2025 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 8

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
HOURS PER TOPIC	9 HOURS		9 HOURS		9 HOURS		4,5 HOURS	13,5 HOURS		
ASSESSMENT TASKS	ASSIGNMENT (Minimum of 3 topics) & TEST									

TOPIC, CONCEPTS, SKILLS AND VALUES

WHOLE NUMBERS

Properties of whole numbers

- 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:**
- Calculations using all four operations on whole numbers, estimating and using calculators where appropriate

Calculation techniques

- Use a range of strategies to perform and check written and mental calculations with whole numbers including:

- Estimation
- Adding, subtracting and multiplying in columns
- Long division
- Rounding off and compensating
- Using a calculator

Multiples and factors

Revise

- Prime factors of numbers to at least 3-digit whole numbers
- LCM and HCF of whole numbers, by inspection or factorisation

Solving problems

Revise

- Solve problems involving whole numbers, including:

- 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:

- VAT
- Hire purchase
- Exchange rates

INTEGERS

Calculations with integers

- **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

- Recognise and use commutative, associative and distributive properties of addition and multiplication for integers
- Recognise and use additive and multiplicative inverses for integers

COMMON FRACTIONS

Calculations with fractions

- 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

- Use knowledge of reciprocal relationships to divide common fractions

Percentage

- Calculate amounts if given percentage increase or decrease

Solving problems

- 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

- 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

- 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

- Solve problems in context involving decimal fractions

EXPONENTS

Comparing and representing numbers in exponential form

- 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

- Establish general laws of exponents, limited to:
  - $a^m \times a^n = a^{m+n}$
  - $a^m \div a^n = a^{m-n}$
  - $(a^m)^n = a^{m \times n}$
  - $(a \times t)^n = a^n \times t^n$
  - $a^0 = 1$
- 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

- Solve problems in contexts involving numbers in exponential form

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TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
HOURS PER TOPIC	**9 HOURS**		**9 HOURS**		**9 HOURS**		**4,5 HOURS**	**13,5 HOURS**		
PREREQUISITE SKILL/ PRE-KNOWLEDGE	• 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: – 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		• 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		• 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		• 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	• Compare and represent whole numbers in exponential form: $a^b = a \times a \times a \times \ldots$ 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		

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12
HOURS PER TOPIC	**9 HOURS**		**9 HOURS**		**9 HOURS**		**9 HOURS**		**9 HOURS**			
ASSESSMENT TASKS	**INVESTIGATION (Topics not yet taught) & JUNE TEST**											
TOPIC, CONCEPTS AND SKILLS	**ALGEBRAIC EXPRESSIONS** **Algebraic language** • 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 expressions** Use 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 Determine the numerical value of algebraic expressions by substitution		**ALGEBRAIC EQUATIONS** **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		**FUNCTIONS AND RELATIONSHIPS** • Input and output values • Revise, determine input values, output values or rules for patterns and relationships using: – Flow diagrams – Tables – Formulae • Extend determine input values, output values or rules for patterns and relationships using equations **Equivalent forms** • Revise, determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented: - 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		**GRAPHS** **Interpreting graphs** • Analyse and interpret global graphs of problem situations, with special focus on the following trends and features: – Linear or non-linear – Constant, increasing or decreasing – Maximum or minimum – Discrete or continuous **Drawing graphs** • 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	**REVISION**		**FORMAL ASSESSMENT TASK** **TEST** All term 1 & 2 topics
PREREQUISITE SKILL/ PREKNOWLEDGE	• Recognise and interpret rules or relationships represented in symbolic form • Identify variables and constants in given formulae and/or equations		• 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 • Determine the numerical value of an expression by substitution • Identify variables and constants in given formulae or equations		• 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					

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 HOURS**		**13,5 HOURS**			**9 HOURS**		**9 HOURS**		**9 HOURS**	
ASSESSMENT TASKS	**PROJECT & TEST**										
TOPIC, CONCEPTS, SKILLS AND VALUES	**GEOMETRY OF STRAIGHT LINES** **Angle relationships** • Recognise and describe pairs of 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** **Classifying 2D shapes** • Identify and write clear 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** **Investigating properties of geometric figures** • Investigate the angles in a triangle, focusing on: – 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 **Classifying 2D shapes** • Identify and write clear definitions of quadrilaterals in terms of their sides and angles, distinguishing between: – Parallelogram – Rectangle – Square – Rhombus – Trapezium – Kite **Constructions** **PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES TO INVESTIGATE THE PROPERTIES OF QUADRILATERALS** **Investigating properties of geometric figures** • Investigate sides and angles in quadrilaterals, focusing on: – The sum of the interior angles of quadrilaterals – The sides and opposite angles of parallelograms **Solving problems** • Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties and definitions **Similar and congruent 2D shapes** • Identify and describe the properties of congruent shapes • Identify and describe the properties of similar shapes **Solving problems** • Solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties and definitions		**THEOREM OF PYTHAGORAS** **Develop and use the Theorem of Pythagoras** • 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		**AREA AND PERIMETER OF 2-D SHAPES** **Area and perimeter** • 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 **Calculations and solving problems** • 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: $mm^2 \leftrightarrow cm^2 \leftrightarrow m^2 \leftrightarrow km^2$	**REVISION**	**FORMAL ASSESSMENT TASK** **TEST** All term 3 topics

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 HOURS**		**13,5 HOURS**			**9 HOURS**		**9 HOURS**			
PREREQUISITE SKILL/ PREKNOWLEDGE	• Definitions of: – Line segment – Ray – Straight lines – Parallel lines – Perpendicular lines		• Describe, sort, name and compare triangles according to their sides and angles, focusing on: – Equilateral triangles – Isosceles triangles – Right-angled triangles • Describe, sort, name and compare quadrilaterals in terms of: – 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: – Shape – Size			• Knowledge of squares and square roots of whole numbers		• Geometry of 2D shapes • Algebraic equations • Calculate the squares, cubes, square roots and cube roots of rational numbers			

<table>
<tr><td>TERM 4</td><td colspan="2">WEEK 1</td><td colspan="2">WEEK 2</td><td colspan="2">WEEK 3</td><td colspan="2">WEEK 4</td><td colspan="2">WEEK 5</td><td colspan="2">WEEK 6</td><td>WEEK 7</td><td colspan="2">WEEK 8</td><td>WEEK 9</td><td>WEEK 10</td></tr>
<tr><td>HOURS PER TOPIC</td><td colspan="4">9 HOURS</td><td colspan="4">9 HOURS</td><td colspan="4">9 HOURS</td><td>4,5 HOURS</td><td colspan="4">13,5 HOURS</td></tr>
<tr><td>ASSESSMENT TASKS</td><td colspan="15">EXAMINATION:
PAPER 1 & PAPER 2</td></tr>
<tr><td>TOPIC, CONCEPTS, SKILLS AND VALUES</td><td colspan="4">NUMERIC AND GEOMETRIC PATTERNS
Investigate and extend patterns
• Revise 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

• 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</td><td colspan="9" rowspan="2">REVISION OF
TERM 1 – 4 WORK</td><td colspan="4" rowspan="2">FORMAL ASSESSMENT TASK
EXAMINATION PAPER 1 AND PAPER 2
All topics from term 1-4</td></tr>
<tr><td>PREREQUISITE SKILL/ PREKNOWLEDGE</td><td colspan="4">• 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</td></tr>
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