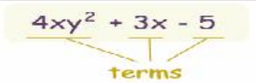
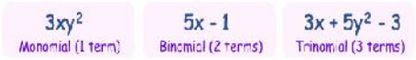
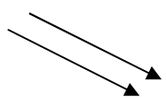
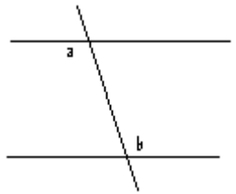
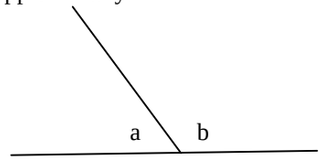
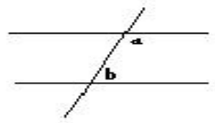
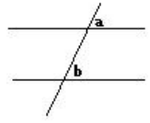
Ministry of Education
Secondary Sector
Mathematics
Grade 8
Christmas Term Schedule of Topics

Week	Topic	Sub-topics	Objectives	Content	Activities	Resources	Evaluation Strategies
1	Number Theory 2	Mathematical Laws Closure property	1). Stating and using the Mathematical Laws- Commutative, Associative and Distributive Laws- to solve problems 2). Identifying the Closure property	The commutative law. Examples: 8 + 12 = 12 + 8 8 - 12 ≠ 12 - 8 The order in which we add or multiply numbers does not matter. The result is always the same. The operations of addition and multiplication satisfy the commutative law. The associative law. Examples (8 + 12) + 2 = 8 + (12 + 2) (8 - 12) - 2 ≠ 8 - (12- 2) The order in which we add or multiply numbers in groups of two does not affect their sum or product. The operations of addition and multiplication satisfy the associative law. The distributive law. Examples: (4- 5) + (4 - 3) = 4 x (-5 + -3) = 4(-5 + -3) (4 x 5) - (4 x 3) = 4 x (5 - 3) = 4(5 - 3) Multiplication distributes over addition and subtraction Closure property: A set of numbers is closed under an operation, if when the operation is applied to any two numbers of a set the result is another member of the set, e.g. if we add two whole numbers, the result is a whole number.	Discussion on the commutative law with examples. Stating the commutative law. Discussion on the associative law with examples. Stating the associative law. Discussion on the distributive law with examples. Stating the distributive law. Discussing and identifying social situations in which mathematical laws can be observed. Discussion: 1. The closure property with examples. 2. The reason why closure is necessary in a mathematical system.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
2		Addition and subtraction of Rational numbers	3) Identify and define types of rational numbers 4) Add and subtract given fractions	The set of rational numbers include: (i) common fractions (ii) improper fractions (iii) exact and recurring decimals (iv) the integers Adding and subtracting rational numbers	Discussion and solving problems on work cards with problems under content. Arranging rational numbers in ascending or descending order	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
3		Multiplication of directed numbers Division of directed numbers	4). Multiplying and dividing directed numbers	Positive Numbers Multiplication of two or more positive numbers gives a positive product 4 x 6 = 24 2 x 10 x 8 = 160 Positive and Negative Numbers (-3) x 5 means (-3) taken 5 times (-3) + (-3) + (-3) + (-3) + (-3) = -15 Multiplication of two negative Integers will result in a positive product	Discussion Applying the rule of directed numbers to solve problems	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written

				(-8) x (-3) = 24 Division (+12) ÷ (+4) = $\frac{+12}{+4} = +3$ (- 45) ÷ (- 5) = + 9	Applying the rule of directed numbers to solve problems		
4	Algebra 1 & 2	Algebraic expressions	1). Using symbols to represent numbers, operations, variables and relations 2). Substituting numerals for algebraic symbols in simple algebraic expressions	 These **are** polynomials: • $3x$ • $x – 2$ • $-6y^2 - (^7/_9)x$ • $3xyz + 3xy^2z - 0.1xz - 200y + 0.5$ • $512v^5 + 99w^5$ • 1 A coefficient is the number in front of a letter in an algebraic term, e.g. in the algebraic term 4a, 4 is the coefficient of a. Substitute numerical values for the variables in the polynomials above. E. g. When $x = 5$, $3x = 3 \times 5 = 15$**Monomial, Binomial, Trinomial**There are special names for polynomials with 1, 2 or 3 terms:  **Degree of Polynomial**The degree of a polynomial is the highest power that the variable is raised in the algebraic expression, e.g. the degree of the polynomial $\boldsymbol{x}^3 + 4\boldsymbol{x}^2 + \boldsymbol{x} + 1$ is 3. In the case of a multivariable polynomial, the degree is found by adding the highest index of each variable, e.g. the degree ofthe polynomial$5x^2y^3 + 4xy^2 + y$ is 5.**Example #1**:$4x^2 + 6x + 5$This polynomial has three terms.The first one is $4x^2$, the second is $6x$, and the third is 5 The exponent of the first term is 2 The exponent of the second term is 1 because $6x = 6x^1$ The exponent of the third term is 0 because $5 = 5x^0$ $x^0 = 1$Since the highest exponent is 2, the degree of $4x^2 + 6x + 5$ is 2 **Example #2:**$2y^6 + y^5 + 3y^4 + 7y^3 + 9y^2 + y + 6$ The degree of the polynomial is 6.	Discuss and solve problems bases on the use of symbols and substitution Writing down the coefficient of algebraic terms. Writing down the factors of algebraic terms. Stating the degree of polynomials. Discussion on the Types of Polynomial Identifying the base and exponent Working problems Writing down the coefficient of algebraic terms. Writing down the factors of algebraic terms. Stating the degree of polynomials. Discussion on the Types of Polynomial Identifying the base and exponent Working problems	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
5		Binary Operations	3). Identifying binary operators and applying binary operators to solve problems	A binary operation refers to a clearly defined computational process that can be carried out on two elements at a time, e.g. a * b = 2a – b In the operation a * b = 2a – b , * is the symbol of the operation and ‘b’is the term that comes after the symbol of the operation. Then 2a – b means (2 x a) – b.	Displaying examples of binary operations. Extracting the rule that governs an operation Discussion: commutative and associative properties of binary operations.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written

				Application of the rule that governs a binary operation. Commutative and Associative properties of binary operations.	Working examples of binary operations on the chalk board. Students working similar examples. Students may also be asked to describe a binary operation of their own and use it on different pairs of values.		
6		Laws of indices	4). Using the Laws of indices to manipulate expressions with integral indices	The index of a number or variable is the power, to which it is raised, e.g. in 4^2, x^2, the power or index is 2. The '4' and 'x' are referred to as the base. When multiplying, add the powers/indices, e.g. $a^6 \times a^2 = a^8$. When dividing, the powers/indices are subtracted, e.g. $a^6 \div a^2 = a^4$. $a^6 \div a^6 = a^{6-4}$ $= a^4$ When raising a power to another power, the powers/indices are multiplied e.g. $(a^4)^2 = a^8$. $(a^4)^2 = a^8$ Laws of indices 1. $\mathbf{a^m * a^n = a^{(m+n)}}$; 2.$\mathbf{a^{(-m)}} = \frac{1}{a^m}$ 3. $\frac{a^m}{a^n} = \mathbf{a^{(m-n)}}$, a $\neq 0$; 4. $\mathbf{(a^m)^n = a^{(m*n)}}$. 5. $\mathbf{a(a*b)^m = a^m * b^m}$; 6. $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$, b $\neq 0$ 7. $\mathbf{a^0 = 1}$.	Stating the base and index of an algebraic term. Working exercises involving the laws of indices.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
7		Removal of brackets Expanding algebraic expressions	5). Applying the distributive law to insert or remove brackets in algebraic expressions 6). Performing the four basic operations with algebraic expressions	Distribution of multiplication over addition and subtraction when brackets are removed in an algebraic expression, .e.g. a(x+ y) = ax+ ay a(x– y) = ax– ay Each term inside the brackets must be multiplied by the term immediately outside the brackets. The term outside the brackets is called the multiplier. In the case where the multiplier is negative, e.g. The signs in the brackets are changed when the brackets are removed. -a(x+ y) = -ax- ay -a(x– y) = ax+ ay Multiplication of a binomial by a binomial, .e.g. (x+ 2)(x+ 3) = x(x + 3) + 2(x+ 3) Each term of the first bracket serves as a multiplier for the terms in the second bracket.	Multiplying terms in brackets by a multiplier. Discussing and working exercises involving the application of the rule governing the removal of brackets. Discussion and working of examples on chalkboard. Students work similar examples	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written

				By the distributive law the product is: $x^2 + 3x + 2x + 6 = x^2 + 5x + 6$	for reinforcement.		
8		Simplifying algebraic fractions, common factors	7). Performing operations involving algebraic fractions	Algebraic fraction, $\frac{x}{2} + 3$ The LCM of 3 and 6 is 6 $\frac{x}{3} + \frac{5x}{6}$ $= \frac{2(x) + 1(5x)}{6}$ $= \frac{2x + 5x}{6}$ $= \frac{7x}{6}$	Discussion on identifying of LCD Discussion and working of examples on chalkboard. Students work similar examples forreinforcement	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
9		Factorization by grouping	8). Solving algebraic expressions by grouping 9) Solving linear equations with one unknown	Common factors are the factors that are common to the terms in an algebraic expression. E.g. in 4a + 5ab, **a** is the common factor of the expression. The factorization of an algebraic expression involves the identification of the common factor(s) and the use of the distributive law. Example: 4a + 5ab = a(4 + 5b) The factors of 4a + 5ab are 'a' and (4 + 5b). That isa(4+5b) Factorization of expressions by grouping. E.g. $6a^2 - 4a + 6a - 4 =$ 6a(a + 1) - 4(a + 1) = (6a – 4)(a + 1) Solve simple linear equations: 1. 3p + 19 = 47 2. 9m – 6 = 30 3. 5n – 8 = 2n + 13	Discussing and working examples on work cards	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
10	Geometry 1	Perpendicular Lines Parallel Lines	1). Identifying, drawing and constructing perpendicular lines 2). Identifying, drawing and constructing parallel lines	Two lines are perpendicular when they are at right angles to each other.  Two lines are parallel when the perpendicular distance between them is always the same. E.g. 	Displaying diagrams of perpendicular lines. Drawing and constructing perpendicular lines. Displaying diagrams of parallel lines. Drawing and constructing parallel lines.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written

11		Alternate angles Co-interior angles Corresponding angles	3). Identifying and calculating Alternate, Co-interior and Corresponding angles	When a transversal cuts two parallel lines, alternate angles, called **Z** angles are formed. E.g.  In the figure above, **a** and **b** are alternate angles. Alternate angles between pairs of parallel lines are equal If the sum of two angles is 180^0 then the angles are supplementary.  The two angles in the figure above add up to 180^0, $\angle a + \angle b = 180^0$ When a transversal cuts a pair of lines, the angles that are formed between the lines are called co-interior or U angles. E.g  In the figure above, **a** and**b** are co-interior angles. Co-interior angles are supplementary only if they are formed between parallel lines. When a transversal cuts a pair of parallel lines, the angles that are in similar or corresponding positions above or below the parallel lines are called corresponding angles. E.g.  In the figure above, a and b are corresponding angles. Corresponding angles are always equal.	Displaying examples of supplementary angles. Discussing situations in which supplementary angles occur. Displaying examples of co-interior angles Discussing situations in which co-interior angles occur. Finding the size of co-interior, alternate , corresponding and supplementary angles.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written

12		Construction of Triangles and Parallelograms	4) Constructing triangles 6) Constructing parallelograms	Construction of triangles given the length of: three sides two sides and the size of the included angle; one side and the size of two angles. The construction of parallelograms given the length of three sides, the length of two sides and the size of the included angle	Constructing triangles Constructing parallelograms	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Quiz Oral Written
13	Computation	Rounding numbers (Approximation) Standard Form	4). Rounding (Approximating) a value to a given of significant figures and express any decimal to a given number of decimal places 5). Expressing very large or small numbers in standard form	The rounding off of whole numbers to the nearest 10, 100, 1000, … The rounding off of decimals to 1, 2, 3, …, places Standard Form : **a** x10^{n}, where **a** represents a number between 1 and 10 and **n** an integer (i) 170 000 = 1.7 × 10^{5} (ii) 0.000 072 = 7.2 × 10^{-5}	Demonstrate the rounding off of whole numbers, .e.g. when we round off 425 to the nearest hundred, it becomes 400 because 425 is nearer 400 than to 500. Similarly, 1.87 to one decimal place becomes 1.9 because the second place after the decimal point is more than 5. Writing numbers in standard form and expanding from standard form	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Make a chart to show rational numbers
14		Ratio and Proportion	6). Expressing ratios and Proportions as fractions in its simplest form 7) Solve problems involving ratio and proportion	Express a ratio as a fraction, e.g. 80:100 becomes $\frac{80}{100} = \frac{4}{5}$ Express ratios and proportions as fractions in their lowest form Apply concepts to work questions	Expressing, reducing and comparing ratios and proportions as fractions in their simplest form	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Quiz
15			**REVIEW AND DO REMEDIAL WORK ON TOPICS/CONCEPTS BASED ON WEAKNESSES AND NEEDS OF STUDENTS**				

Note for all Teachers:

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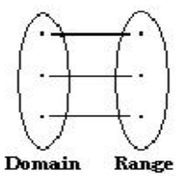
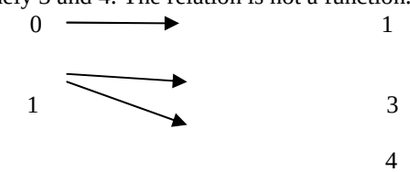
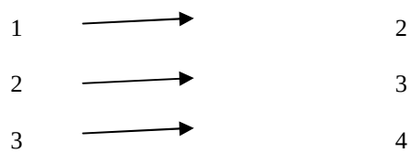
2. The recommended texts: Mathematics for Secondary Schools in Guyana Book 2 and Mathematics for Secondary School Book 2 are not the only text you can use to give students practice exercises.
3. Use any Mathematics textbook that is available to you and the students.
4. Seek out the topics with the appropriate content for the students to gain practice.
5. If teachers feel that their students are competent in the objectives specified for the given week, then they can move on or give students additional work on the objectives to test their skills.

Ministry of Education
Secondary Sector
Mathematics
Grade 8
Easter Term Schedule of Topics

Week	Topic	Sub-topic	Objectives	Content	Activities	Resources	Evaluation Strategies
1	Computation	Fractions	Converting fractions to decimals and vice versa Performing any of the four basic operations with fractions. ii). decimals	Convert fractions to decimals and vice versa Perform the four basic operations with fractions – addition, subtraction, multiplication and division.	Make a table to show the conversion of fractions to decimals and vice versa. Solve problems using the four basic operations.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Assignment Questions from Exercise
2		Decimals	Converting fractions to decimals and vice versa Performing any of the four basic operations with decimals.	Perform the four basic operations with decimals – addition, subtraction, multiplication and division.	Solve problems using the four basic operations.		Quiz Worksheet
3		Currency Conversion	Converting local currencies to those most commonly used	Basic operations with simple proportion to calculated currency conversion involving Guyana, Canadian, Eastern Caribbean, Jamaican, Trinidad&Tobago, United Kingdom, United States and other currencies. E.g. If US$1.00 = G$200 Then US$10.00 = G$200 x 10 = $2000	Changing currency from one form to another. Set up a bank/cambio corner to exchange money. Worksheet	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Worksheet
4	Consumer Arithmetic	Profit and Loss Percent Profit Percent Loss	1). Calculating profit or loss as a percentage 2). Calculating marked price when cost price and percentage profit are given	Calculate profit or loss as a percentage Profit = Selling Price – Cost Price Loss = Cost Price – Selling Price Profit % = $\frac{\text{Profit}}{\text{Cost Price}} \times \frac{100}{1}$ Loss % = $\frac{\text{Loss}}{\text{Cost Price}} \times \frac{100}{1}$ Calculate marked price when cost price and percentage profit are given	Simulate buying and selling situations. Visit the market, vendors, shops, etc, to observe how profit is calculated and added to buying price to give selling price. Calculate profit and profit percent. Discuss how loss can be incurred and loss percent. Report outcomes of simple transactions. Solve problems involving profit and loss. Set up a shop corner	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Written Poster Paper clippings

5		Simple Interest Calculating Amount	3). Using the simple interest formula to calculate simple interest. 4). Calculating amount	$SI = \frac{P \times R \times T}{100}$, where SI represents Simple Interest. P the principal, R the Interest Rate and T the Time. Rearrangement of the formula to find P, R and T: $P = \frac{100 \quad SI}{R \times T}$; $R = \frac{100 \quad SI}{P \times T}$ $T = \frac{100 \quad SI}{P \times R}$ Calculate Amount: Amount = Principal + Interest i. e. A = P + I, where A represents the amount, P the Principal and I the Interest. Rearrangement of the formula to find Principal and Interest: P = A – I ; I = A – P Solve problems involving the calculation of amount.	Discuss the words: savings, loans, interest and amount. Calculating simple interest and amount. Solve problems involving the calculation of amount	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Banking Worksheet
6	Relations & Functions	Many-to-one and one-to-one Relations	1). Defining a function as a many-to-one or one-to-one relation 2). Distinguish between graph of a relation and a function 3). Draw the graph of functions. 4). Write down the set of ordered pairs from a graph.	Define a function as a many-to-one or one-to-one relation A function is a special kind of a relation in which one and only one arrow leaves each member of the domain. E.g.  Domain Range In a set of ordered pairs {(0, 1), (1, 3), (1, 4)}, the first element "1" is paired with two different elements of the range, namely 3 and 4. The relation is not a function.  0 → 1 1 → 3 4 In a set of ordered pairs {(1, 2), (2, 3), (3, 4)}, each first element namely 1, 2 and 3 has one image.  1 → 2 2 → 3 3 → 4 Hence the set is a function. A set of ordered pairs is a function if no first element is	Observe several arrow diagrams and determine which ones are functions and which are not. Discuss whether a given set of ordered pairs is a function. Draw the graph of functions. Write down the set of ordered pairs from graphs.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Chart Written Graph

				repeated. Identify graphs showing relations and functions Draw graphs of functions Write the set of coordinates as ordered pairs from the graphs			
7		Many-to-one and one-to-one Relations	5). Writing equations of lines parallel to the **x**-axis. 6). Writing equations of lines parallel to the y-axis. 7). Shading the region on a co-ordinate plane that is represented by inequalities. 8). Recognizing the gradient of a line as the ratio of the vertical rise to the horizontal shift	**y = k** represent the equation of lines parallel to the **x**-axis, where k is a constant. **x** = k represents the equation of lines parallel to the y-axis, where k is a constant Write equations of lines parallel to the x-axis Write equations of lines parallel to the y-axis. Shade the region on a co-ordinate plane that is represented by inequalities. Recognize the gradient of a line as the ratio of the vertical rise to the horizontal shift	Write the equation of lines parallel to the **x**-axis. Write the equation of lines parallel to the y-axis.Shade the region on a co-ordinate plane that is represented by inequalities. Write the gradient of a line as a ratio of the vertical rise to the horizontal shift	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Graphs Worksheets Oral
8	Number Theory 1	Set of Rational numbers	1). Identifying the set of rational numbers 2). Listing subsets of the set of rational numbers 3). Arranging rational numbers in order of size	The set of rational numbers include: _ common fractions _ improper fractions _ exact and recurring decimals _ the integers The use of equivalent fractions to determine which fraction is bigger. Examination of the parts of rational numbers in a given set of rational numbers as a quick way to determine which one is bigger or smaller or equal List subsets of rational numbers Arrange rational numbers in order of size	Show on a chart examples of the set of rational numbers. List subsets of the set of rational numbers. Arrange rational numbers in order of size.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Chart Oral Written Quiz
9		Base-Ten Base-Two System	4). Listing the base ten symbols. 5). Identifying place value of digits in a numeral 6). Writing numbers in expanded form and vice versa 7). Converting numbers from base-two to base-ten and vice versa 8). Adding numbers in base-two.	List base ten numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. List base-two numerals: 0, 1. Identify place value of digits in a numeral in base-ten and base-two Write nos in expanded form for both bases and vice versa Convert nos from base-two to base-ten and vice versa Add numbers in base-two	List base two and ten symbols. Show students examples of the place value of digits in numerals Write numbers in expanded form. Convert numbers form one base to the next. Add numbers in base-two.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Place Value Chart Oral Written
10		Base Three Base Four	9) Identify place value of digiits and expand numbers in the two bases 10) Convert from the bases to base 10 and vice versa 11) Add and subtract numbers in the given bases	Numerals in base three: 0,1,2 and base four:0,1,2,3 Place value of digits in the bases Conversion of numbers in bases using place value table and long division Addition and subtraction of numbers in bases using place value table and conversion method	List base three and four symbols. Show students examples of the place value of digits in numerals Write numbers in expanded form. Convert numbers form one base to the next. Add and subtract numbers in bases		Place Value Chart Oral Written
11		Base-Five Base-Eight system	9). Converting numbers from base-five to base-ten and vice versa 10). Add numbers in base-five 11). Subtract numbers in base five 12). Convert numbers from base-eight to base-ten and vice versa 13). Add numbers in base-eight	List base five numbers: 0, 1, 2, 3,4. List base-eight numerals: 0, 1,3, 4, 5, 6, 7. Identify place value of digits in a numeral in base-five and base-eight Write numbers in expanded form for both bases and vice versa Convert numbers from base-five and eight to base-ten and	List base five and eight symbols. Show students examples of the place value of digits in numerals Write numbers in expanded form. Convert numbers form one base to the next. Add and subtract numbers in	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Place Value Chart Oral Written

			14). Subtract numbers in base-eight	vice versa Add and subtract numbers in base-five and eight	base-five and eight		
12			**EASTER TERM EXAMINATIONS**				
13			**EASTER TERM EXAMINATIONS AND REMEDIAL WORK ON WEAK AREAS IDENTIFIED FROM MATHEMATICS EXAMINATION**				

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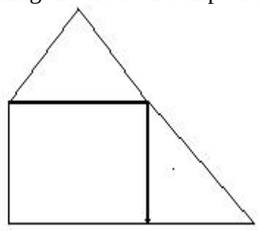
Ministry of Education
Secondary Sector
Mathematics
Grade 8
August Term Schedule of Topics

Week	Topic	Sub-topic	Objectives	Content	Activities	Resources	Evaluation Strategies
1	Measurement	Circumference of a Circle Area of a Parallelogram Area of Composite Shapes	1). Identifying the symbol Ⓡ and using the value of Ⓡ to solve problems 2). Identifying the formula for finding the circumference of a circle 3). Solving problems involving the calculation of the circumference of a circle 4). Calculating the perimeter of a polygon and circumference of a circle and their combinations	Identification of Ⓡ. Values used for Ⓡ are 3.14, 3.1416 or $3\frac{1}{7}$. Circumference is the outside edge of a circle. Its length can be found by measurement or can be calculated by formula. Circumference = Ⓡ × diameter C = Ⓡ d or C = 2Ⓡ r, where r is the radius of the circle. r = $\frac{C}{2Ⓡ}$	Display the symbol Ⓡ. Project to discover an approximate value for Ⓡ, e.g. ➢ have students collect five or more circular objects, e.g. milk tin, fruit juice tin, etc. ➢ use measuring tape or string and ruler/metre stick to measure the circumference of the tops of the objects, then the diameter. Listing the following on a table: - object - circumference - diameter - answers for the circumference divided by the diameter. Discuss: How does the measurement of the circumference compare to the measurement of the diameter? Is it twice as large? Is it three times as large or more than three times as large? What is the value of Ⓡ (pi)?	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Practical Chart
2		Area of a Parallelogram Area of Composite Shapes	5). Identifying the formula for finding the area of a parallelogram 6). Calculating the area of parallelograms 7). Recognizing composite shapes and calculating area of composite shapes	Area of parallelogram = base × perpendicular height. Calculating the area of a parallelogram using each side as a base and respective height. Solving problems involving the calculation of the area of parallelograms?	Display chart showing formula for finding the area of a parallelogram. **Discuss:** A parallelogram is formed from two congruent triangles. What are the properties of the parallelogram?	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Display Oral Written Worksheet

				A composite shape is a shape that is made up of many different parts. E.g.  Composite shape Calculating the areas of composite shapes. 	How can the area of the parallelogram be found using the two congruent triangles? Use graph paper or popsicle sticks to adjust the shape of a parallelogram into that of a rectangle and vice versa. Find the area of the rectangle and the parallelogram and compare the results. Calculate the area of a parallelogram using each side as a base and respective height. Solve problems involving the calculation of the area of parallelograms? Make composite shapes. Identify each part used to make up a composite shape. Find the area of each part and add to find the total area of the composite shape. Use graph paper to make shapes, form composite shapes Calculate the area of shapes with different parts		
3		Scales and Distances	8). Recognizing enlarged and reduced scales 9). Expressing a scale as a ratio and then as a representative fraction 10). Using scales to represent lengths or distances	**Enlarged scale** – E.g. 1 cm on drawing represents 1 km in reality. **Reduced scale** – E.g. 1 m on drawing represents 1 cm in reality. A scale of 1 cm to 250 000 cm can be written as 1:250 000. This means that 1 cm on a drawing represents 250 000 cm in reality. Such a scale has a Representative Fraction of $\frac{1}{250000}$ Representative Fraction (RF) = $\frac{\text{Size on drawing}}{\text{Actual size}}$ Both numerator and denominator of the fraction must be expressed in the same units. The use of scales to represent lengths or distances.	Demonstrating examples of enlarged and reduced scales. Expressing a scale as a ratio and then as a Representative Fraction. Draw simple plans using given scales. Make models using appropriate scales, .e.g. a model of a desk, table, etc.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Models

4	Statistics	Bar Graphs	1). Recognizing and constructing Bar graphs 2). Using Bar graphs in problem solving	Construction of bar graphs.	Display examples of bar graphs. Construct bar graphs vertically and horizontally. Collect examples of bar graphs and use same for interpretation and discussion.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Display Oral Written
5		Pie Charts	3). Recognizing and constructing Pie graphs 4). Using Pie graphs in problem solving	Construction of pie charts. When constructing a pie chart, the smallest angle should be drawn first, then the next smallest angle and so on, in order to compensate for small errors that may occur while drawing the angles In order to read a pie chart, it is necessary to know the angle of each sector.	Display examples of Pie Chart Find the total to be represented. Draw a circle to represent the total. Calculate the fractional parts of the circle that are allocated to various purposes. Find the size of the angle in degrees of each sector of the circle by multiplying each fractional part by 360^0. Use ruler and protractor to draw the angle for each sector. Label each sector. Draw the pie chart using calculated sector angles. Interpret and discuss information on pie charts.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	
6		Frequency Tables Line Graphs	5). Recognizing the format of frequency tables 6). Constructing a frequency table from a given set of data 7). Recognizing situations in which line graphs can be applied 8). Drawing line graphs and using line graphs to solve problems	Frequency table: a table in which the frequency is shown Score | Tally | Frequency 4 | 1111 | 4 5 | ~~1111~~ | 5 9 | ~~1111~~ 1111 | 9 Construction of frequency tables Line graphs pictorially represent trends and patterns in which change can be clearly shown. E.g. change in temperature and growth; population increase or decrease	Display examples of frequency tables. Plan and collect information. Record data. Report on frequencies of values. Construct frequency table. Discuss ways to arrive at frequencies of values, e.g. count occurrences and write down values and how often they occur. Display examples of line graphs. Collect examples of line graphs from magazines, newspapers, etc. Collect data, e.g. population of school over a period of time. Construct line graphs. Display work done to class.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Display Oral Written
7		Averages: Mean, Mode, Median	9). Finding the mean given a set of scores 10). Finding the mean from a frequency table	The arithmetic mean is another name for the average of a set of scores. The mean can be found by dividing the sum by the	Manipulate sets of concrete objects to find the mean, e.g.	A Compl. Mths. Crse for Sec	

			11). Finding the median from a given set of data 12). Finding the mode from a given set of data 13). Recognizing when the mode is used as a measure of central tendency 14). Distinguish among the averages: mean, median and mode 15). Selecting the median and mode from a given set of data 16). Determining the range for a set of data	number of scores. E.g. the mean of 2, 4, 8 and 10 is $\frac{24}{6} = 4$ Mean = Sum of scores ÷ Number of scores Calculation of the mean from a frequency table follows the same principles as calculating the mean from a set of scores, that is, the sum of all scores divided by the number of scores. **Balls** | **f** | **f × n** 3 | 2 | 6 4 | 3 | 12 6 | 4 | 24 9 | 1 | 9 **Total** | **10** | **51** Mean = $\sum \frac{fx}{x}$ = $\frac{51}{10}$ = 5.1 Median: The median of a set of numbers is the middle one, after the numbers have been arranged in an ascending or descending order. Examples: - The median of 7, 9, 10, 3, 6, 8, 4 is 7 - The median of 7, 9, 10, 3, 8, 4 is 7.5 The mode of a set of data values is the number in the set that appears the most often. E.g. the mode of 2, 2, 3, 3, 3, 4, 5 is 3. A set of numbers can have more than one mode as long as the number appears more than once. In the data set 2, 2, 3, 3, 4, 5, the mode is 2 and 3. The data set is binomial. If no number appears more than once, then the data set has no mode.	three sets of corks with each set having 10, 11, and 9 corks. Establish one set of the three sets and then re-distribute to form three equivalent sets. Find the mean from a given set of scores, say 10, 11 and 9 by adding all the scores and dividing by 3. Collect information and finding the mean. Compare means to determine the greatest levels of performance and lowest levels of performance. Collect data and Construct frequency tables. Calculate the mean from data on frequency tables. Arrange a set of numbers in ascending or descending order of size (magnitude) Identify the middle number when there is an odd number of numbers. The middle number is the median. Identifying the middle number when there is a even number of numbers. The mean of the two middle numbers identified is the mean. Find the mode from a given set of data. Make decisions concerning the mode. For example, what size of shoes would you order most for sale if the mode is size 8? Discuss situations in which the mode of a set of data is more useful than the mean	Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	

8	Geometry 2	Common Solids Properties of Common solids Drawing Common shapes	1). Identifying and naming common solids 2). Identifying the properties of common solids 3). Drawing common shapes possessing translational, bilateral and rotational symmetry	Axes of symmetry: Whenever you fold a shape over so that one half fits exactly on top of the other half, it is said to have an axis of symmetry.	Fold shapes Identify the axis of symmetry on objects such as books, capital letters, oranges, etc. Trace the axis of symmetry on given diagrams. Sketch pictures or objects that are balanced about an axis of Symmetry.	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Practical
9		Common Solids Properties of Common solids	4). Identifying the axes of symmetry of common objects 5). Sketching pictures about axes of symmetry 6). Identifying the line of reflection	A mathematical reflection is a drawing of an original shape on the opposite side of the line of reflection or mirror line. When reflection is carried out the: - distance between the object and the line of reflection and the image and the line of reflection are the same. - line joining the object and the image is perpendicular to the line of reflection. - object and its image are on opposite sides of the mirror line.	**Display pictures, shapes, etc., which show the line of reflection.**	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Display Oral Written
10			7). Drawing lines of reflection 8). Drawing the image of shapes after reflection in a line 9). Finding the co-ordinates of the vertices of the image of a shape after reflection in the **x**-axis and y-axis	Drawing lines of reflection. Drawing objects and images after a reflection Finding the co-ordinates of the vertices of the image of a shape after reflection in the **x**-axis and y-axis Reflection of a point (**x**, y) in the x-axis is (**x**, -y) Reflection of a point (**x**, y) in the y-axis is (-**x**, y)	Draw the line of reflection on symmetrical shapes. **Draw the image of shapes after reflection in a line.** Plot the co- ordinates of the vertices of a shape on a co-ordinate plane. Find the images of the co-ordinates of the vertices of a shape after reflection in the x-axis and y-axis	A Compl. Mths. Crse for Sec Schools Bk 2 Mathematics for Sec School in Guyana Bk 2	Oral Written Practical
10			**ANNUAL EXAMINATIONS**				
11			**ANNUAL EXAMINATIONS AND REMEDIAL WORK ON WEAK AREAS IDENTIFIED FROM MATHEMATICS EXAMINATION**				

Note for all Teachers:

1. Use this termly schedule of topics, together with the Ministry of Education's Curriculum Guides.
2. The recommended texts: Mathematics for Secondary Schools in Guyana Book 2 and Mathematics for Secondary School Book 2 are not the only text you can use to give students practice exercises.
3. Use any Mathematics textbook that is available to you and the students.
4. Seek out the topics with the appropriate content for the students to gain practice.
5 .If teachers feel that their students are competent in the objectives specified for the given week, then they can move on or give students additional work on the objectives to test their skills.