ENGLISH MATHEMATICS _2021 WEEKLY TEACHING PLAN _ GRADE 9

TERM 1	Week 1 3 days	Week 2 5 days	Week 3 5 days	Week 4 5 days	Week 5 5 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 4 days	Week 10 3 days
Hours per week	**2.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**3.5 hrs**	**3 hrs.**
Hours per topic	**2.5 hrs.**	**6 hrs**	**9 hrs.**	**2 hrs.**	**9 hrs.**			**4.5 hrs.**	**6.5 hrs**	
Topics, concepts and skills	**REVISION OF GRADE 8 WORK**	**WHOLE NUMBERS** **Properties of numbers** • Describe the real number system by recognising, defining and distinguishing properties of: – natural numbers, whole numbers, integers, rational numbers, irrational numbers **Calculations using whole numbers** • Revise: Calculations using all four operations on whole numbers, estimating and using calculators where appropriate **Multiples and factors** • Use prime factorisation of numbers to find LCM and HCF **Solving problems** • Solve problems in contexts involving: – Ratio and rate – Direct and indirect proportion	**INTEGERS** **Calculations with integers** • Revise: – addition and subtraction with integers – Multiplication and division with integers – perform calculations involving all four operations with integers – perform calculations involving all four operations with numbers that involve the squares, cubes, square roots and cube roots of integers **Properties of integers** • Revise: – Commutative, associative and distributive properties of addition and multiplication for integers – Additive and multiplicative inverses for integers	**FORMAL ASSESSMENT TASK** **ASSIGNMENT** • Whole numbers • Integers	**EXPONENTS** **Calculations using numbers in exponential form** • **Revise** the following general laws of exponents. – $a^m \times a^n = a^{m+n}$ – $a^m \div a^n = a^{m-n}$, if $m>n$ – $(a^m)^n = a^{m \times n}$ – $(a \times t)^n = a^n \times t^n$ – $a^0 = 1$ • **Extend** the general laws of exponents to include: – integer exponents – $a^{-m} = \frac{1}{a^m}$ • Perform calculations involving all four operations using numbers in exponential form		**NUMERIC AND GEOMETRIC PATTERNS:** **NUMERIC PATTERNS** **Investigate and extend patterns** • Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns: – represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically • Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language –	**FORMAL ASSESSMENT TASK** **TEST** All Term 1 topics	
Prerequisite skill or pre-knowledge		• The commutative; associative; distributive properties of whole numbers • 0 in terms of its additive property (identity element for addition) • 1 in terms of its multiplicative property (identify element for multiplication) • Recognise the division property of 0, whereby any number divided by 0 is undefined	• Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers • Calculate the squares, cubes, square roots and cube roots of rational numbers		• Recognize and use the appropriate laws of numbers involving exponents and square and cube roots		• Determine input values, output values and rules for patterns given in input-output diagrams • Determine equivalence of different descriptions of the same relationship or rule presented verbally, in a flow diagram, by a number sentence.		

TERM 2	Week 1 4 days	Week 2 5 days	Week 3 3 days	Week 4 5 days	Week 5 5 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 4 days	Week 11 5 days
Hours per week	**3.5 hrs**	**4.5 hrs**	**2.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**3.5 hrs**	**4.5 hrs**
Hours per topic	**6 hrs.**		**16 hrs.**			**2 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**3.5 hrs.**	**4.5 hrs.**
Topics, concepts and skills	**NUMERIC AND GEOMETRIC PATTERNS** **GEOMETRIC PATTERNS** **Investigate and extend patterns** • Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns: – represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically • Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language		**ALGEBRAIC EXPRESSIONS** **Algebraic language** • Revise the following: – Recognize and identify conventions for writing algebraic expressions – Identify and classify like and unlike terms in algebraic expressions – Recognize and identify coefficients and exponents in algebraic expressions – Recognize and differentiate between monomials, binomials and trinomials **Expand and simplify algebraic expressions.** • Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to: – add and subtract like terms in algebraic expressions. – multiply integers and monomials by: monomials, binomials, trinomials – divide the following by integers or monomials: monomials, binomials, trinomials – simplify algebraic expressions involving the above operations – determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms **N.B. ENSURE THAT COMMON FRACTIONS AND DECIMAL FRACTIONS ARE PART OF CALCULATIONS WITH EXPRESSIONS (Page 122 and 123 of CAPS)** • Extend the above algebraic manipulations to include: – multiply integers and monomials by polynomials, – divide polynomials by integers or monomials, – the product of two binomials, the square of a binomial **Factorize algebraic expressions** • Factorize algebraic expressions that involve: – common factors – -difference of two squares – trinomials of the form: ✓ $x^2 + bx + c$ ✓ $ax^2 + bx + c$, where *a* is a common factor. • Simplify algebraic expressions that involve the above factorisation processes.	**FORMAL ASSESSMENT TASK** **INVESTIGATION** • Numeric and geometric patterns • Algebraic expressions	**ALGEBRAIC EQUATIONS** • **Revise the following:** – set up equations to describe problem situations – analyse and interpret equations that describe a given situation – Solve equations by inspection – using additive and multiplicative inverses – using laws of exponents – Solve equations by substitution – Use substitution in equations to generate tables of ordered pairs • Extend solving equations to include: – using factorisation – equations of the form: a product of factors = 0		**REVISION**	**FORMAL ASSESSMENT TASK** **TEST** All Term 1 & 2 topics

		• Simplify algebraic fractions using factorisation				
Prerequisite skill or pre-knowledge	• Determine input values, output values or rules for patterns and relationships using flow diagrams, tables and formulae • Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented verbally, in flow diagrams, in tables and by formulae •	• Algebraic language • Factors and multiples • Expand and simply algebraic expressions • Substitution • Determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms		• Write number sentences to describe problem situations • Analyse and interpret number sentences that describe a given situation • Solve and complete number sentences by: – inspection – trial and improvement • Identify variables and constants in given formulae or equations • Use substitution in equations to generate tables of ordered pairs • Extend solving equations to include: – using additive and multiplicative inverses – using laws of exponents		

TERM 3	Week 1 4 days	Week 2 5 days	Week 3 5 days	Week 4 5 days	Week 5 4 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 5 days	Week 11 4 days
Hours per work	**3.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**3.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4 hrs**
Hours per topic	**6.5 hrs.**		**9 hrs.**		**5 hrs.**	**9 hrs.**		**9 hrs.**		**4.5 hrs.**	**4 hrs.**
Topics, concepts and skills	**FUNCTIONS AND RELATIONSHIPS** **Input and output values** • Determine input values, output values or rules for patterns and relationships using: – flow diagrams – tables – formulae – equations **Equivalent forms** • Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: – verbally – in flow diagrams – in tables – by formulae – by equations – by graphs on a Cartesian plane		**GRAPHS** **Interpreting graphs** • Extend the focus on features of graphs with special focus on the following features of **linear graphs**: – x-intercept and y-intercept – Gradient **Drawing graphs** • Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane • Extend drawing of graphs with special focus on: – drawing linear graphs from given equations – determining equations from given **linear graphs.**		**TRANSFORMATION GEOMETRY** **Transformations** • Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on: – reflection in the X-axis or Y- axis – translation within and across quadrants	**GEOMETRY OF STRAIGHT LINES** **Angle relationships** • Revise and write clear descriptions of the relationship between angles formed by: – perpendicular lines – intersecting lines – parallel lines cut by a transversal **Solving problems** • Solve geometric problems using the relationships between pairs of angles described above		**GEOMETRY OF 2D SHAPES AND COSTRUCTION OF GEOMETRIC FIGURES** **Classifying 2D shapes** • Revise properties and definitions of triangles in terms of their sides and angles, distinguishing between: – equilateral triangles – isosceles triangles – right-angled triangles **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF TRIANGLES** • Investigate the angles in a triangle, focusing on the relationship between the exterior angle of a triangle and its interior angles **Classifying 2D shapes** • Revise and write clear definitions of quadrilaterals in terms of their sides, angles and diagonals, distinguishing between: – parallelogram – rectangle – square – rhombus – trapezium – kite **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF QUADRILATERALS**		**REVISION**	**FORMAL ASSESSMENT TASK** **TEST** All topics

					• investigate sides and angles. and diagonals in quadrilaterals, focusing on: – exploring the sum of the interior angles of polygons – the diagonals of rectangles, squares, – parallelograms, rhombi and kites		
Prerequisite skill or pre-knowledge		•	• Translations, reflections, rotations enlargements and reductions with geometric figures and shapes on grid paper	• Recognize and describe pairs of angles formed by: – perpendicular lines – intersecting lines – parallel lines cut by a transversal • Solve geometric problems using the relationships between pairs of angles described above	• the sum of the interior angles of triangles • Identify and write clear definitions of types of triangles focusing on sides and angles		

N.B. BY THE END OF TERM 3, LEARNERS SHOULD HAVE COMPLETED A PROJECT AND A TEST. SEE NOTES ON PROJECT FROM ABRIDGED SECTION 4 OF CAPS.

TERM 4	Week 1 4 days	Week 2 5 days	Week 3 5 days	Week 4 5 days:	Week 5 5 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 3 days
Hours per week	**3.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**4.5 hrs**	**3 hrs**
Hours per topic	**6 hrs.**	**4.5 hrs.**	**9 hrs.**	**9 hrs.**	**2 hrs.**	**4.5 hrs.**	**4.5 hrs.**	**3 hrs.**		
Topics, concepts and skills	**GEOMETRY OF 2D SHAPES AND COSTRUCTIONS** **Similar and congruent triangles** • Through investigation, establish the minimum conditions for congruent triangles • Through investigation, establish the minimum conditions for similar triangles **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES** • Explore the minimum conditions for two triangles to be congruent **Solving problems** • Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties of triangles and quadrilaterals, as well as properties of congruent and similar triangles.	**THEOREM OF PYTHAGORAS** • Use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right-angled triangles	**AREA AND PERIMETER OF 2-D SHAPES** • Use appropriate formulae and conversions between SI units, to solve problems and calculate perimeter and area of: – polygons – circles	**SURFACE AREA AND VOLUME OF 3 – D OBJECTS** • Use appropriate formulae and conversions between SI units to solve problems and calculate the surface area, volume and capacity of: – rectangular prisms – triangular prisms – cylinders cylinders	**REVISION**	**FORMAL ASSESSMENT TASK** **TEST** Term 3 & 4 work				
Prerequisite skill or pre-knowledge		• Determine whether a triangle is a right-angled triangle or not if the length of the three sides of the triangle are known • Use the Theorem of Pythagoras to calculate a missing length in a right-angled triangle, leaving irrational answers in surd form •	• Use of appropriate formulae to calculate perimeter and area of polygons to include circles to at least 2 decimal places and convert between appropriate SI units, including and up to km^2 • Calculate perimeter and area of complex figures	• Use of appropriate formulae to calculate the surface area, volume and capacity of cubes and rectangular prisms • Describe the interrelationship between surface area and volume of the objects mentioned above • Use and convert between appropriate SI units, including: – $mm^2 \leftrightarrow cm^2 \leftrightarrow m^2 \leftrightarrow km^2$ – $mm^3 \leftrightarrow cm^3 \leftrightarrow m^3$ – $ml\ (cm^3) \leftrightarrow l \leftrightarrow kl$					