series, such as first, second, third, or fourth.

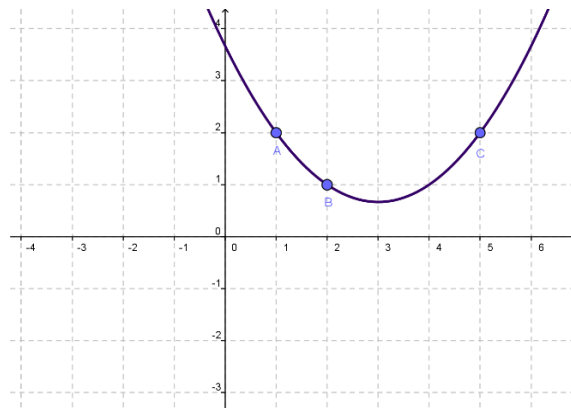
One-Dimensional (1D): One measurable attribute. Length can only be measured in one direction. A line segment is one dimensional because its length is its only measurable attribute.

Origin: 1. The reference point on the real number line. The point with coordinate 0 on the real number line.

2. The reference point on the rectangular coordinate plane. The point with coordinates (0, 0) on the rectangular coordinate plane.

Output Values: All the results obtained by applying a relation or a function rule to a set of input values. The values of the range.

Parabola: The shape of the graph of a quadratic function.



Example of a parabola

Parallel Lines: Two lines in a plane that never intersect.

Parallelogram: A quadrilateral with both pairs opposite sides that are parallel.

Parent function: The simplest example of a family of functions.

Percent: 1. Per 100 or Out of 100.

2. A fraction with a denominator of 100.

Percentage: 1. A portion of a quantity.

2. The result of multiplying a number by a percent.

Perfect Cube: The cube of an integer: An integer n that can be written in the form $n = k^3$, where k is an integer.

Perfect Square: The square of an integer: An integer n that can be written in the form $n = k^2$, where k is an integer.

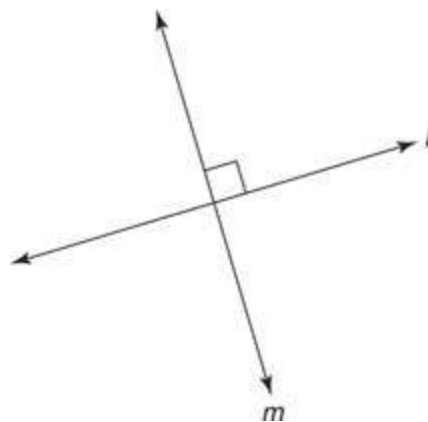
Perfect Square Trinomial: An expression of the form $a^2 \pm 2ab + b^2$ that be written in the form $(a \pm b)^2$.

Perimeter: 1. The boundary of a region or plane figure.
2. The total distance around the boundary of a region or plane figure.

Perpendicular: Form right angles.

Perpendicular Distance: The shortest distance from a point to a line. The length of the perpendicular line segment from a point to a line.

Perpendicular Lines: Lines are perpendicular if they intersect to form a right angle.



Perpendicular Line Segments: Line segments are perpendicular if the lines containing the segments are perpendicular.

Pi (π): The symbol used to represent the ratio of the circumference to the diameter of a circle. $\pi \approx 3.142$ or $\pi \approx \frac{22}{7}$.

Plane: 1. A continuous two-dimensional set of points.
2. A smooth flat surface.

Plane Shape: A closed two-dimensional figure. A figure that lies entirely in a plane.

Point-slope form: A form of the equation of a line written as $y - y_1 = m(x - x_1)$, where m is the slope and (x_1, y_1) is a point on the line.

Polygon: A simple closed plane figure formed by three or more line segments.

Polynomial: A polynomial is a term or an algebraic expression obtained by adding or subtracting two or more terms. Each term of a polynomial has the form ax^n where a is a real number and n is a whole number.

Positive Integer: A whole number greater than zero. A counting or natural number.

Positive Number: A number greater than zero.

Power: 1. An exponent or index.
2. The result of raising a number to an exponent.

Prime Number: A natural number with exactly two factors.

Prism: A solid figure with a uniform cross section. A space figure that has two congruent opposite faces.

Proper Fraction: A common fraction that is between zero and 1. The numerator is less than the denominator.

Proportion: An equation that states that two ratios are equal.

Quadrant: 1. A quarter of a circle. The region bounded by two perpendicular radii and an arc that is one quarter of the circumference.
2. A quarter of the coordinate plane. See **Rectangular Coordinate Plane**

Quadratic Equation: An equation with a second degree term as its term with the highest degree.

Quadratic Expression: A polynomial containing a second degree term as its term with the highest degree.

Quadratic Function: A function of the form $f(x) = ax^2 + bx + c$, where $a \neq 0$.

Radical: 1. An expression containing a radical sign.
2. An indicated root of a number denoted by $\sqrt[n]{x}$, the n th root of x .
3. The index n is omitted when $n = 2$ and we write $\sqrt{x}$ to denote the square root of x .

Radical Equation: An equation in which the variable appears in the radicand.

Radical Function: A function that is the n th root of a variable expression.

Radicand: The number or expression that appears under the radical sign; the number or expression whose root is to be found.

Radii: Plural of radius

Radius: 1. A line segment from the centre to the circumference of a circle.
2. The distance from the centre to the circumference of a circle.

Range: 1. The set of all the values of the dependent variable (the output values) of a relation or a function.
2. The difference between the largest and smallest values in a data set.

Rate: A ratio comparing two quantities with different units of measure. See **Unit Rate**.

Rational Equation: An equation involving one or more rational expressions.

Rational Expression: An expression in the form $\frac{p(x)}{q(x)}$, where $p(x)$ and $q(x)$ are polynomials, the degree of $q(x)$ is at least 1, and $p(x) \neq 0$.

Rational Number: A number that can be written as a common fraction $\frac{a}{b}$, where a and b are integers, and $b \neq 0$.

Ray: A part of a line that starts at a point and extends in one direction.

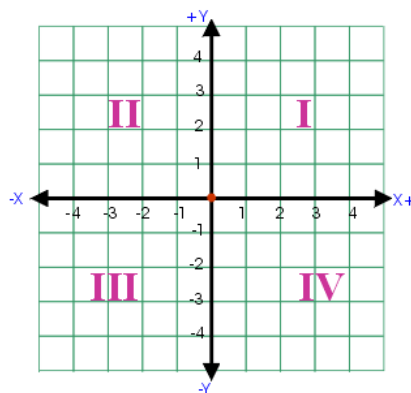
Real Number: A number that ‘exists’ as a point on the real number line.

Real Number Line: The set of all points that correspond to real numbers. Every real number is the coordinate of a point on the real number line and indicates the position of the point in relation to the origin.

Reciprocal: See **Multiplicative Inverse**

Rectangle: A parallelogram with four right angles.

Rectangular Coordinate Plane: A plane that consists of a horizontal number line and a vertical number line that intersect at right angles at their origins. The number lines, called axes, divide the plane into four quadrants. The quadrants are numbered I, II, III, and IV beginning in the upper right quadrant and moving counterclockwise.



Reduction: A dilation that produces an image that is smaller than the original object. An enlargement with a scale factor that is between 0 and 1.

Reflection: A transformation that flips an object across a line creating a mirror image.

Reflex Angle: An angle whose measure is greater than 180° and less than 360° .

Regular Polygon: A polygon with all sides and all angles equal.

Regular Solid: A solid with faces that are regular polygons and the same number of faces meet at each corner.

Relation: A rule connecting the elements of two sets called the domain and the range.

Revolution: A complete turn. An angle measuring 360° .

Rhombus: A parallelogram with congruent sides.

Right Angle: One quarter of a revolution. An angle measuring 90° .

Right Triangle: A triangle that has a right angle.

Roots of a Quadratic Equation:

1. The solutions of $ax^2 + bx + c = 0$.
2. The zeros of the quadratic function $f(x) = ax^2 + bx + c$.
3. The x-intercepts of the graph of $y = ax^2 + bx + c$.

Rotation: A transformation that turns an object clockwise or anticlockwise about a fixed point called the centre of rotation.

Scale Factor of a Drawing: The ratio of a length on a scale drawing to the corresponding length of the actual object.

Scale Factor of an Enlargement: The number used to multiply the side-lengths of the original object to find the side-lengths of the image.

Scalene Triangle: A triangle with no congruent sides.

Scientific Notation: Numbers written in the form $a \times 10^n$, where $1 \leq a < 10$ and n is an integer.

Sequence: An ordered list of numbers or objects.

Set: A collection of objects called elements or members.

Set-Builder Notation: A symbolic description of a set. "A is the set of all x such that x is an element of the set of natural numbers and x is greater than 2 but less than 11." is written in set-builder notation as $A = \{x : x \text{ is a natural number, } 2 < x < 11\}$.

Set Notation: The collection of symbols used to represent sets, their relationships, and operations.

Simplify: To write in the simplest form.

Simplifying: 1. Combining the like terms of an algebraic expression by carrying out the indicated additions or subtractions.
2. Eliminating common factors between the numerator and denominator of a common fraction or rational expression.

Simple Interest: Interest calculated a single time on a principal invested or borrowed. Computed using the formula $I = Prt$.

Slope of a Line: If (x_1, y_1) and (x_2, y_2) are two points on a line, then the slope of the line is the ratio $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$, provided $x_2 \neq x_1$.

Slope-intercept form: $y = mx + b$ is the slope-intercept form of the equation of a line, where m is the slope and b is the y -intercept of the line.

Solution of an Equation: A solution of an equation with variable x is a number that, when substituted for x , makes the equation a true statement. If the equation has more than one solution, then the collection of solutions is called the solution set.

Solution of an Inequality: The set of values that may be substituted for the variable in an inequality to obtain a true statement.

Solution of a System of Linear Equations: An ordered pair that satisfies each of the equations. See **System of Linear Equations**.

Solve: Determine the solution.

Solid Figure: A three-dimensional object. A figure that does not lie entirely in a plane.

Space: 1. The continuous set of all the points that exist in our three-dimensional environment.
2. A three-dimensional set of points.
3. The region within the boundaries of a plane shape.
4. The interior of a hollow three-dimensional object.

Space Figure: A three-dimensional object. A figure that does not lie entirely in a plane.

Square: A rectangle with congruent sides. A rhombus with congruent angles.

Square Root: For non-negative x and y , y is the square root of x if $y^2 = x$. For a real number x , $\sqrt{x^2} = |x|$ because the square root symbol denotes the non-negative root.

Square Root Function: A function that is the square root of a variable expression. See **Radical Function**.

Standard Form: See **Scientific Notation**.

Standard Form of a Linear Equation: $Ax + By = C$ where A and B are not both equal to 0.

Standard Form of a Quadratic Equation: $ax^2 + bx + c = 0$, where $a > 0$ and a , b , and c are integers with H.C.F. equal to 1.

Straight Angle: Half of a revolution. An angle measuring 180° .

Straight Line Segment: The shortest path between two points in a plane.

Subset: Set B is a subset of set A if every element of set B is also an element of set A .

Surface: The outer boundary or layer of an object. It is a two-dimensional set of points that can be flat or curved.

Surface Area: The total area of the outer boundary or layer of an object.

System of Linear Equations: Two equations that both impose conditions on the variables. An ordered pair is a solution of the system if and only if it is a solution of each of the given equations.

Systems of equations may be classified as follows:

1. A system with one or more solutions is called Consistent.
2. A system with no solution is called Inconsistent.
3. A Consistent system with exactly one solution is called Independent.
4. A Consistent system with more than one solution is called Dependent.

System of inequalities in two variables: Two inequalities that both impose conditions on the variables. If the inequalities form an "and" statement the solution is all ordered pairs that satisfy both inequalities. If the inequalities form an "or" statement the solution is any ordered pair that satisfies either inequality.

Term of a Sequence: An element of a sequence.

Term (Algebra): A constant, a variable, or a product of constants and variables.

Terms (Algebra): The parts of an algebraic expression that are separated by addition or subtraction signs.

Three-Dimensional (3D): Three measurable attributes. Length can be measured in three perpendicular directions. A space figure is three dimensional since we can measure its linear dimensions (length, width, and height/depth), surface area, and volume.

Transformation: An operation that changes the position, size, or shape of an object. The four main transformations are reflection, translation, rotation, and dilation.

Translation: A transformation that moves a figure along a line in a plane but does not alter its size or shape. Also called a slide.

Transpose: 1. Move terms from one side of an equation to another by adding or subtracting on both sides.
2. The transpose of a matrix is obtained by interchanging its rows and columns.

Transposition: Changing the subject of a formula.

Trapezium or Trapezoid: A quadrilateral with exactly one pair of opposite sides that are parallel.

Triangle: A polygon with three sides and three angles.

Trinomial: An algebraic expression that is the sum or difference of three terms. A polynomial with three terms.

Two-Dimensional (2D): Two measurable attributes. Length can be measured in two perpendicular directions. A plane shape is two-dimensional since we can measure its linear dimensions (length and width) and its area.

Unit Rate: A ratio of two unlike quantities that has a denominator of 1 unit.

Unknown: A letter or symbol representing a value that is not known or given. See **Variable**.

Variable: A letter or symbol that represents an unspecified value or an unknown quantity. Usually a symbol like x , y , or z , from the end of the English alphabet.

Vertex: A point.

1. The common endpoint of two rays forming an angle.
2. The intersection of two sides of a plane figure.
3. The intersection of three or more edges or faces of a space figure. A corner of a space figure.
4. The highest or lowest point of a parabola.

Vertex form of a Parabola: A quadratic function written as $f(x) = a(x - h) + bx + c$ is in vertex form. The vertex is (h, k) .

Vertical Axis: The number line that goes up and down on a graph. The y -axis on the rectangular coordinate plane.

Volume: The amount of space that a three-dimensional figure occupies or contains.

Whole Number: A number that indicates the number of whole objects. The coordinate of the origin or a point that is a whole number of units from the origin.

Whole Numbers: The whole numbers are the numbers in the following never-ending sequence: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, . . .

X-axis: The horizontal axis of a rectangular coordinate plane.

X-coordinate: The first number in an ordered pair indicating the horizontal distance of a point from the origin in the coordinate plane.

X-intercept(s): The x coordinate(s) of the point(s) of intersection of a graph and the x -axis.

Y-axis: The vertical axis of a rectangular coordinate plane.

Y-coordinate: The second number in an ordered pair indicating the vertical distance of a point from the origin in the coordinate plane.

Y-intercept: The point of intersection of a graph with the y -axis.

Zero-Dimensional (0D): No measurable extent or attribute. A point is zero dimensional because it only specifies a location.

Zero power: For any nonzero number x , $x^0 = 1$.

Zeros of a Quadratic Function: See **Roots of a Quadratic Equation**.

Technology Integration

4 C's of Learning and Innovation Skills

- Critical Thinking & Problem Solving
- Creativity
- Collaboration
- Communication

Students should be able to:

- Demonstrate knowledge
- Apply knowledge to real life situations
- Express themselves using math language and vocabulary
- Contribute to the global knowledge bank

STUDENT ACTIVITIES	TOOLS
<u>VOCABULARY SLIDE SHOW</u> Create a math vocabulary slideshow using PowerPoint. Convert the PPT to a video and upload the video to a video streaming service.	MS PowerPoint Video Streaming Service (YouTube, Vimeo, etc.)
<u>HOW TO VIDEOS</u> Create instructional/ how to videos (similar to Khan Academy) to demonstrate how to complete a mathematical function/process. Extension – Have students choose a particular audience (age group, gender, etc.) to tailor the instruction.	Video Camera PowerPoint Video Editing Software Video Streaming Service (YouTube, Vimeo, etc.)
<u>APPLICATION PROBLEMS</u> Create a book of application problems. Students submit a unique word problem to be included in the book. Each problem must be accompanied by the worked-out solution. Students should also justify why their question should be included in the book.	MS Word or MS Publisher
<u>DIGITAL FLASH CARDS</u> Create digital flash cards to support mental math concepts.	MS PowerPoint
<u>PIN THAT STRATEGY</u> Curate a collection of strategies to best teach and learn math concepts. Publish the collection using Pinterest.	Pinterest Account
<u>PROBLEM VIDEOS</u> Turn word problems into video problems. Create a short video clip demonstrating a real-life problem related to the concept.	PowerPoint Video Editing Software Video Streaming Service (YouTube, Vimeo, etc.)

REFERENCES

- Binks, A. W., Layne, C. E., & Lutchman, C. (1995). *Fundamental Mathematics for the Caribbean Book 1*. Oxford, UK: Heinemann
- Binks, A. W., & Lutchman, C. (1996). *Fundamental Mathematics for the Caribbean Book 2*. Oxford, UK: Heinemann
- Binks, A. W., Ramsey, Y., Edwards-Kennedy, I., Jackson, S., & Hollands, R. (1997). *Fundamental Mathematics for the Caribbean Book 3*. Oxford, UK: Heinemann
- Binks, A. W., Pope, G., Hollands, R., Ramsey, Y., & Edwards-Kennedy, I. (2000). *Heinemann Mathematics for CXC*. Oxford, UK: Heinemann
- Brown, Lillymae, Curriculum Development Team (1999). *Mathematics Curriculum/Resource Guidelines*. Department of Education, Bahamas.
- Burton, Grace M. et al, (1994). *Mathematics Plus Teacher's Edition*. Harcourt Brace & Company: United States of America.
- Byer-Bowen, R. K. & Samuel, D. D. (2006). *Caribbean Maths Connect 1*. Harcourt Education Ltd.: United Kingdom.
- Byer-Bowen, R. K. & Samuel, D. D. (2006). *Caribbean Maths Connect 2*. Harcourt Education Ltd.: United Kingdom.
- Byer-Bowen, R. K. & Samuel, D. D. (2006). *Caribbean Maths Connect 3*. Harcourt Education Ltd.: United Kingdom.
- Channon, J. B. et al, Eighth Impression (1995). *Mathematics For Caribbean Schools Book 2*. Longman Group Ltd: Trinidad.
- Folkes, M. & Maxwell, M. (1990). *Nelson Caribbean Mathematics 1*. Thomas Nelson & Sons Ltd: Surry, UK.

REFERENCES

- Folkes, M. & Maxwell, M. (1991). *Nelson Caribbean Mathematics 2*. Thomas Nelson & Sons Ltd: Surry, UK.
- Folkes, M. & Maxwell, M. (1992). *Nelson Caribbean Mathematics 3*. Thomas Nelson & Sons Ltd: Surry, UK.
- Foster, A. A., & Rose, G. (2001). *Success in Maths for the Caribbean Student's Book 1*. Harlow, UK: Longman
- Foster, A. A., & Rose, G. (2002). *Success in Maths for the Caribbean Student's Book 2*. Harlow, UK: Longman
- Foster, A. A., & Rose, G. (2003). *Success in Maths for the Caribbean Student's Book 3*. Harlow, UK: Longman
- Foster, A. A., & Rees, J. (2006). *Success in Maths for the Caribbean Student's Book 4*. Harlow, UK: Longman
- Greer, A. (1978). *A Complete O Level Mathematics*. Stanley Thornes (Publishers) Ltd., London
- Higgs, C.W.R., Revised Edition (2010). *Bahamian Mathematics Student Workbook*. The Software Connexion: Commonwealth of The Bahamas.
- Jason-Abdelnor, R. E., & Chandler, S. (2014). *A Mathematical Dictionary for CSEC*. Cheltenham, UK: Nelson Thornes
- Layne, C. E., Ali, F. W., Bostock, L., Chandler, S., Shepherd, A., & Smith, E. (2005). *STP Caribbean Mathematics Book 1 (3rd Ed.)*. Cheltenham, UK: Nelson Thornes
- Layne, C. E., Bostock, L., Chandler, S., Shepherd, A., & Smith, E. (2005). *STP Caribbean Mathematics Book 2 (3rd Ed.)*. Cheltenham, UK: Nelson Thornes
- Layne, C. E., Bostock, L., Chandler, S., Shepherd, A., & Smith, E. (2005). *STP Caribbean Mathematics Book 3 (3rd Ed.)*. Cheltenham, UK: Nelson Thornes

REFERENCES

- Layne, C. E., Bostock, L., Chandler, S., Shepherd, A., & Smith, E. (2005). *STP Caribbean Mathematics Book 4 for CXC (3rd Ed.)*. Cheltenham, UK: Nelson Thornes
- Llewellyn, S., Greer, A., Redhead, J., Verity, C. (1986). *Mathematics: The Basic Skills for the Bahamas*. Stanley Thornes (Publishers) Ltd., London
- Metcalf, Paul et al, (2006). *AQA Mathematics for GCSE*. Nelson Thornes Ltd: United Kingdom.
- Muschla, J. A., & Muschla, G. A. (1996). *Hands0On math Projects with Real-Life Applications*. Jossey-Bass, USA
- Muschla, J. A., & Muschla, G. A. (1999). *Math Starters*. Jossey-Bass, USA
- Muschla, J. A., & Muschla, G. A. (2004). *Math Games*. Jossey-Bass, USA
- Muschla, J. A., & Muschla, G. A. (2005). *The Math Teacher's Book of Lists*. Jossey-Bass, USA
- National Council of Teachers of Mathematics (2010). *The Curriculum Principle*. Retrieved from <http://www.nctm.org>
- National Council of Teachers of Mathematics (2010). *Guiding Principles of Mathematics*. Retrieved from <http://www.nctm.org/standards>
- National Council of Teachers of Mathematics (2010). *Mathematics Standards*. Retrieved from <http://www.standard.nctm.org>
- Overholt, J. L., Aaberg, N. H., & Lindsey, J. F. (2008). *Math Stories for Problem Solving Success*. Jossey-Bass, USA
- Rayner, D. (1990). *Complete Mathematics for GCSE and Standard Grade*. Oxford University Press, London

REFERENCES

Rayner, D. (1988). ***General Mathematics: Revision and Practice***. Oxford University Press, London

Toolsie, Raymond, BSc, MACP (2001). ***A Complete Mathematics Course for Secondary Book 1***. Caribbean Educational Publishers Ltd: Trinidad, West Indies.

Toolsie, Raymond, BSc, MACP (2002). ***A Complete Mathematics Course for Secondary Book 2***. Caribbean Educational Publishers Ltd: Trinidad, West Indies.

Toolsie, Raymond, BSc, MACP (2013). ***Mathematics A Complete Course With CXC Questions, Volume One***. Caribbean Educational Publishers Ltd: Trinidad, West Indies.

Toolsie, Raymond, BSc, MACP (2013). ***Mathematics A Complete Course With CXC Questions, Volume Two***. Caribbean Educational Publishers Ltd: Trinidad, West Indies.