# ENGLISH MATHEMATICS _2021 WEEKLY TEACHING PLAN _ GRADE 8

| TERM 1 | Week 1<br>3 days | Week 2<br>5 days | Week 3<br>5 days | Week 4<br>5 days | Week 5<br>5 days | Week 6<br>5 days | | Week 7<br>5 days | Week 8<br>5 days | | Week 9<br>4 days | | Week 10<br>3 days |
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| **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.** | **9 hrs.** | | **9 hrs.** | | **2 hrs.** | **2.5 hrs** | **4.5 hrs** | **2 hrs** | **2.5 hrs** | **1.5 hrs.** | **2 hrs** | **3 hrs.** |
| **Topic, concepts, skills and values** | **REVISION OF GRADE 7 WORK** | **WHOLE NUMBERS**<br><br>**Calculations using whole numbers**<br>**Revise:**<br>• Calculations using all four operations on whole numbers, estimating and using calculators where appropriate<br><br>**Calculation techniques**<br>• Use a range of strategies to perform and check written and mental calculations with whole numbers including:<br>- Estimation<br>- Adding, subtracting and multiplying in columns<br>- Long division<br>- Rounding off and compensating<br>- Using a calculator<br><br>**Multiples and factors**<br>**Revise:**<br>• Prime factors of numbers to at least 3-digit whole numbers<br>• LCM and HCF of whole numbers, by inspection or factorisation<br><br>**Solving problems**<br>**Revise**:<br>• Solve problems involving whole numbers, including:<br>- Comparing two or more quantities of the same kind (ratio)<br>- Comparing two quantities of different kinds (rate)<br>- Sharing in a given ratio where the whole is given<br>• Extend to increasing or decreasing of a number in a given ratio | | **INTEGERS**<br><br>**Calculations with integers**<br>• **Revise**<br>- addition and subtraction with integers<br>• Multiply and divide with integers<br>• Perform calculations involving all four operations with integers<br>• Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers<br><br>**Properties of integers**<br>• Recognise and use commutative, associative and distributive properties of addition and multiplication for integers<br>• Recognize and use additive and multiplicative inverses for integers | **FORMAL ASSESMENT TASK**<br><br>**ASSIGNMENT**<br><br>• Whole numbers<br>• Integers | | **COMMON FRACTIONS**<br><br>**Calculations with fractions**<br><br>• Divide whole numbers and common fractions by common fractions<br>• Calculate the squares, cubes, square roots and cube roots of common fractions<br>• Calculate amounts if given percentage increase or decrease<br>• Calculations and solving problems<br><br>**Calculation techniques**<br><br>• Use knowledge of reciprocal relationships to divide common fractions<br><br>**Percentage**<br><br>• Calculate amounts if given percentage increase or decrease<br><br>**Solving problems**<br><br>• Solve problems in contexts involving common fractions and mixed numbers, including grouping, sharing and finding fractions of whole numbers<br>• Solve problems in contexts involving percentages<br>• | **DECIMAL FRACTIONS**<br><br>**Calculations with decimal fractions**<br><br>• Multiplication of decimal fractions by decimal fractions not limited to one decimal place<br>• Division of decimal fractions by decimal fractions<br>• Calculate the squares, cubes, square roots and cube roots of decimal fractions<br><br>**Calculation techniques**<br>• Use knowledge of place value to estimate the number of decimal places in the result before performing calculations<br>• Use rounding off and a calculator to check results where appropriate | | **FORMAL ASSESMENT TASK**<br><br>**TEST**<br><br>All topics |

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| | | • Solve problems that involve whole numbers, percentages and decimal fractions in financial contexts such as: | | | | | |
| **Prerequisite skill/ pre-knowledge** | | • Multiplication of whole numbers to at least $12 \times 12$<br>• Order and compare prime numbers to at least 100<br>• Calculations using all four operations on whole numbers, estimating and using calculators where appropriate<br>• Prime factors of numbers to at least 3-digit whole numbers<br>• LCM and HCF of numbers to at least 3-digit whole numbers, by inspection or factorisation<br><br>• Solve problems involving whole numbers, including:<br>- Comparing two or more quantities of the same kind (ratio)<br>- Comparing two quantities of different kinds (rate)<br>-Sharing in a given ratio where the whole is given | • Count forwards and backwards in integers for any interval<br>• Recognise, order and compare integers<br>• Add and subtract with integers<br>• Recognise and use commutative and associative properties of addition and multiplication for integers<br>• Solve problems in contexts involving addition and subtraction of integers | | • Addition and subtraction to fractions where one denominator is not a multiple of the other<br>• Multiplication of common fractions, including mixed numbers, not limited to fractions where one denominator is a multiple of another<br>• Converting mixed numbers to common fractions<br>• Use knowledge of multiples and factors to write fractions in the simplest form before or after calculations<br>• Use knowledge of equivalent fractions to add and subtract common fractions in order to perform calculations with them<br>• Calculate the percentage of part of a whole<br>• Calculate percentage increase or decrease of whole numbers | • Count forwards and backwards in decimals<br>• Compare and order decimal fractions<br>• Rounding off decimal fractions<br>• Addition and subtraction of decimal<br>fractions of at least three decimal places<br>• Multiplication of decimal fractions by whole numbers and decimals<br>• Division of decimal fractions by whole numbers<br>• Use knowledge of Place value to estimate the number of decimal places in the result before performing calculations<br>• Use rounding off and a calculator to check results where appropriate | |

| TERM 2 | Week 1<br>4 days | Week 2<br>5 days | | Week 3<br>3 days | Week 4<br>5 days | Week 5<br>5 days | Week 6<br>5 days | Week 7<br>5 days | | Week 8<br>5 days | Week 9<br>5 days | Week 10<br>4 days | Week 11<br>5 days |
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| **Hours per week** | **3.5 hrs** | **4.5 hrs.** | | **2.5 hrs** | **4.5hrs.** | **4.5 hrs.** | **4.5 hrs.** | **4.5 hrs.** | | **4.5 hrs.** | **4.5 hrs.** | **3.5 hrs.** | **4.5 hrs.** |
| **Hours per topic** | **3.5 hrs.** | **1.5 hrs.** | **3 hrs** | **7 hrs** | | **9 hrs.** | | **2 hrs.** | **2.5 hrs.** | **4.5 hrs** | **4.5 hrs.** | **3.5 hrs.** | **4.5 hrs** |
| **Topic, concepts, skills and values** | **DECIMAL FRACTIONS**<br>**Calculations with decimal fractions**<br>• **Revise**<br>- Multiplication of decimal fractions by decimal fractions not limited to one decimal place<br>- Division of decimal fractions by decimal fractions<br>- Calculate the squares, cubes, square roots and cube roots of decimal fractions<br>**Solving problems**<br>• Solve problems in context involving decimal | **EXPONENTS**<br>**Comparing and representing numbers in exponential form**<br>• Revise compare and represent whole numbers in exponential form<br>• Compare and represent integers in exponential form<br>• Compare and represent numbers in scientific notation, limited to positive exponents<br>**Calculations using numbers in exponential form**<br>• Establish general laws of exponents, limited to:<br>- $a^m \times a^n = a^{m+n}$<br>- $a^m \div a^n = a^{m-n}$ if $m > n$<br>- $(a^m)^n = a^{m \times n}$<br>- $(a \times t)^n = a^n \times t^n$<br>- $a^0 = 1$<br>• Recognise and use the appropriate laws of operations using numbers involving exponents and square and cube roots<br>• Perform calculations involving all four operations with numbers that involve squares, cubes, square and cube roots of integers<br>• Calculate the squares, cubes, square and cube roots of rational numbers<br>**Solving problems**<br>• Solve problems in contexts involving numbers in exponential form | | **NUMERIC AND GEOMETRIC PATTERNS**<br>**Investigate and extend patterns**<br>• Revise investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns:<br>- represented in physical or diagram form<br>- not limited to sequences involving a constant difference or ratio<br>- of learner's own creation<br>- represented in tables<br>• Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically<br>• Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language | | **FORMAL ASSESSMENT TASK**<br>**INVESTIGATION**<br>• Exponents<br>• Patterns | | **FUNCTIONS AND RELATIONSHIPS**<br>**Input and output values**<br>• Revise, determine input values, output values or rules for patterns and relationships using:<br>- flow diagrams<br>- tables<br>- formulae<br>• Extend determine input values, output values or rules for patterns and relationships using equations<br>**Equivalent forms**<br>• Revise determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented:<br>- verbally<br>- in flow diagrams<br>- in tables<br>- by formulae<br>- by number sentences<br>• Extend determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented by equations | **ALGEBRAIC EXPRESSIONS**<br>**Algebraic language**<br>• Recognize and identify conventions for writing algebraic expressions<br>• Identify and classify like and unlike terms in algebraic expressions<br>• Recognize and identify coefficients and exponents in algebraic expressions<br>**Expand and simplify algebraic expressions**<br>• Use commutative, associative and distributive laws for rational numbers and laws o exponents to:<br>• Add and subtract like terms in algebraic expressions | **FORMAL ASSESEMENT TASK**<br>**TEST**<br>All Term 1 and Term 2 topics | |
| **Prerequisite skill/ pre-** | • Count forwards and backwards in decimals | • Compare and represent whole numbers in exponential form: $a^b = a \times$ | | • Investigate and extend numeric and geometric patterns looking for | | - | | • Determine input values, output values or rules for patterns and relationships using: | | • Recognize and interpret rules or relationships represented in symbolic form | | |

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| **knowledge** | • Compare and order decimal fractions<br>• Rounding off decimal fractions<br>• Addition and subtraction of decimal fractions of at least three decimal places<br>• Multiplication of decimal fractions by whole numbers and decimals<br>• Division of decimal fractions by whole numbers<br>• Use knowledge of Place value to estimate the number of decimal places in the result before performing calculations<br>• Use rounding off and a calculator to check results where appropriate | $a \times a \times \ldots$ for $b$ number of factors<br>• Recognise and use the appropriate laws of operations with numbers involving exponents and square and cube roots<br>• Perform calculations involving all four operations using numbers in exponential form, limited to exponents up to 5, and square and cube roots<br>• Solve problems in contexts involving numbers in exponential form | relationships between numbers, including patterns:<br>- represented in physical or diagram form<br>- not limited to sequences involving a constant difference or ratio<br>- of learner's own creation<br>- represented in tables<br><br>• Describe and justify the general rules for observed relationships between numbers in own words | | - flow diagrams<br>- tables<br>- formulae<br>• Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented:<br>- verbally<br>- in flow diagrams<br>- in tables<br>- by formulae<br>- by number sentences | • Identify variables and constants in given formulae and/or equations | |

| TERM 3 | Week 1<br>4 days | Week 2<br>5 days | Week 3<br>5 days | Week 4<br>5 days | Week 5<br>4 days | Week 6<br>5 days | Week 7<br>5 days | Week 8<br>5 days | Week 9<br>5 days | Week 10<br>5 days | Week 11<br>4 days |
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| **Hours per week** | **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** | **3.5 hrs.** | **4.5 hrs.** | **7 hrs.** | **2 hrs** | **3.5 hrs.** | **4.5 hrs** | **1 hr.** **3.5 hrs** | **4.5 hrs.** | **4.5 hrs.** | **4.5 hrs.** | **4 hrs** |
| **Topic, concepts, skills and values** | **ALGEBRAIC EXPRESSIONS**<br><br>**Expand and simplify algebraic expressions**<br>• Use commutative, associative and distributive laws for rational numbers and laws o exponents to:<br>• Add and subtract like terms in algebraic expressions<br>• Multiply integers and monomials by:<br>– monomials<br>– binomials<br>– trinomials<br>• Divide the following by integers or monomials:<br>– monomials<br>– binomials<br>– trinomials<br>• Simplify algebraic expressions involving the above operations<br>• Determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms<br>• Determine the numerical value of algebraic expressions by substitution | | **ALGEBRAIC EQUATIONS**<br><br>**Equations**<br>• Use substitution in equations to generate tables of ordered pairs<br>• Extend solving equations to include:<br>– using additive and multiplicative inverses<br>– using laws of exponents | | **GEOMETRY OF STRAIGHT LINES**<br><br>**Angle relationships**<br>• Recognize and describe pairs of angles formed by:<br>– perpendicular lines<br>– intersecting lines<br>– parallel lines cut by a transversal<br><br>**Solving problems**<br>• Solve geometric problems using the relationships between pairs of angles described above | | **GEOMETRY OF 2D SHAPES**<br><br>**Classifying 2D shapes**<br>• Identify and write clear definitions of triangles in terms of their sides and angles, distinguishing between:<br>– equilateral triangles<br>– isosceles triangles<br>– right-angled triangles<br><br>**Constructions**<br><br>**PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF TRIANGLES**<br><br>**Investigating properties of geometric figures**<br>• Investigate the angles in a triangle, focusing on:<br>– the sum of the interior angles of triangles<br>– the size of angles in an equilateral triangle<br>– the sides and base angles of an isosceles triangle<br><br>**Classifying 2D shapes**<br><br>• Identify and write clear definitions of quadrilaterals in terms of their sides and angles, distinguishing between:<br>– parallelogram<br>– rectangle<br>– square<br>– rhombus<br>– trapezium<br>– kite<br><br>**Constructions**<br><br>**PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF QUADRILATERALS** | | **REVISION** | **FORMAL ASSESSMENT TASK**<br><br>**TEST**<br><br>All topics |

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| | | | | **Investigating properties of geometric figures**<br>• Investigate sides and angles in quadrilaterals, focusing on:<br>– the sum of the interior angles of quadrilaterals<br>– the sides and opposite angles of parallelograms<br><br>**Solving problems**<br>• Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties and definitions.<br><br>**Similar and congruent 2D shapes**<br>• Identify and describe the properties of congruent shapes<br>• Identify and describe the properties of similar shapes<br><br>**Solving problems**<br>• Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals,<br>using known properties and definitions. | | |
| **Prerequisite skill/ pre-knowledge** | • Recognize and interpret rules or relationships represented in symbolic form<br>– Identify variables and constants in given formulae and/or equations | • Write number sentences to describe problem situations<br>• Analyse and interpret number sentences that<br>describe a given situation<br>• Solve and complete number sentences by:<br>– inspection<br>– trial and improvement<br>• Determine the numerical value of an expression<br>by substitution.<br>• Identify variables and constants in given formulae<br>or equations | • Definitions of:<br>– Line segment<br>– Ray<br>– Straight lines<br>– Parallel lines<br>• Perpendicular lines | • Describe, sort, name and compare triangles according to their sides and angles, focusing on:<br>– equilateral triangles<br>– isosceles triangles<br>– right-angled triangles<br>• Describe, sort, name and compare quadrilaterals in terms of:<br>– length of sides<br>– parallel and perpendicular sides<br>– size of angles (right-angles or not)<br>• Describe and name parts of a circle<br>• Recognize and describe similar and congruent figures by comparing:<br>– shape<br>- size | | |

**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<br>4 days | Week 2<br>5 days | Week 3<br>5 days | Week 4<br>5 days | Week 5<br>5 days | Week 6<br>5 days | Week 7<br>5 days | Week 8<br>5 days | Week 9<br>5 days | Week 10<br>3 days |
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| **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** | **8 hrs.** | | **4.5 hrs.** | | **4.5.hrs** | **4.5 hrs.** | **4.5 hrs** | **4.5 hrs.** | **7.5 hrs** | |
| **Topic, concepts, skills and values** | **GRAPHS**<br><br>**Interpreting graphs**<br>• **Revise**: Analyse and interpret global graphs of problem situations, with special focus on the following trends and features:<br>– linear or non-linear<br>– constant, increasing or decreasing<br><br>• Analyse and interpret global graphs of problem situations, with a special focus on the following trends and features:<br>– maximum or minimum<br>– discrete or continuous<br><br>**Drawing graphs**<br>• Draw global graphs from given descriptions of a problem situation, identifying features listed above<br>• Use tables or ordered pairs to plot points and draw graphs on the Cartesian plane | | **TRANSFORMATION GEOMETRY**<br><br>**Transformations**<br>• Recognize, describe and perform transformations with points on a co-ordinate plane, focusing on:<br>– reflecting a point in the X-axis or Y-axis<br>– translating a point within and across quadrants<br>• Recognize, describe and perform transformations with triangles on a co-ordinate plane, focusing on the co-ordinates of the vertices when:<br>– reflecting a triangle in the X-axis or Y-axis<br>– translating a triangle within and across quadrants | **THEOREM OF PYTHAGORAS**<br><br>**Develop and use the Theorem of Pythagoras**<br>• Investigate the relationship between the lengths of the sides of a right-angled triangle to develop the Theorem of Pythagoras<br>• Determine whether a triangle is right-angled triangle or not if the lengths of the three sides of the triangle is known<br>• Use the Theorem of Pythagoras to calculate the missing length in a right-angled triangle, leaving irrational answers in surd form. | **AREA AND PERIMETER OF 2-D SHAPES**<br><br>**Area and perimeter**<br>• Use appropriate formulae to calculate perimeter and area of: circles<br>• Calculate the areas of polygons, to at least 2 decimal places, by decomposing them into rectangles and/or triangles<br>• Use and describe the relationship between the radius, diameter and circumference of a circle in calculations<br>• Use and describe the relationship between the radius and area of a circle in calculations<br><br>**Calculations and solving problems**<br>• Solve problems, with or without a calculator, involving perimeter and area of polygons and circles to at least 2 decimal places<br>• Use and describe the meaning of the irrational number Pi (π) in calculations involving circles<br>• Use and convert between appropriate SI units, including: $mm^2 \leftrightarrow cm^2 \leftrightarrow m^2 \leftrightarrow km^2$ | | **REVISION OF TERM 3 AND 4 WORK** | **FORMAL ASSESMENT TASK**<br><br>**TEST**<br><br>All Term 3 and Term 4 topics | |
| **Prerequisite skill/ pre-knowledge** | • Analyse and interpret global graphs of problem situations, with special focus on the following trends and features:<br>– linear or non-linear<br>– constant, increasing or decreasing<br>• Draw global graphs from given descriptions of a problem situation, identifying features listed above | • Recognise, describe and perform translations, reflections and rotations with geometric figures ad shapes on squared paper<br>• Identify and draw lines of symmetry in geometric figures | • Knowledge of squares and square roots of whole numbers | • Geometry of 2-D shapes<br>• Algebraic equations<br>• Calculate the squares, cubes, square roots and cube roots of rational numbers | | | | | | |