

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 8 (TERM 1)

| TERM 1 | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 | WEEK 11 | |
|------------------------------------|--|--------|--------|--|--------|--|---|--------|---|---------------|-----------------|--|
| HOURS PER TOPIC | 11,5 hrs | | | 9 hrs | | 2 hrs | 9 hrs | | 7 hrs | 4,5 (2,5) hrs | 2,5 (4,5) hrs. | |
| TOPIC, CONCEPTS, SKILLS AND VALUES | WHOLE NUMBERS Properties of whole numbers <ul style="list-style-type: none"> Revise the properties done in the previous grades Recognise the division property of 0, whereby any number divided by 0 is undefined Calculations using whole numbers Revise: <ul style="list-style-type: none"> Calculations using all four operations on whole numbers, estimating and using calculators where appropriate Calculation techniques <ul style="list-style-type: none"> Use a range of strategies to perform and check written and mental calculations with whole numbers including: <ul style="list-style-type: none"> Estimation Adding, subtracting and multiplying in columns Long division Rounding off and compensating Using a calculator Multiples and factors Revise <ul style="list-style-type: none"> Prime factors of numbers to at least 3-digit whole numbers LCM and HCF of whole numbers, by inspection or factorisation Solving problems Revise <ul style="list-style-type: none"> Solve problems involving whole numbers, including: <ul style="list-style-type: none"> Comparing two or more quantities of the same kind (ratio) Comparing two quantities of different kinds (rate) Sharing in a given ratio where the whole is given Extend to increasing or decreasing of a number in a given ratio Solve problems that involve whole numbers, percentages and decimal fractions in financial contexts such as: <ul style="list-style-type: none"> VAT Hire purchase Exchange rates | | | INTEGERS Calculations with integers <ul style="list-style-type: none"> Revise addition and subtraction with integers Multiply and divide with integers Perform calculations involving all four operations with integers Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers Properties of integers <ul style="list-style-type: none"> Recognise and use commutative, associative and distributive properties of addition and multiplication for integers Recognise and use additive and multiplicative inverses for integers | | FORMAL ASSESSMENT TASK ASSIGNMENT <ul style="list-style-type: none"> Whole numbers Integers | COMMON FRACTIONS Calculations with fractions <ul style="list-style-type: none"> Divide whole numbers and common fractions by common fractions Calculate the squares, cubes, square roots and cube roots of common fractions Calculate amounts if given percentage increase or decrease Calculations and solving problems Calculation techniques <ul style="list-style-type: none"> Use knowledge of reciprocal relationships to divide common fractions Percentage <ul style="list-style-type: none"> Calculate amounts if given percentage increase or decrease Solving problems <ul style="list-style-type: none"> Solve problems in contexts involving common fractions and mixed numbers, including grouping, sharing and finding fractions of whole numbers Solve problems in contexts involving percentages | | DECIMAL FRACTIONS Calculations with decimal fractions <ul style="list-style-type: none"> Multiplication of decimal fractions by decimal fractions not limited to one decimal place Division of decimal fractions by decimal fractions Calculate the squares, cubes, square roots and cube roots of decimal fractions Calculation techniques <ul style="list-style-type: none"> Use knowledge of place value to estimate the number of decimal places in the result before performing calculations Use rounding off and a calculator to check results where appropriate Solving problems <ul style="list-style-type: none"> Solve problems in context involving decimal fractions | | REVISION | FORMAL ASSESSMENT TASK TEST All topics |

| TERM 1 | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 | WEEK 11 | |
|-----------------------------------|---|--------|--------|---|--------|--------|---|--------|--|---------|---------------|----------------|
| HOURS PER TOPIC | 11,5 hrs | | | 9 hrs | | 2 hrs | 9 hrs | | 7 hrs | | 4,5 (2,5) hrs | 2,5 (4,5) hrs. |
| PREREQUISITE SKILL/ PRE-KNOWLEDGE | <ul style="list-style-type: none"> • Multiplication of whole numbers to at least 12×12 • Order and compare prime numbers to at least 100 • Calculations using all four operations on whole numbers, estimating and using calculators where appropriate • Prime factors of numbers to at least 3-digit whole numbers • LCM and HCF of numbers to at least 3-digit whole numbers, by inspection or factorisation • Solve problems involving whole numbers, including: <ul style="list-style-type: none"> – Comparing two or more quantities of the same kind (ratio) – Comparing two quantities of different kinds (rate) – Sharing in a given ratio where the whole is given | | | <ul style="list-style-type: none"> • Count forwards and backwards in integers for any interval • Recognise, order and compare integers • Add and subtract with integers • Recognise and use commutative and associative properties of addition and multiplication for integers • Solve problems in contexts involving addition and subtraction of integers | | | <ul style="list-style-type: none"> • Addition and subtraction to fractions where one denominator is not a multiple of the other • Multiplication of common fractions, including mixed numbers, not limited to fractions where one denominator is a multiple of another • Converting mixed numbers to common fractions • Use knowledge of multiples and factors to write fractions in the simplest form before or after calculations • Use knowledge of equivalent fractions to add and subtract common fractions in order to perform calculations with them • Calculate the percentage of part of a whole • Calculate percentage increase or decrease of whole numbers | | <ul style="list-style-type: none"> • Count forwards and backwards in decimals • Compare and order decimal fractions • Rounding off decimal fractions • Addition and subtraction of decimal fractions of at least three decimal places • Multiplication of decimal fractions by whole numbers and decimals • Division of decimal fractions by whole numbers • Use knowledge of Place value to estimate the number of decimal places in the result before performing calculations • Use rounding off and a calculator to check results where appropriate | | | |

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 8 (TERM 2)

| TERM 2 | | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 | WEEK 11 | | | |
|---|--|--|--------|--------|--|--------|--------|--|--------|---|---------|-----------------|--|---|--|
| HOURS PER TOPIC | 3 hrs | 9 hrs | | | 9 hrs | | | 8 hrs | | 6,5 hrs | | 8 hrs | | | |
| TOPIC, CONCEPTS, SKILLS AND VALUES | FORMAL ASSESSMENT TASK INVESTIGATION NB Administer an investigation on any one of the term 2 topics before teaching it | EXPONENTS Comparing and representing numbers in exponential form <ul style="list-style-type: none"> Revise compare and represent whole numbers in exponential form Compare and represent integers in exponential form Compare and represent numbers in scientific notation, limited to positive exponents Calculations using numbers in exponential form <ul style="list-style-type: none"> Establish general laws of exponents, limited to: <ul style="list-style-type: none"> $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$ if $m > n$ $(a^m)^n = a^{m \times n}$ $(a \times t)^n = a^n \times t^n$ $a^0 = 1$ Recognise and use the appropriate laws of operations using numbers involving exponents and square and cube roots Perform calculations involving all four operations with numbers that involve squares, cubes, square and cube roots of integers Calculate the squares, cubes, square and cube roots of rational numbers Solving problems <ul style="list-style-type: none"> Solve problems in contexts involving numbers in exponential form | | | NUMERIC AND GEOMETRIC PATTERNS Investigate and extend patterns <ul style="list-style-type: none"> Revise investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns: <ul style="list-style-type: none"> Represented in physical or diagram form Not limited to sequences involving a constant difference or ratio Of learner's own creation Represented in tables Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language | | | FUNCTIONS AND RELATIONSHIPS Input and output values <ul style="list-style-type: none"> Revise, determine input values, output values or rules for patterns and relationships using: <ul style="list-style-type: none"> Flow diagrams Tables Formulae Extend determine input values, output values or rules for patterns and relationships using equations Equivalent forms <ul style="list-style-type: none"> Revise determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: <ul style="list-style-type: none"> Verbally In flow diagrams In tables By formulae By number sentences Extend determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented by equations | | ALGEBRAIC EXPRESSIONS Algebraic language <ul style="list-style-type: none"> Recognise and identify conventions for writing algebraic expressions Identify and classify like and unlike terms in algebraic expressions Recognise and identify coefficients and exponents in algebraic expressions Expand and simplify algebraic expression <ul style="list-style-type: none"> Use commutative, associative and distributive laws for rational numbers and laws of exponents to: <ul style="list-style-type: none"> Add and subtract like terms in algebraic expressions | | REVISION | | FORMAL ASSESSMENT TASK TEST All term 1 & 2 topics | |
| PREREQUISITE SKILL/ PRE-KNOWLEDGE | | <ul style="list-style-type: none"> Compare and represent whole numbers in exponential form: $a^b = a \times a \times a \times \dots$ for b number of factors Recognise and use the appropriate laws of operations with numbers involving exponents and square and cube roots Perform calculations involving all four operations using numbers in exponential form, limited to exponents up to 5, and square and cube roots Solve problems in contexts involving numbers in exponential form | | | <ul style="list-style-type: none"> Investigate and extend numeric and geometric patterns looking for relationships between numbers Describe and justify the general rules for observed relationships between numbers in own words | | | <ul style="list-style-type: none"> 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 by formulae and by number sentences | | <ul style="list-style-type: none"> Recognise and interpret rules or relationships represented in symbolic form Identify variables and constants in given formulae and/or equations | | | | | |

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 8 (TERM 3)

| TERM 3 | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 | WEEK 11 |
|------------------------------------|--|--|--|---|---|--------|----------|------------------------|--|---------|---------|
| HOURS PER TOPIC | 9 hrs | | 8 hrs | | 9 hrs | | 12,5 hrs | | | 8 hrs | |
| TOPIC, CONCEPTS, SKILLS AND VALUES | <p>FORMAL ASSESSMENT TASK PROJECT</p> <p>NB. The project must cover a combination of topics from term 1 to term 3 and must be completed before the end of term 3</p> | <p>ALGEBRAIC EXPRESSIONS</p> <p>Expand and simplify algebraic expressions</p> <p>Use commutative, associative and distributive laws for rational numbers and laws of exponents to:</p> <ul style="list-style-type: none"> Add and subtract like terms in algebraic expressions Multiply integers and monomials by: <ul style="list-style-type: none"> Monomials Binomials Trinomials Divide the following by integers or monomials: <ul style="list-style-type: none"> 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 Determine the numerical value of algebraic expressions by substitution | <p>ALGEBRAIC EQUATIONS</p> <p>Equations</p> <ul style="list-style-type: none"> Use substitution in equations to generate tables of ordered pairs Extend solving equations to include: <ul style="list-style-type: none"> Using additive and multiplicative inverses Using laws of exponents | <p>GEOMETRY OF STRAIGHT LINES</p> <p>Angle relationships</p> <ul style="list-style-type: none"> Recognise and describe pairs of angles formed by: <ul style="list-style-type: none"> Perpendicular lines Intersecting lines parallel lines cut by a transversal <p>Solving problems</p> <ul style="list-style-type: none"> Solve geometric problems using the relationships between pairs of angles described above | <p>GEOMETRY OF 2D SHAPES</p> <p>Classifying 2D shapes</p> <ul style="list-style-type: none"> Identify and write clear definitions of triangles in terms of their sides and angles, distinguishing between: <ul style="list-style-type: none"> Equilateral triangles Isosceles triangles Right-angled triangles <p>Constructions</p> <p>PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF TRIANGLES</p> <p>Investigating properties of geometric figures</p> <ul style="list-style-type: none"> Investigate the angles in a triangle, focusing on: <ul style="list-style-type: none"> The sum of the interior angles of triangles The size of angles in an equilateral triangle The sides and base angles of an isosceles triangle <p>Classifying 2D shapes</p> <ul style="list-style-type: none"> Identify and write clear definitions of quadrilaterals in terms of their sides and angles, distinguishing between: <ul style="list-style-type: none"> Parallelogram Rectangle Square Rhombus Trapezium Kite <p>Constructions</p> <p>PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF QUADRILATERALS</p> <p>Investigating properties of geometric figures</p> <ul style="list-style-type: none"> Investigate sides and angles in quadrilaterals, focusing on: <ul style="list-style-type: none"> The sum of the interior angles of quadrilaterals The sides and opposite angles of parallelograms <p>Solving problems</p> <ul style="list-style-type: none"> Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties and definitions <p>Similar and congruent 2D shapes</p> <ul style="list-style-type: none"> Identify and describe the properties of congruent shapes Identify and describe the properties of similar shapes <p>Solving problems</p> <ul style="list-style-type: none"> Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties and definitions | | | <p>REVISION</p> | <p>FORMAL ASSESSMENT TASK TEST</p> <p>All term 3 topics</p> | | |

| TERM 3 | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 | WEEK 11 |
|-----------------------------------|--------|--|--|---|---|--------|----------|--------|--------|---------|---------|
| HOURS PER TOPIC | 9 hrs | | 8 hrs | | 9 hrs | | 12,5 hrs | | | 8 hrs | |
| PREREQUISITE SKILL/ PRE-KNOWLEDGE | | <ul style="list-style-type: none"> Recognise and interpret rules or relationships represented in symbolic form Identify variables and constants in given formulae and/or equations | <ul style="list-style-type: none"> Write number sentences to describe problem situations Analyse and interpret number sentences that describe a given situation Solve and complete number sentences by: <ul style="list-style-type: none"> Inspection Trial and improvement Determine the numerical value of an expression by substitution Identify variables and constants in given formulae or equations | <ul style="list-style-type: none"> Definitions of: <ul style="list-style-type: none"> Line segment Ray Straight lines Parallel lines Perpendicular lines | <ul style="list-style-type: none"> Describe, sort, name and compare triangles according to their sides and angles, focusing on: <ul style="list-style-type: none"> Equilateral triangles Isosceles triangles Right-angled triangles Describe, sort, name and compare quadrilaterals in terms of: <ul style="list-style-type: none"> Length of sides Parallel and perpendicular sides Size of angles (right-angles or not) Describe and name parts of a circle Recognise and describe similar and congruent figures by comparing: <ul style="list-style-type: none"> Shape Size | | | | | | |

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 8 (TERM 4)

| TERM 4 | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 |
|------------------------------------|---|--------|---|--------|---|--------|---|--|--------|---------|
| HOURS PER TOPIC | 8 hrs | | 9 hrs | | 9 hrs | | 3,5 hrs | 12 hrs | | |
| TOPIC, CONCEPTS, SKILLS AND VALUES | <p>GRAPHS</p> <p>Interpreting graphs</p> <ul style="list-style-type: none"> Analyse and interpret global graphs of problem situations, with special focus on the following trends and features: <ul style="list-style-type: none"> Linear or non-linear Constant, increasing or decreasing Maximum or minimum Discrete or continuous <p>Drawing graphs</p> <ul style="list-style-type: none"> Draw global graphs from given descriptions of a problem situation, identifying features listed above Use tables or ordered pairs to plot points and draw graphs on the Cartesian plane | | <p>THEOREM OF PYTHAGORAS</p> <p>Develop and use the Theorem of Pythagoras</p> <ul style="list-style-type: none"> Investigate the relationship between the lengths of the sides of a right-angled triangle to develop the Theorem of Pythagoras Determine whether a triangle is right-angled triangle or not if the lengths of the three sides of the triangle is known Use the Theorem of Pythagoras to calculate the missing length in a right-angled triangle, leaving irrational answers in surd form | | <p>AREA AND PERIMETER OF 2-D SHAPES</p> <p>Area and perimeter</p> <ul style="list-style-type: none"> Use appropriate formulae to calculate perimeter and area of: circles Calculate the areas of polygons, to at least 2 decimal places, by decomposing them into rectangles and/or triangles Use and describe the relationship between the radius, diameter and circumference of a circle in calculations Use and describe the relationship between the radius and area of a circle in calculations <p>Calculations and solving problems</p> <ul style="list-style-type: none"> Solve problems, with or without a calculator, involving perimeter and area of polygons and circles to at least 2 decimal places Use and describe the meaning of the irrational number Pi (π) in calculations involving circles Use and convert between appropriate SI units, including: $mm^2 \leftrightarrow cm^2 \leftrightarrow m^2 \leftrightarrow km^2$ | | <p>REVISION OF TERM 3 AND 4 WORK</p> | <p>FORMAL ASSESSMENT TASK EXAMINATION PAPER 1 AND PAPER 2</p> <p>All topics from term 1-4</p> | | |
| PREREQUISITE SKILL/ PRE-KNOWLEDGE | | | <ul style="list-style-type: none"> Knowledge of squares and square roots of whole numbers | | <ul style="list-style-type: none"> Geometry of 2D shapes Algebraic equations Calculate the squares, cubes, square roots and cube roots of rational numbers | | | | | |