

# 2021 Annual Teaching Plans

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# MATHEMATICS

## Senior Phase



Shuter & Shooter  
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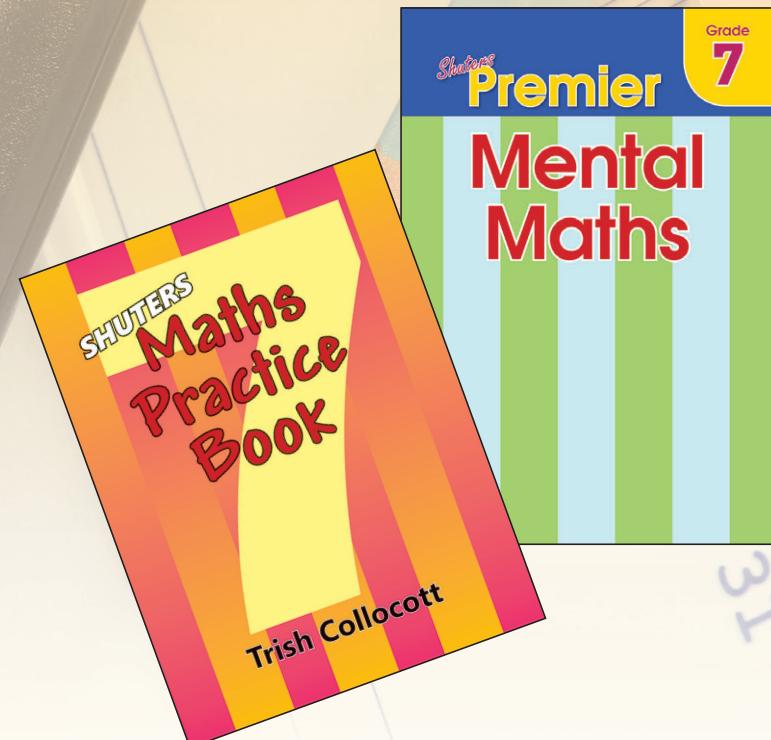
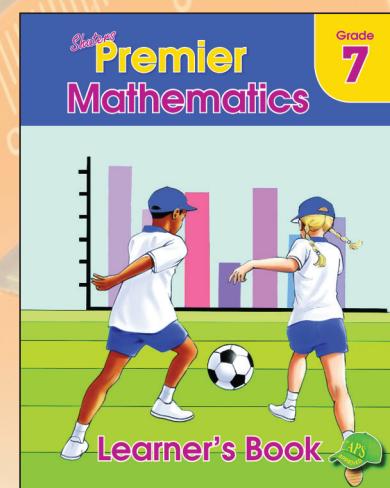
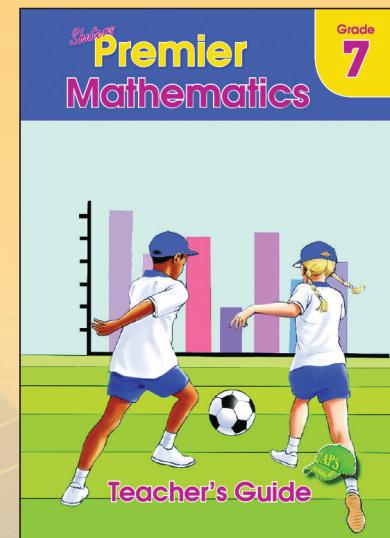
## Advantages of using our books

- Improves learners' results
- Assess progress easily
- Reduce the administrative burden
- Helps save planning and preparation time
- Follows the CAPS precisely, making teaching easier
- Most of our titles are also available as e-Books

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# MATHEMATICS Term 1

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 7	Unit	LB	TG
Revision	Revise Intermediate Phase concepts	Week 1				
	<p><b>Calculation techniques</b></p> <ul style="list-style-type: none"> <li>Use a range of strategies to perform and check written and mental calculations of whole numbers including:           <ul style="list-style-type: none"> <li>long division</li> <li>adding, subtracting and multiplying in columns</li> <li>estimation</li> <li>rounding off and compensating</li> <li>using a calculator</li> </ul> </li> </ul> <p><b>Multiples and factors</b></p> <ul style="list-style-type: none"> <li>List prime factors of numbers to at least 3-digit whole numbers</li> <li>Find the LCM and HCF of whole numbers by inspection or factorisation</li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>Solve problems involving whole numbers, including:           <ul style="list-style-type: none"> <li>Comparing of two or more quantities of the same kind (ratio)</li> <li>Comparing two quantities of different kinds (rate)</li> <li>Sharing in a given ratio where the whole is given</li> </ul> </li> </ul>	Weeks 2–4	Unit 1: Whole numbers 1–9	1–21	1–9	
Whole numbers	<p><b>Mental calculations</b></p> <ul style="list-style-type: none"> <li>Determine squares to at least <math>12^2</math> and their square roots</li> <li>Determine cubes to at least <math>6^3</math> and their cube roots</li> </ul> <p><b>Comparing and representing numbers in exponential form</b></p> <ul style="list-style-type: none"> <li>Compare and represent whole numbers in exponential form:  <math>a^b = a \times a \times \dots</math> for b number of factors</li> </ul> <p><b>Calculations using numbers in exponential form</b></p> <ul style="list-style-type: none"> <li>Recognize and use the appropriate laws of operations with numbers involving exponents and square and cube roots</li> <li>Calculations involving all four operations using numbers in exponential form, limited exponents up to 5, and square and cube roots</li> </ul>	Week 5	Unit 2: Exponents 22–24	10–11		
Exponents						

<b>Ordering, comparing and simplifying common fractions</b>	Extend to thousandths			
<b>Calculations with fractions</b>	<ul style="list-style-type: none"> <li>• Addition and subtraction of fractions including mixed numbers where one denominator is not a multiple of the other.</li> <li>• Multiplication common fractions, including mixed numbers, not limited to fractions where one denominator is a multiple of another.</li> </ul>	<b>Calculation techniques</b>	<ul style="list-style-type: none"> <li>• Convert mixed numbers to common fractions in order to perform calculations with them</li> <li>• Use knowledge of multiples and factors to write fractions in the simplest form before or after calculations.</li> <li>• Use knowledge of equivalent fractions to add and subtract common fractions</li> </ul>	Weeks 6–8 Common Fractions 49–59 30–34
<b>Percentages</b>	<ul style="list-style-type: none"> <li>• Calculate the percentage of part of a whole</li> <li>• Calculate percentage increase or decrease of whole numbers</li> </ul>	<b>Solving problems</b>	<ul style="list-style-type: none"> <li>• Solve problems in contexts involving common fractions and mixed numbers,</li> <li>• including grouping and sharing; and finding fractions of whole numbers</li> <li>• Solve problems in contexts involving percentages</li> </ul>	Unit 6: Common fractions Weeks 8–9 60–65 35–39
<b>Decimal fractions</b>	<ul style="list-style-type: none"> <li>• Count forwards and backwards in decimal fractions to at least 3 decimal places</li> <li>• Place value of decimals to at least 3 decimal places</li> <li>• Order and compare decimal fractions to at least 3 decimals</li> <li>• Rounding off decimal fractions to at least 2 decimal places</li> </ul>	<b>Ordering and comparing decimal fractions</b>		

# MATHEMATICS Term 2

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 7	LB	TG
	<p><b>Calculations with decimal fractions</b></p> <ul style="list-style-type: none"> <li>• Addition and subtraction to decimal fractions of at least three decimal places</li> <li>• Multiply decimal fractions to include:           <ul style="list-style-type: none"> <li>– decimal fractions to at least 3 decimal places by whole numbers</li> <li>– Decimal fractions to at least 2 decimal places by decimal fractions to at least 1 decimal place</li> </ul> </li> <li>• Divide decimal fractions to include decimal fractions to at least 3 decimal places by whole numbers</li> </ul> <p><b>Calculation techniques</b></p> <ul style="list-style-type: none"> <li>• Use knowledge of place value to estimate the number of decimal places in the result before rounding off and a calculator to check results where appropriate</li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>• Solve problems in context involving decimal fractions</li> </ul>				
	<p><b>Equivalent forms</b></p> <ul style="list-style-type: none"> <li>• Recognize equivalence between common fraction and decimal fraction forms of the same number</li> <li>• Recognize equivalence between common fraction, decimal fraction and percentage forms of the same number</li> </ul>				
	<p><b>Counting, ordering and comparing integers</b></p> <ul style="list-style-type: none"> <li>• Count forwards and backwards in integers for any interval</li> <li>• Recognize, order and compare integers</li> </ul> <p><b>Calculations with integers</b></p> <ul style="list-style-type: none"> <li>• Add and subtract with integers</li> </ul> <p><b>Properties of integers</b></p> <ul style="list-style-type: none"> <li>• Recognize and use commutative and associative properties of addition for integers</li> </ul>				
Integers		Weeks 3–5	Unit 18: Integers	123–129	96–99

# MATHEMATICS Term 2

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Numeric and Geometric Patterns	<p><b>Investigate and extend patterns</b></p> <ul style="list-style-type: none"><li>Investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns:<ul style="list-style-type: none"><li>represented in physical or diagram form</li><li>not limited to sequences involving a constant difference or ratio</li><li>of learner's own creation</li><li>represented in tables</li></ul></li><li>Describe and justify the general rules for observed relationships between numbers in own words</li></ul> <p><b>Input and output values</b></p> <ul style="list-style-type: none"><li>Determine input values, output values or rules for patterns and relationships using:<ul style="list-style-type: none"><li>flow diagrams</li><li>tables</li><li>formulae</li></ul></li></ul> <p><b>Equivalent forms</b></p> <ul style="list-style-type: none"><li>Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented:<ul style="list-style-type: none"><li>verbally</li><li>in flow diagrams</li><li>in tables</li><li>by formulae</li><li>by number sentences</li></ul></li></ul>	Weeks 6–7 Unit 11: Numeric and geometric patterns 84–88 64–65	Weeks 8–9 Unit 8: Functions and relationships 66–68 40
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# MATHEMATICS Term 3

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 7	Unit	LB	TG
Algebraic expressions	<ul style="list-style-type: none"> <li>Recognise and interpret rules or relationships represented in symbolic form</li> <li>Identify variables and constants in given formulae and equations</li> </ul>	Week 1	Unit 13: Algebraic expressions	92–93	67–68	
Algebraic equations	<p><b>Number sentences</b></p> <ul style="list-style-type: none"> <li>Write number sentences to describe problem situations</li> <li>Analyse and interpret number sentences that describe a given situation</li> <li>Identify variables and constants in given formulae or equations</li> <li>Solve and complete number sentences by: <ul style="list-style-type: none"> <li>inspection</li> <li>trial and improvement</li> </ul> </li> <li>Solve equations by substitution</li> </ul>	Weeks 2–3	Unit 14: Algebraic equations	94–96	69–70	
Construction of Geometric Figures	<p><b>Measuring angles</b></p> <ul style="list-style-type: none"> <li>Accurately use a protractor to measure and classify angles: <ul style="list-style-type: none"> <li>&lt; <math>90^\circ</math> (acute angles)</li> <li>Right-angles</li> <li>&gt; <math>90^\circ</math> (obtuse angles)</li> <li>Straight angles</li> <li>&gt; <math>180^\circ</math> but less than <math>360^\circ</math> (reflex angles)</li> </ul> </li> </ul> <p><b>Constructions</b></p> <ul style="list-style-type: none"> <li>Accurately construct geometric figures appropriately using a compass, ruler and protractor, including: <ul style="list-style-type: none"> <li>angles, to one degree of accuracy</li> <li>circles</li> <li>parallel lines</li> <li>perpendicular lines</li> </ul> </li> <li>Describe and name parts of a circle</li> </ul>	Week 4	Unit 3: Construction of geometric figures	25–30	12–13	
Geometry of Straight Lines	<p><b>Define:</b></p> <ul style="list-style-type: none"> <li>Line segment</li> <li>Ray</li> <li>Straight line</li> <li>Parallel lines</li> <li>Perpendicular lines</li> </ul>	Week 5	Unit 5: Geometry of straight lines	38–42	16–18	

# MATHEMATICS Term 3

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<p><b>Classifying 2D shapes</b></p> <ul style="list-style-type: none"><li>• Describe, sort, name and compare triangles according to their sides and angles, focussing on:<ul style="list-style-type: none"><li>– equilateral triangles</li><li>– isosceles triangles</li><li>– right-angled triangles</li></ul></li><li>• Describe, sort, name and compare quadrilaterals in terms of:<ul style="list-style-type: none"><li>– length of sides</li><li>– parallel and perpendicular sides</li><li>– size of angles (right angles or not)</li></ul></li></ul> <p><b>Similar and congruent 2D shapes</b></p> <ul style="list-style-type: none"><li>• Recognise and describe similar and congruent figures by comparing:<ul style="list-style-type: none"><li>– shape</li><li>– size</li></ul></li></ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"><li>• Solve simple geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties</li></ul> <p><b>Transformations</b></p> <ul style="list-style-type: none"><li>• Recognize, describe and perform translations, reflections and rotations with geometric figures and shapes on squared paper</li><li>• Identify and draw lines of symmetry in geometric figures</li></ul> <p><b>Enlargements and reductions</b></p> <ul style="list-style-type: none"><li>• Draw enlargements and reductions of geometric figures on squared paper and compare them in terms of shape and size</li></ul>	<p>Geometry of 2D Shapes</p> <p>Weeks 6–7</p> <p>Unit 4: Geometry of 2D shapes</p> <p>31–37</p> <p>14–15</p>	<p>Transformation Geometry</p> <p>Weeks 8–9</p> <p>Unit 16: Transformation Geometry</p> <p>106–111</p> <p>76–81</p>
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# MATHEMATICS Term 4

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 7	Unit	LB	TG
Area and perimeter of 2D shapes	<p><b>Area and perimeter</b></p> <ul style="list-style-type: none"> <li>Calculate the perimeter of regular and irregular polygons</li> <li>Use appropriate formulae to calculate perimeter and area of:           <ul style="list-style-type: none"> <li>squares</li> <li>rectangles</li> <li>triangles</li> </ul> </li> </ul> <p><b>Calculations and solving problems</b></p> <ul style="list-style-type: none"> <li>Solve problems involving perimeter and area of polygons</li> <li>Calculate to at least 1 decimal place</li> <li>Use and convert between appropriate SI units, including:           <ul style="list-style-type: none"> <li><math>\text{mm}^2 \leftrightarrow \text{cm}^2</math></li> <li><math>\text{cm}^2 \leftrightarrow \text{m}^2</math></li> </ul> </li> </ul>	Weeks 1–2	Unit 9: Area and perimeter of 2D shapes	69–74	41	
Surface area and volume of 3D objects	<p><b>Surface area and volume</b></p> <ul style="list-style-type: none"> <li>Use appropriate formulae to calculate the surface area, volume and capacity of:           <ul style="list-style-type: none"> <li>cubes</li> <li>rectangular prisms</li> </ul> </li> <li>Describe the interrelationship between surface area and volume of the objects mentioned above</li> </ul> <p><b>Calculations and solving problems</b></p> <ul style="list-style-type: none"> <li>Solve problems involving surface area, volume and capacity of 3D objects</li> <li>Use and convert between appropriate SI units, including:           <ul style="list-style-type: none"> <li><math>\text{mm}^2 \leftrightarrow \text{cm}^2</math></li> <li><math>\text{cm}^2 \leftrightarrow \text{m}^2</math></li> <li><math>\text{mm}^3 \leftrightarrow \text{cm}^3</math></li> <li><math>\text{cm}^3 \leftrightarrow \text{m}^3</math></li> </ul> </li> <li>Use equivalence between units when solving problems:           <ul style="list-style-type: none"> <li><math>1 \text{ cm}^3 \leftrightarrow 1 \text{ ml}</math></li> <li><math>1 \text{ m}^3 \leftrightarrow 1 \text{ kl}</math></li> </ul> </li> </ul>	Weeks 3–4	Unit 10: Surface area and volume of 3D shapes	75–78	43–44	

# MATHEMATICS Term 4

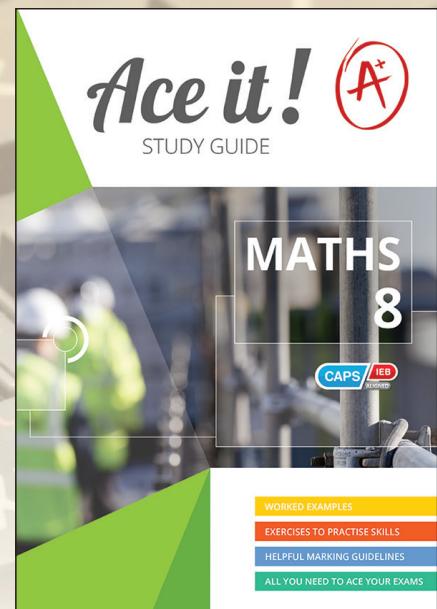
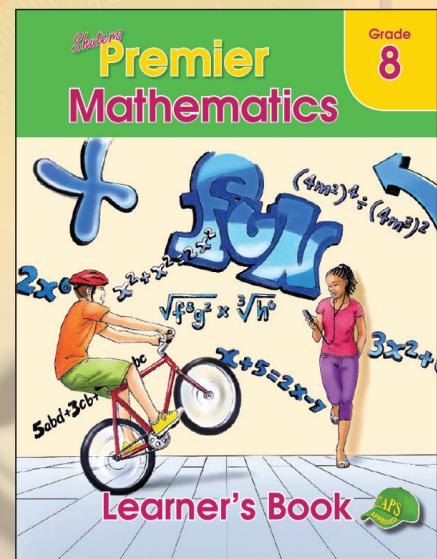
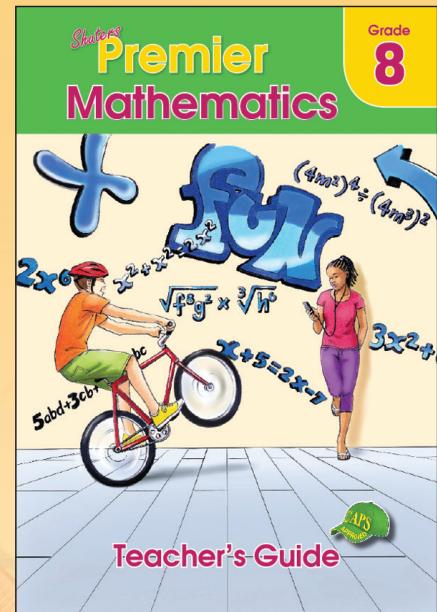
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<b>Collect data</b>	<ul style="list-style-type: none"><li>Pose questions relating to social, economic, and environmental issues in own environment</li><li>Select appropriate sources for the collection of data (including peers, family, newspapers, books, magazines)</li><li>Distinguish between samples and populations and suggest appropriate samples for investigation</li><li>Design and use simple questionnaires to answer questions with:<ul style="list-style-type: none"><li>yes/no type responses</li><li>multiple choice responses</li></ul></li></ul>	<b>Organize and summarize data</b> <ul style="list-style-type: none"><li>Organize (including grouping where appropriate) and record data using<ul style="list-style-type: none"><li>tally marks</li><li>tables</li><li>stem-and-leaf displays</li></ul></li><li>Group data into intervals</li><li>Summarize and distinguishing between ungrouped numerical data by determining:<ul style="list-style-type: none"><li>mean</li><li>median</li><li>mode</li></ul></li><li>Identify the largest and smallest scores in a data set and determine the difference between them in order to determine the spread of the data (range)</li></ul>	Unit 23: Collect, organise, summarise, represent, analyse, interpret and report data Weeks 5–6 143–153
<b>Data handling</b>		<b>Represent data</b> <ul style="list-style-type: none"><li>Draw a variety of graphs by hand/ technology to display and interpret data (grouped and ungrouped) including:<ul style="list-style-type: none"><li>bar graphs and double bar graphs</li><li>histograms with given intervals</li><li>pie charts</li></ul></li></ul>	108–112 Weeks 5–6 143–153

# MATHEMATICS Term 4

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 7	Unit	LB	TG
Data handling	<p><b>Analyse data</b></p> <ul style="list-style-type: none"> <li>Critically analyse data by answering questions related to:           <ul style="list-style-type: none"> <li>– data categories, including data intervals</li> <li>– data sources and contexts</li> <li>– central tendencies (mean, mode, median)</li> <li>– scales used on graphs</li> </ul> </li> </ul> <p><b>Report data</b></p> <ul style="list-style-type: none"> <li>Summarise data in short paragraphs that include:           <ul style="list-style-type: none"> <li>– drawing conclusions about the data</li> <li>– making predictions based on the data</li> <li>– identifying sources of error and bias in the data</li> <li>– choosing appropriate summary statistics for the data (mean, median, mode)</li> </ul> </li> </ul>	Weeks 5–6	Unit 23: Collect, organise, summarise, represent, analyse, interpret and report data	143–153	108–112	
Revision	Revise Term 3 and Term 4 work	Weeks 7–8	Revision			

# 8



# MATHEMATICS Term 1

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 8
		Unit	LB      TG
Revision	<p>Revise Grade 7 work</p> <p><b>Calculations using whole numbers</b></p> <p><b>Revise:</b></p> <ul style="list-style-type: none"> <li>Calculations using all four operations on whole numbers, estimating and using calculators where appropriate</li> </ul> <p><b>Calculation techniques</b></p> <ul style="list-style-type: none"> <li>Use a range of strategies to perform and check written and mental calculations with whole numbers including: <ul style="list-style-type: none"> <li>Estimation</li> <li>Adding, subtracting and multiplying in columns</li> <li>Long division</li> <li>Rounding off and compensating</li> <li>Using a calculator</li> </ul> </li> </ul> <p><b>Multiples and factors</b></p> <p><b>Revise:</b></p> <ul style="list-style-type: none"> <li>Prime factors of numbers to at least 3-digit whole numbers</li> <li>LCM and HCF of whole numbers, by inspection or factorisation</li> </ul> <p><b>Solving problems</b></p> <p><b>Revise:</b></p> <ul style="list-style-type: none"> <li>Solve problems involving whole numbers, including: <ul style="list-style-type: none"> <li>Comparing two or more quantities of the same kind (ratio)</li> <li>Comparing two quantities of different kinds (rate)</li> <li>Sharing in a given ratio where the whole is given</li> </ul> </li> <li>Extend to increasing or decreasing of a number in a given ratio</li> <li>Solve problems that involve whole numbers, percentages and decimal fractions in financial contexts</li> </ul>	Week 1	1–9
	Whole numbers	Weeks 2–3	1–13

	<b>Calculations with integers</b>			
Integers	<p><b>Revise</b></p> <ul style="list-style-type: none"> <li>- addition and subtraction with integers</li> <li>• Multiply and divide with integers</li> <li>• Perform calculations involving all four operations with integers</li> <li>• Perform calculations involving all four operations with numbers that involve squares, cubes, square roots and cube roots of integers</li> </ul> <p><b>Properties of integers</b></p> <ul style="list-style-type: none"> <li>• Recognise and use commutative, associative and distributive properties of addition and multiplication for integers</li> <li>• Recognize and use additive and multiplicative inverses for integers</li> </ul>	Weeks 4–6	Unit 2: Integers	14–25 10–16
Common Fractions	<p><b>Calculations with fractions</b></p> <ul style="list-style-type: none"> <li>• Divide whole numbers and common fractions by common fractions</li> <li>• Calculate the squares, cubes, square roots and cube roots of common fractions</li> <li>• Calculate amounts if given percentages increase or decrease</li> <li>• Calculations and solving problems</li> </ul> <p><b>Calculation techniques</b></p> <ul style="list-style-type: none"> <li>• Use knowledge of reciprocal relationships to divide common fractions</li> </ul> <p><b>Percentage</b></p> <ul style="list-style-type: none"> <li>• Calculate amounts if given percentage increase or decrease</li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>• Solve problems in contexts involving common fractions and mixed numbers, including grouping, sharing and finding fractions of whole numbers</li> <li>• Solve problems in contexts involving percentages</li> </ul>			84–89
				119–129

# MATHEMATICS Term 1

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 8	Unit	LB	TG
Decimal Fractions	<p><b>Calculations with decimal fractions</b></p> <ul style="list-style-type: none"> <li>• Multiplication of decimal fractions by decimal fractions not limited to one decimal place</li> <li>• Division of decimal fractions by decimal fractions</li> <li>• Calculate the squares, cubes, square roots and cube roots of decimal fractions</li> </ul> <p><b>Calculation techniques</b></p> <ul style="list-style-type: none"> <li>• Use knowledge of place value to estimate the number of decimal places in the result before performing calculations</li> <li>• Use rounding off and a calculator to check results where appropriate</li> </ul>	Weeks 8–9	Unit 14: Decimal fractions	130–141	90–94	

# MATHEMATICS Term 2

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Decimal Fractions	<b>Calculations with decimal fractions</b>				
	<ul style="list-style-type: none"> <li><b>Revise</b> <ul style="list-style-type: none"> <li>Multiplication of decimal fractions by decimal fractions not limited to one decimal place</li> <li>Division of decimal fractions by decimal fractions</li> <li>Calculate the squares, cubes, square roots and cube roots of decimal fractions</li> </ul> </li> </ul>	Weeks 1–2	Unit 14: Decimal fractions	130–141	90–94
Exponents	<b>Solving problems</b>				
	<ul style="list-style-type: none"> <li>Solve problems in context involving decimal</li> </ul>				
Exponents	<b>Comparing and representing numbers in exponential form</b>				
	<ul style="list-style-type: none"> <li>Revise compare and represent whole numbers in exponential form</li> <li>Compare and represent integers in exponential form</li> <li>Compare and represent numbers in scientific notation, limited to positive exponents</li> </ul>				
Exponents	<b>Calculations using numbers in exponential form</b>				
	<ul style="list-style-type: none"> <li>Establish general laws of exponents, limited to:           <ul style="list-style-type: none"> <li><math>a^m \times a^n = a^{m+n}</math></li> <li><math>a^m \div a^n = a^{m-n}</math> if <math>m &gt; n</math></li> <li><math>(a^m)^n = a^{m \times n}</math></li> <li><math>(a \times t)^n = a^n \times t^n</math></li> <li><math>a^0 = 1</math></li> </ul> </li> <li>Recognise and use the appropriate laws of operations using numbers involving exponents and square and cube roots</li> <li>Perform calculations involving all four operations with numbers that involve squares, cubes, square and cube roots of integers</li> <li>Calculate the squares, cubes, square and cube roots of rational numbers</li> </ul>	Weeks 2–4	Unit 3: Exponents	26–36	17–24
Exponents	<b>Solving problems</b>				
	<ul style="list-style-type: none"> <li>Solve problems in contexts involving numbers in exponential form</li> </ul>				

# MATHEMATICS Term 2

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 8	LB	TG
Numeric and Geometric Patterns	<p><b>Investigate and extend patterns</b></p> <ul style="list-style-type: none"> <li>Revise investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns:           <ul style="list-style-type: none"> <li>represented in physical or diagram form</li> <li>not limited to sequences involving a constant difference or ratio</li> <li>of learner's own creation</li> <li>represented in tables</li> </ul> </li> <li>Extend investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns represented algebraically</li> <li>Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language</li> </ul>	Weeks 5–7	Unit 4: Numeric and geometric patterns	37–43	25–28
Functions and Relationships	<p><b>Input and output values</b></p> <ul style="list-style-type: none"> <li>Revise, determine input values, output values or rules for patterns and relationships using:           <ul style="list-style-type: none"> <li>flow diagrams</li> <li>tables</li> <li>formulae</li> </ul> </li> <li>Extend determine input values, output values or rules for patterns and relationships using equations</li> </ul> <p><b>Equivalent forms</b></p> <ul style="list-style-type: none"> <li>Revise determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented:           <ul style="list-style-type: none"> <li>verbally</li> <li>in flow diagrams</li> <li>in tables</li> <li>by formulae</li> <li>by number sentences</li> </ul> </li> <li>Extend determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented by equations</li> </ul>	Weeks 7–8	Unit 5: Functions and relationships	44–49	29–31

# MATHEMATICS Term 2

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Algebraic Expressions	<b>Algebraic language</b>	<ul style="list-style-type: none"><li>• Recognize and identify conventions for writing algebraic expressions</li><li>• Identify and classify like and unlike terms in algebraic expressions</li><li>• Recognize and identify coefficients and exponents in algebraic expressions</li></ul>	Week 9	Unit 6: Algebraic expressions	50–57	32–37
	<b>Expand and simplify algebraic expressions</b>	<ul style="list-style-type: none"><li>• Use commutative, associative and distributive laws for rational numbers and laws of exponents</li><li>• Add and subtract like terms in algebraic expressions</li></ul>				

# MATHEMATICS Term 3

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 8	LB	TG
Algebraic Expressions	<p><b>Expand and simplify algebraic expressions</b></p> <ul style="list-style-type: none"> <li>• Use commutative, associative and distributive laws for rational numbers and laws of exponents to:</li> <li>• Add and subtract like terms in algebraic expressions</li> <li>• Multiply integers and monomials by: <ul style="list-style-type: none"> <li>– monomials</li> <li>– binomials</li> <li>– trinomials</li> </ul> </li> <li>• Divide the following by integers or monomials: <ul style="list-style-type: none"> <li>– monomials</li> <li>– binomials</li> <li>– trinomials</li> </ul> </li> <li>• Simplify algebraic expressions involving the above operations</li> <li>• Determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms</li> <li>• Determine the numerical value of algebraic expressions by substitution</li> </ul>	Weeks 1–2	Unit 8: Algebraic expressions	66–74	32–37
Algebraic Equations	<p><b>Equations</b></p> <ul style="list-style-type: none"> <li>• Use substitution in equations to generate tables of ordered pairs</li> <li>• Extend solving equations to include: <ul style="list-style-type: none"> <li>– using additive and multiplicative inverses</li> <li>– using laws of exponents</li> </ul> </li> </ul>	Weeks 3–4	Unit 9: Algebraic equations	75–79	38–40
Geometry of Straight Lines	<p><b>Angle relationships</b></p> <ul style="list-style-type: none"> <li>• Recognize and describe pairs of angles formed by: <ul style="list-style-type: none"> <li>– perpendicular lines</li> <li>– intersecting lines</li> <li>– parallel lines cut by a transversal</li> </ul> </li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>• Solve geometric problems using the relationships between pairs of angles described above</li> </ul>	Weeks 5–7	Unit 12: Geometry of straight lines	103–113	71–75

<p><b>Classifying 2D shapes</b></p> <ul style="list-style-type: none"> <li>Identify and write clear definitions of triangles in terms of their sides and angles, distinguishing between:           <ul style="list-style-type: none"> <li>equilateral triangles</li> <li>isosceles triangles</li> <li>right-angled triangles</li> </ul> </li> </ul> <p><b>Constructions</b></p> <p><b>Investigating properties of geometric figures</b></p> <ul style="list-style-type: none"> <li>Investigate the angles in a triangle, focusing on:           <ul style="list-style-type: none"> <li>the sum of the interior angles of triangles</li> <li>the size of angles in an equilateral triangle</li> <li>the sides and base angles of an isosceles triangle</li> </ul> </li> </ul>	<p><b>Classifying 2D shapes</b></p> <ul style="list-style-type: none"> <li>Identify and write clear definitions of quadrilaterals in terms of their sides and angles, distinguishing between:           <ul style="list-style-type: none"> <li>parallelogram</li> <li>rectangle</li> <li>square</li> <li>rhombus</li> <li>trapezium</li> <li>kite</li> </ul> </li> </ul> <p><b>Constructions</b></p> <p><b>Investigating properties of geometric figures</b></p> <ul style="list-style-type: none"> <li>Investigate sides and angles in quadrilaterals, focusing on:           <ul style="list-style-type: none"> <li>the sum of the interior angles of quadrilaterals</li> <li>the sides and opposite angles of parallelograms</li> </ul> </li> </ul>	<p>Geometry of 2D Shapes</p> <p>Weeks 7–9</p>	<p>93–102</p>

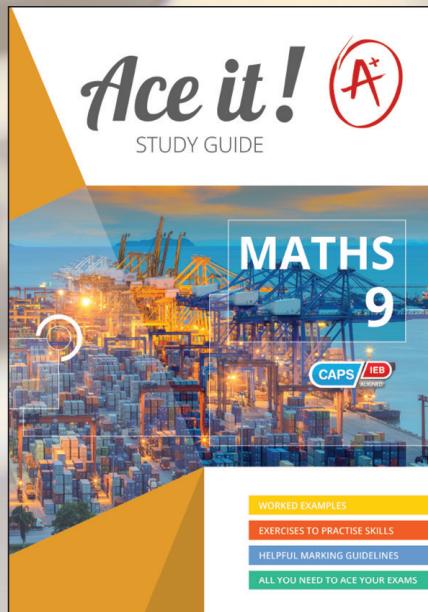
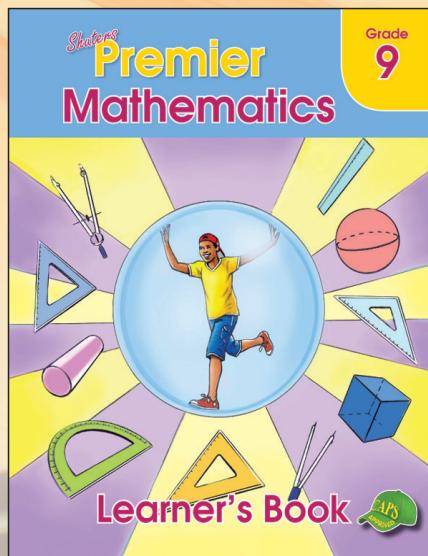
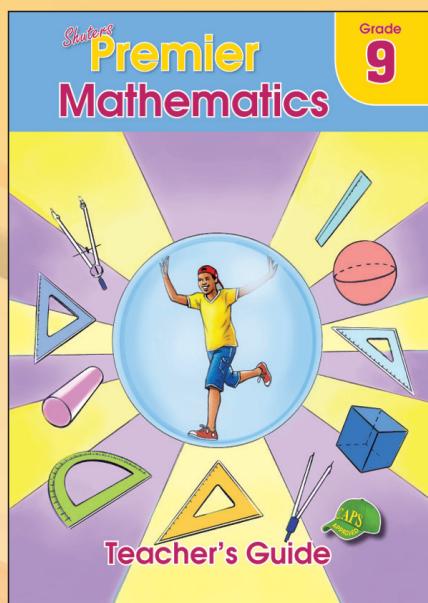
# MATHEMATICS Term 4

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 8	Unit	LB	TG
	<b>Interpreting graphs</b> <ul style="list-style-type: none"> <li><b>Revise:</b> Analyse and interpret global graphs of problem situations, with special focus on the following trends and features:           <ul style="list-style-type: none"> <li>– linear or non-linear</li> <li>– constant, increasing or decreasing</li> </ul> </li> <li>Analyse and interpret global graphs of problem situations, with a special focus on the following trends and features:           <ul style="list-style-type: none"> <li>– maximum or minimum</li> <li>– discrete or continuous</li> </ul> </li> </ul>					
Graphs	<b>Drawing graphs</b> <ul style="list-style-type: none"> <li>Draw global graphs from given descriptions of a problem situation, identifying features listed above</li> <li>Use tables or ordered pairs to plot points and draw graphs on the Cartesian plane</li> </ul>	Weeks 1–2	Unit 21: Graphs	201–217	135–142	
Transformation Geometry	<b>Transformations</b> <ul style="list-style-type: none"> <li>Recognize, describe and perform transformations with points on a co-ordinate plane, focusing on:           <ul style="list-style-type: none"> <li>– reflecting a point in the X-axis or Y-axis</li> <li>– translating a point within and across quadrants</li> </ul> </li> <li>Recognize, describe and perform transformations with triangles on a co-ordinate plane, focusing on the co-ordinates of the vertices when:           <ul style="list-style-type: none"> <li>– reflecting a triangle in the X-axis or Y-axis</li> <li>– translating a triangle within and across quadrants</li> </ul> </li> </ul>	Week 3	Unit 22: Transformation geometry	219–236	146–154	
Theorem of Pythagoras	<b>Develop and use the Theorem of Pythagoras</b> <ul style="list-style-type: none"> <li>Investigate the relationship between the lengths of the sides of a right-angled triangle to develop the Theorem of Pythagoras</li> <li>Determine whether a triangle is right-angled triangle or not if the lengths of the three sides of the triangle is known</li> <li>Use the Theorem of Pythagoras to calculate the missing length in a right-angled triangle, leaving irrational answers in surd form.</li> </ul>	Week 4	Unit 15: The Theorem of Pythagoras	142–146	95–96	

# MATHEMATICS Term 4

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<p><b>Area and perimeter</b></p> <ul style="list-style-type: none"><li>• Use appropriate formulae to calculate perimeter and area of circles</li><li>• Calculate the areas of polygons, to at least 2 decimal places, by decomposing them into rectangles and/or triangles</li><li>• Use and describe the relationship between the radius, diameter and circumference of a circle in calculations</li><li>• Use and describe the relationship between the radius and area of a circle in calculations</li></ul> <p>Area and Perimeter of 2D Shapes</p> <p><b>Calculations and solving problems</b></p> <ul style="list-style-type: none"><li>• Solve problems, with or without a calculator, involving perimeter and area of polygons and circles to at least 2 decimal places</li><li>• Use and describe the meaning of the irrational number Pi (<math>\pi</math>) in calculations involving circles</li><li>• Use and convert between appropriate SI units, including: <math>mm^2 \leftrightarrow cm^2 \leftrightarrow m^2 \leftrightarrow km^2</math></li></ul>	<p>Weeks 5–6</p> <p>Unit 16: Area and perimeter of 2D shapes</p> <p>147–152</p> <p>97–102</p>
<p>Revision</p> <p>Revise Term 3 and Term 4</p>	<p>Week 7</p> <p>Revision</p>



# 9

# MATHEMATICS Term 1

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Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 9	Unit	LB	TG
Revision	<ul style="list-style-type: none"> <li>Revise Grade 8 work</li> </ul> <p><b>Properties of numbers</b></p> <ul style="list-style-type: none"> <li>Describe the real number system by recognising, defining and distinguishing properties of:           <ul style="list-style-type: none"> <li>natural numbers, whole numbers, integers, rational numbers, irrational numbers</li> </ul> </li> </ul> <p><b>Calculations using whole numbers</b></p> <ul style="list-style-type: none"> <li>Revise: Calculations using all four operations on whole numbers, estimating and using calculators where appropriate</li> </ul> <p><b>Multiples and factors</b></p> <ul style="list-style-type: none"> <li>Use prime factorisation of numbers to find LCM and HCF</li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>Solve problems in contexts involving:           <ul style="list-style-type: none"> <li>Ratio and rate</li> <li>Direct and indirect proportion</li> </ul> </li> </ul>	Week 1			1–5	

Whole numbers

Weeks 2–3

Unit 1: Whole numbers

1–17

1–5

Weeks 3–5

Unit 2: Integers

18–24

6–8

Unit 2: Integers

18–24

6–8

Weeks 3–5

Unit 2: Integers

18–24

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Unit 2: Integers

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Weeks 3–5

Unit 2: Integers

18–24

# MATHEMATICS Term 1

<p><b>Calculations using numbers in exponential form</b></p> <ul style="list-style-type: none"> <li>Revise the following general laws of exponents.           <ul style="list-style-type: none"> <li><math>a^m \times a^n = a^{m+n}</math></li> <li><math>a^m \div a^n = a^{m-n}</math>, if <math>m &gt; n</math></li> <li><math>(a^m)^n = a^{m \times n}</math></li> <li><math>(a \times t)^n = a^n \times t^n</math></li> <li><math>a^0 = 1</math></li> </ul> </li> <li>Extend the general laws of exponents to include:           <ul style="list-style-type: none"> <li>integer exponents</li> <li><math>a^{-m} = \frac{1}{a^m}</math></li> </ul> </li> <li>Perform calculations involving all four operations using numbers in exponential form</li> </ul>	<p>Weeks 6–7</p> <p>Unit 5: Exponents</p> <p>33–39</p> <p>15–18</p>
<p><b>Numeric and Geometric Patterns</b></p> <p><b>Investigate and extend numeric patterns</b></p> <ul style="list-style-type: none"> <li>Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:           <ul style="list-style-type: none"> <li>represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, or learner's own creation, represented in tables, represented algebraically</li> </ul> </li> <li>Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language</li> </ul>	<p>Week 8</p> <p>Unit 6: Numeric and geometric patterns</p> <p>40–50</p> <p>19–22</p>

# MATHEMATICS Term 2

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Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 9	Unit	LB	TG
Numeric and Geometric Patterns	<b>Investigate and extend geometric patterns</b> <ul style="list-style-type: none"><li>• Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:<ul style="list-style-type: none"><li>– 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</li></ul></li><li>• Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language</li></ul>	Weeks 1–2	Unit 6: Numeric and geometric patterns	40–50	19–22	

# MATHEMATICS Term 2

<b>Algebraic language</b>	<ul style="list-style-type: none"><li>Revise the following:<ul style="list-style-type: none"><li>Recognize and identify conventions for writing algebraic expressions</li><li>Identify and classify like and unlike terms in algebraic expressions</li><li>Recognize and identify coefficients and exponents in algebraic expressions</li><li>Recognize and differentiate between monomials, binomials and trinomials</li></ul></li></ul>	<b>Expand and simplify algebraic expressions</b> <ul style="list-style-type: none"><li>Revise the following: using the commutative, associative and distributive laws for rational numbers and laws of exponents to:<ul style="list-style-type: none"><li>add and subtract like terms in algebraic expressions.</li><li>multiply integers and monomials by: monomials, binomials, trinomials</li><li>divide the following by integers or monomials: monomials, binomials, trinomials</li><li>simplify algebraic expressions involving the above operations</li></ul></li><li>determine the squares, cubes, square roots and cube roots of single algebraic terms or like algebraic terms</li></ul> <p>Extend the above algebraic manipulations to include:</p> <ul style="list-style-type: none"><li>multiply integers and monomials by polynomials,</li><li>divide polynomials by integers or monomials,</li><li>the product of two binomials, the square of a binomial</li></ul>	Unit 8: Algebraic expressions Weeks 2-6

# MATHEMATICS Term 2

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	<p><b>Revise the following:</b></p> <ul style="list-style-type: none"><li>– set up equations to describe problem situations</li><li>– analyse and interpret equations that describe a given situation</li><li>– Solve equations by inspection</li><li>– using additive and multiplicative inverses</li><li>– using laws of exponents</li><li>– Solve equations by substitution</li><li>– Use substitution in equations to generate tables of ordered pairs<ul style="list-style-type: none"><li>• Extend solving equations to include:<ul style="list-style-type: none"><li>– using factorisation</li><li>– equations of the form: a product of factors = 0</li></ul></li></ul></li></ul>		
Algebraic Equations	<p>Weeks 7–9</p> <p>Unit 9: Algebraic equations</p> <p>69–75</p> <p>36–43</p>		
Revision	<ul style="list-style-type: none"><li>• Revise Term 1 and 2 content</li></ul>	Week 10	

# MATHEMATICS Term 3

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 9	LB	TG
	<b>Input and output values</b> <ul style="list-style-type: none"> <li>Determine input values, output values or rules for patterns and relationships using:           <ul style="list-style-type: none"> <li>flow diagrams</li> <li>tables</li> <li>formulae</li> <li>equations</li> </ul> </li> </ul>				
Functions and Relationships	<b>Equivalent forms</b> <ul style="list-style-type: none"> <li>Determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented:           <ul style="list-style-type: none"> <li>verbally</li> <li>in flow diagrams</li> <li>in tables</li> <li>by formulae</li> <li>by equations</li> <li>by graphs on a Cartesian plane</li> </ul> </li> </ul>	Weeks 1-2	Unit 7: Functions and relationships	51-57	23-26
Graphs	<b>Interpreting graphs</b> <ul style="list-style-type: none"> <li>Extend the focus on features of graphs with special focus on the following features of <b>linear graphs</b>:           <ul style="list-style-type: none"> <li>x-intercept and y-intercept</li> <li>Gradient</li> </ul> </li> </ul>				
Transformation Geometry	<b>Drawing graphs</b> <ul style="list-style-type: none"> <li>Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane</li> <li>Extend drawing of graphs with special focus on:           <ul style="list-style-type: none"> <li>drawing linear graphs from given equations</li> <li>determining equations from given <b>linear graphs</b></li> </ul> </li> </ul>	Weeks 2-4	Unit 18: Graphs	155-168	113-122
	<b>Transformations</b> <ul style="list-style-type: none"> <li>Recognize, describe and perform transformations with points, line segments and simple geometric figures on a co-ordinate plane, focusing on:           <ul style="list-style-type: none"> <li>reflection in the X-axis or Y- axis</li> <li>translation within and across quadrants</li> </ul> </li> </ul>	Weeks 4-5	Unit 20: Transformation geometry	187-201	141-145

# MATHEMATICS Term 3

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Geometry of Straight Lines	<b>Angle relationships</b>	<ul style="list-style-type: none"> <li>Revise and write clear descriptions of the relationship between angles formed by:           <ul style="list-style-type: none"> <li>perpendicular lines</li> <li>intersecting lines</li> <li>parallel lines cut by a transversal</li> </ul> </li> </ul>	Weeks 6–7	Unit 12: Geometry of straight lines	102–109	60–63
	<b>Solving problems</b>	<ul style="list-style-type: none"> <li>Solve geometric problems using the relationships between pairs of angles described above</li> </ul>				
Geometry of 2D Shapes and Construction of Geometric Figures	<b>Classifying 2D shapes</b>	<ul style="list-style-type: none"> <li>Revise properties and definitions of triangles in terms of their sides and angles, distinguishing between:           <ul style="list-style-type: none"> <li>equilateral triangles</li> <li>isosceles triangles</li> <li>right-angled triangles</li> </ul> </li> </ul>				
	<b>Constructions</b>	<ul style="list-style-type: none"> <li>Investigate the angles in a triangle, focusing on the relationship between the exterior angle of a triangle and its interior angles</li> </ul>	Weeks 8–9	Unit 10: Construction of geometric figures	79–90	48–53
Revision		<b>Classifying 2D shapes</b> <ul style="list-style-type: none"> <li>Revise and write clear definitions of quadrilaterals in terms of their sides, angles and diagonals, distinguishing between:           <ul style="list-style-type: none"> <li>parallelogram</li> <li>rectangle</li> <li>square</li> <li>rhombus</li> <li>trapezium</li> <li>kite</li> </ul> </li> </ul>				
		<b>Constructions</b>	Week 10			

# MATHEMATICS Term 4

Topic	Content	Time allocation	Where to find it in Premier Mathematics Grade 9	LB	TG
Geometry of 2D Shapes and Constructions	<p><b>Similar and congruent triangles</b></p> <ul style="list-style-type: none"> <li>Through investigation, establish the minimum conditions for congruent triangles</li> <li>Through investigation, establish the minimum conditions for similar triangles</li> </ul> <p><b>Constructions</b></p> <ul style="list-style-type: none"> <li>Explore the minimum conditions for two triangles to be congruent</li> </ul> <p><b>Solving problems</b></p> <ul style="list-style-type: none"> <li>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</li> </ul>	Weeks 1–2	Unit 10: Construction of geometric figures	79–90	48–53
Theorem of Pythagoras	<ul style="list-style-type: none"> <li>Use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right-angled triangles</li> </ul>	Weeks 2–3	Unit 13: The Theorem of Pythagoras	110–119	64–69
Area and Perimeter of 2D Shapes	<ul style="list-style-type: none"> <li>Use appropriate formulae and conversions between SI units, to solve problems and calculate perimeter and area of:           <ul style="list-style-type: none"> <li>polygons</li> <li>circles</li> </ul> </li> <li>Use appropriate formulae and conversions between SI units to solve problems and calculate the surface area, volume and capacity of:           <ul style="list-style-type: none"> <li>rectangular prisms</li> <li>triangular prisms</li> <li>cylinders</li> </ul> </li> </ul>	Weeks 3–5	Unit 14: Area and perimeter of 2D shapes	120–127	76–80
Surface Area and Volume of 3D Objects	<ul style="list-style-type: none"> <li>Use appropriate formulae and conversions between SI units to solve problems and calculate the surface area, volume and capacity of:           <ul style="list-style-type: none"> <li>rectangular prisms</li> <li>triangular prisms</li> <li>cylinders</li> </ul> </li> </ul>	Week 5–7	Unit 19: Surface area and volume	169–180	123–127
Revision	<ul style="list-style-type: none"> <li>Revise Term 3 and 4 content</li> </ul>	Week 7			

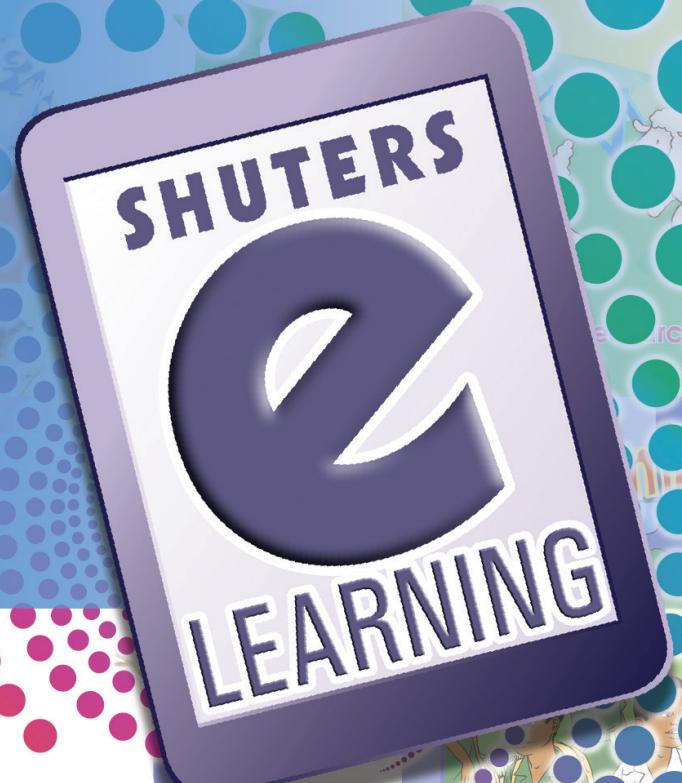
# PROGRAMME OF ASSESSMENT

<b>Grade 7</b>		
Term	Assessment task	Page references
1	Assignment (Week 6) • Whole numbers • Exponents	LB page 43 TG page 19
	Test (Week 10)	TG page 48
2	Investigation (Week 5) • Decimal fractions • Integers	LB page 73 TG page 42
	Test (Week 11)	TG page 48
3	Test (Week 11)	TG page 75
4	Test (Week 9 or Week 10)	TG page 124

<b>Grade 8</b>		
Term	Assessment task	Page references
1	Assignment (Week 6) • Whole numbers • Integers	LB page 62 TG page 41
	Test (Week 9 or 10)	TG page 44
2	Investigation (Week 7) • Exponents • Patterns	LB page 114
	Test (Week 10 or 11)	TG page 46
3	Test (Week 11)	TG page 121
4	Test (Week 8, 9 or 10)	TG page 170

<b>Grade 9</b>		
Term	Assessment task	Page references
1	Assignment (Week 5) • Whole numbers • Integers	LB page 58 TG page 27
	Test (Week 9 or 10)	TG page 46
2	Investigation (Week 6) • Numeric and geometric patterns • Algebraic expressions	LB page 128 TG page 81
	Test (Week 11)	TG page 70
3	Test (Week 11)	TG page 137
4	Test (Week 8, 9 or 10)	TG page 166

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