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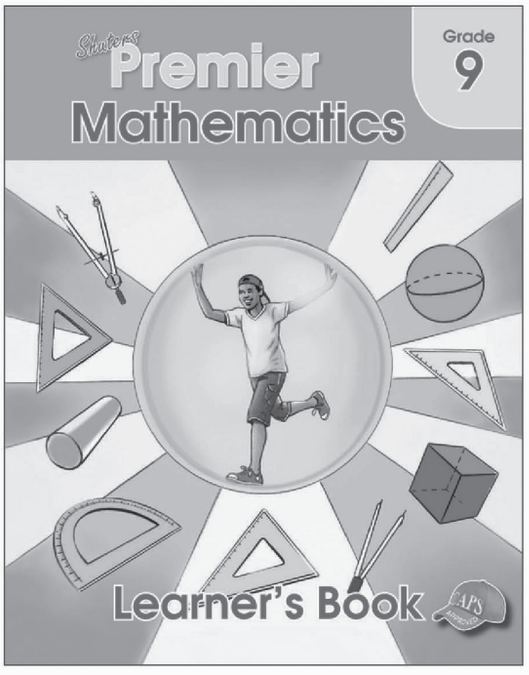
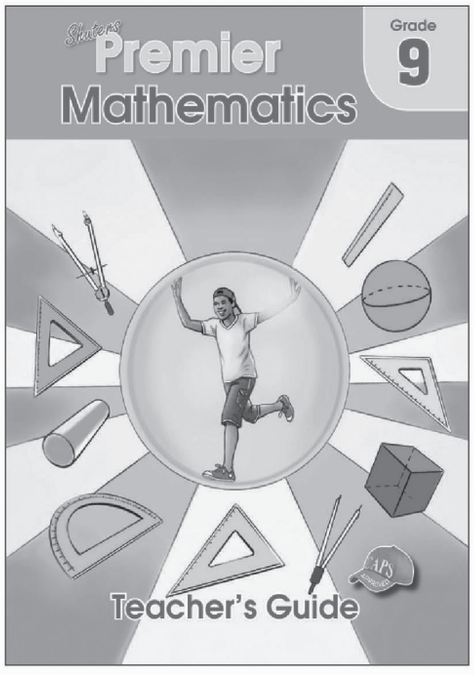
Shuters Premier Mathematics

Grade 9





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sylvie@shuter.co.za • robert@shuter.co.za • tiny@shuter.co.za • thandeka@shuters.co.za

SHUTERS e LEARNING

Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
Unit 1 **Whole numbers**	Exercise 1 Properties of numbers **TG 1; LB 1** Exercise 2 Calculations using whole numbers **TG 1; LB 3** Exercise 3 Calculation techniques **TG 2; LB 4** Exercise 4 Multiples and factors **TG 3; LB 6** Exercise 5 Solving problems with ratio and rate **TG 3; LB 8** Exercise 6 Solving problems with direct and indirect proportion **TG 4; LB 9** Exercise 7 Solving problems in financial contexts such as simple interest and hire purchase **TG 4; LB 11**						

Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
	Exercise 8 Solving problems in financial contexts such as compound interest **TG 4; LB 13** Exercise 9 Solving problems in financial contexts such as profit, loss, discount and VAT **TG 5; LB 14** Exercise 10 Budgets **TG 5; LB 17**						
Unit 2 **Integers**	Exercise 1 Calculations involving all four operations with Integers **TG 6; LB 18** Exercise 2 Calculations using Squares, cubes, square roots and cube roots of integers **TG 7; LB 20** Exercise 3 Properties of integers **TG 8; LB 21** Exercise 4 Solving problems **TG 8; LB 23**						
Unit 3 **Common Fractions**	Exercise 1 Calculations **TG 9; LB 25**						

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Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
	Exercise 2 Calculation techniques **TG 10; LB 26** Exercise 3 Solving problems **TG 10; LB 27** Exercise 4 Equivalent forms **TG 11; LB 28**						
Unit 4 **Decimal Fractions**	Exercise 1 Calculations with decimal fractions **TG 12; LB 29** Exercise 2 Calculation techniques **TG 13; LB 30** Exercise 3 Solving problems in context using decimal fractions **TG 13; LB 30** Exercise 4 Equivalent forms **TG 14; LB 32**						
Unit 5 **Exponents**	Exercise 1 Compare and rep. numbers in exponential form **TG 15; LB 33** Exercise 2 Calculations using exponential laws **TG 15; LB 33**						

Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
	Exercise 3 Represent numbers in scientific notation **TG 17; LB 35** Exercise 4 Exponential equations **TG 18; LB 37** Exercise 5 Solving problems **TG 18; LB 38**						
Unit 6 **Numeric and geometric patterns**		Exercise 1 By inspection, find the rule for the numeric patterns where there is a constant difference between terms **TG 19; LB 40** Exercise 2 By inspection, find the rule for a numeric sequence where there is a constant ratio between terms **TG 19; LB 41** Exercise 3 By inspection, find the rule for a numeric sequence that has neither a constant difference nor ratio **TG 20; LB 42**					

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Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
		Exercise 4 Determine the rule for numeric sequences and predict any term in the sequence **TG 20; LB 44** Exercise 5 Determine the rule for geometric patterns **TG 22; LB 47**					
Unit 7 Functions and relationships		Exercise 1 Determine input and output values using flow diagrams **TG 23; LB 51** Exercise 2 Determine input and output values using a table **TG 24; LB 52** Exercise 3 Determine input or output values given the formula **TG 25; LB 55** Exercise 4 Equivalent forms **TG 25; LB 56**					
Unit 8 Algebraic expressions		Exercise 1 Algebraic languag **TG 29; LB 61**					

Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
		Exercise 2 Add and subtract like terms in algebraic expressions **TG 30; LB 62** Exercise 3 Multiply integers and monomials by Monomials, binomials, trinomials and polynomials **TG 31; LB 64** Exercise 4 Divide monomials, binomials, trinomials and polynomials by integers or monomials **TG 32; LB 65** Exercise 5 Determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms **TG 33; LB 66** Exercise 6 Determine the numerical value of algebraic expressions by substitution **TG 33; LB 66**					

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Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
		Exercise 7 Determine the product of two binomials **TG 34; LB 67** Exercise 8 Determine the square of a binomial **TG 35; LB 68**					
Unit 9 **Algebraic equations**		Exercise 1 Set up equations to describe problem situations **TG 36; LB 69** Exercise 2 Analyse and interpret equations that describe a given situation **TG 38; LB 70** Exercise 3 Solve equations by inspection **TG 39; LB 71** Exercise 4 Solve equations using additive and multiplicative inverses **TG 39; LB 71** Exercise 5 Solve equations using laws of exponents **TG 41; LB 72**					

Grade 9 Term 1	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
		Exercise 6 Solving equations where the product of two factors = 0 **TG 41; LB 73** Exercise 7 Solve for x in fraction equations **TG 42; LB 74**					

Grade 9 Term 2	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
Unit 10 Construction of geometric figures			Exercise 1 Construct geometric figures using a compass, ruler and protractor, including bisecting angles of a triangle **TG 48; LB 79** Exercise 2 Construct angles of 45, 60, 30 and their multiples without using a protractor **TG 49; LB 82** Exercise 3 By construction, investigate the angles in a triangle **TG 50; LB 85**				

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Grade 9 Term 2	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
			Exercise 4 By construction, explore the minimum conditions for two triangles to be congruent **TG 51; LB 86** Exercise 5 By construction, investigate the sides, angles and diagonals in quadrilaterals **TG 51; LB 87** Exercise 6 By construction explore the sum of the of the interior angles of polygons **TG 52; LB 90**				
Unit 11 Geometry of 2D shapes			Exercise 1 Classifying Triangles **TG 54; LB 91** Exercise 2 Classifying quadrilaterals **TG 55; LB 93** Exercise 3 Through investigation, establish the minimum requirements for congruent triangles **TG 57; LB 96**				

Grade 9 Term 2	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
			Exercise 4 Through investigation, establish the minimum requirements for similar triangles **TG 58; LB 98**				
Unit 12 **Geometry of straight lines**			Exercise 5 Solving problems **TG 59; LB 99** Exercise 1 Perpendicular lines **TG 60; LB 102** Exercise 2 Intersecting lines **TG 60; LB 103** Exercise 3 Parallel lines cut by a transversal **TG 61; LB 105** Exercise 4 Solving problems **TG 62; LB 109**				
Unit 13 **The Theorem of Pythagoras**				Exercise 1 Revise the Theorem of Pythagoras **TG 64; LB 110** Exercise 2 Finding the unknown length **TG 64; LB 112** Exercise 3 Identifying if triangles are right-angled **TG 65; LB 114**			

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Grade 9 Term 2	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
				Exercise 4 Finding lengths in 2D shapes using Pythagoras **TG 66; LB 114** Exercise 5 Using the Theorem of Pythagoras to solve problems **TG 67; LB 117** Exercise 6 Challenge **TG 69; LB 119**			
Unit 14 **Area and perimeter of 2D shapes**				Exercise 1 Revision of SI units **TG 76; LB 120** Exercise 2 Perimeter of 2D shapes **TG 77; LB 122** Exercise 3 Area of 2d shapes **TG 78; LB 124** Exercise 4 Circumference and area of circles **TG 79; LB 126**			

Grade 9 Term 3	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
Unit 15 **Functions and relationships**				Exercise 1 Determine output values for given equations **TG 91; LB 133** Exercise 2 Equivalent forms **TG 92; LB 134**			
Unit 16 **Algebraic expressions**		Exercise 1 Find the highest common factor of monomials **TG 96; LB 138** Exercise 2 Factorise algebraic expressions that involve common factors **TG 98; LB 139** Exercise 3 Factorise algebraic expressions that involve difference of squares **TG 99; LB 140** Exercise 4 Factorise algebraic expressions that involve perfect square trinomials **TG 100; LB 141** Exercise 5 Factorise algebraic expressions that involve trinomials **TG 101; LB 142**					

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Grade 9 Term 3	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
		Exercise 6 Simplify algebraic fractions using factorisation **TG 102; LB 145**					
Unit 17 **Algebraic equations**		Exercise 1 Revision **TG 103; LB 147** Exercise 2 Solving equations using factorisation **TG 106; LB 148** Exercise 3 Solve equations involving a difference of squares **TG 107; LB 150** Exercise 4 Use equations to generate tables of ordered pairs **TG 108; LB 150** Exercise 5 Application of solving equations					
Unit 18 **Graphs**		Exercise 1 Interpreting graphs **TG 113; LB 155** Exercise 2 Drawing graphs **TG 114; LB 158** Exercise 3 Investigate x-intercept and y-intercept on linear graphs **TG 115; LB 160**					

Grade 9 Term 3	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
		Exercise 4 Investigating gradients **TG 117; LB 162** Exercise 5 Draw linear graphs from given equations **TG 118; LB 163** Exercise 6 Determine equations from given linear graphs **TG 121; LB 165** Exercise 7 Sketching and comparing graphs **TG 121; LB 168**					
Unit 19 **Surface area and volume**				Exercise 1 Surface area and volume of cubes **TG 123; LB 169** Exercise 2 Surface area, volume and capacity of rectangular prisms **TG 123; LB 170** Exercise 3 Surface area, volume and capacity of triangular prisms **TG 124; LB 173**			

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Grade 9 Term 3	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	*Recording*	*Reflection*
				Exercise 4 Surface area, volume and capacity of cylinders **TG 125; LB 176** Exercise 5 Investigate how doubling any or all of the dimensions of right prisms and cylinders affects their volume **TG 126; LB 178**			

Grade 9 Term 4	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
Unit 20 Transformation geometry			Exercise 1 Reflection about the x-axis or y-axis **TG 141; LB 187** Exercise 2 Translation within and across quadrants **TG 142; LB 190** Exercise 3 Reflection about the straight line y=x **TG 144; LB 193** Exercise 4 Identify the transformation given the coordinates of the image **TG 144; LB 196**				

Grade 9 Term 4	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
			Exercise 5 Enlargement and reduction **TG 145; LB 198**				
Unit 21 **Geometry of 3D objects**			Exercise 1 Classifying 3D objects **TG 146; LB 202** Exercise 2 Recognise and describe properties of spheres and cylinders **TG 148; LB 206** Exercise 3 Building 3D models **TG 148; LB 207** Exercise 4 Drawing nets **TG 149; LB 210**				
Unit 22 **Data Handling**					Exercise 1 Collect data **TG 152; LB 213** Exercise 2 Organise and summarise data **TG 152; LB 215** Exercise 3 Represent data **TG 153; LB 217** Exercise 4 Interpret data **TG 156; LB 228** Exercise 5 Analyse data **TG 157; LB 231**		

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Grade 9 Term 4	Numbers, Operations and Relationships	Patterns, Functions and Algebra	Shape and Space	Measurement	Data Handling	Recording	Reflection
					Exercise 6 Report data **TG 157; LB 233**		
Unit 23 probability					Exercise 1 Determine probabilities of compound events using two-way tables and tree diagrams **TG 159; LB 237** Exercise 2 Predict the relative frequency in simple experiments **TG 160; LB 239**		

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