Inspire Maths 6 Medium-term Plan

Unit 1: Algebra

Week	Learning Objectives	Thinking Skills	Resources
1	**(1) Using letters as numbers** Pupils will be able to: • recognise and write simple algebraic expressions in one variable • evaluate simple algebraic expressions by substitution	• Induction	• Pupil Textbook 6A, pp 2 to 12 • Practice Book 6A, pp 1 to 8 • Teacher's Guide 6A, pp 4 to 14
1	*Let's Explore!* Pupils will be able to conclude that $^y/_2$ can be interpreted as $^1/_2$ of y or $^1/_2 \times y$ and $^{(y-2)}/_3$ can be interpreted as $(y-2) \div 3$ or $^1/_3 \times (y-2)$. *Maths Journal* Pupils will be able to construct one-step word problems with given algebraic expressions as the answers.	• Induction	• Pupil Textbook 6A, pp 10 to 11 • Teacher's Guide 6A, pp 12 to 13
1–2	**(2) Simplifying algebraic expressions** Pupils will be able to simplify algebraic expressions in one variable.	• Comparing • Deduction	• Pupil Textbook 6A, pp 13 to 18 • Practice Book 6A, pp 9 to 10 • Teacher's Guide 6A, pp 15 to 20
2	**(3) Word problems** Pupils will be able to solve simple word problems involving algebraic expressions.	• Translating	• Pupil Textbook 6A, pp 19 to 21 • Practice Book 6A, pp 11 to 16 • Teacher's Guide 6A, pp 21 to 23
2	*Maths Journal* Pupils will be able to express their understanding of basic algebraic expressions.	• Identifying relationships	• Pupil Textbook 6A, p 22 • Practice Book 6A, pp 17 to 18 • Teacher's Guide 6A, p 24

2	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to translate verbal statements into symbolic representations to solve the problem.	• Identifying relationships Heuristic for problem solving: • Solve in parts	• Pupil Textbook 6A, pp 22 to 23 • Practice Book 6A, pp 19 to 20 • Teacher's Guide 6A, pp 24 to 25
Summative assessment opportunity			
Assessment Book 6, Test 1, pp 1 to 6			

Unit 2: Angles in Shapes and Diagrams

Week	Learning Objectives	Thinking Skills	Resources

3	**(1) Finding unknown angles**
	
	Pupils will be able to:
	• find unknown angles in geometric shapes using the properties of:
	  (a) angles on a straight line
	  (b) angles at a point
	  (c) vertically opposite angles
	  (d) triangles
	  (e) four-sided shapes (square, rectangle, parallelogram, rhombus and trapezium)
	
	Let's Explore!
	
	Pupils will be able to name three- and four-sided geometric shapes based on the descriptions provided.
	
	Maths Journal
	
	Pupils will be able to:
	• explain why a parallelogram with two equal adjacent sides and a right angle between them is a square
	• apply the angle properties they have learnt to state the relationship between the given angles
		• Spatial visualisation
		• Identifying relationships
		• Deduction
			• Pupil Textbook 6A, pp 24 to 34
			• Practice Book 6A, pp 21 to 35
			• Teacher's Guide 6A, pp 40 to 50

3	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to use the properties of an equilateral triangle, an isosceles triangle and a square to deduce the size of the unknown angle.	• Deduction Heuristic for problem solving: • Simplify the problem	• Pupil Textbook 6A, pp 35 to 37 • Practice Book 6A, pp 36 to 38 • Teacher's Guide 6A, pp 51 to 53
Summative assessment opportunity			
Assessment Book 6, Test 2, pp 7 to 14			

Unit 3: Nets

Week	Learning Objectives	Thinking Skills	Resources
4	**(1) Solids** Pupils will be able to: • identify and name cubes, cuboids, prisms, pyramids, cylinders and cones • identify the faces of a solid, state the number of faces and name their shapes. This excludes the cylinder and cone, which have surfaces but do not have faces	• Comparing • Identifying relationships • Spatial visualisation	• Pupil Textbook 6A, pp 38 to 42 • Practice Book 6A, pp 39 to 44 • Teacher's Guide 6A, pp 66 to 70
4	**(2) Nets of Solids** Pupils will be able to: • identify the nets of a cube, a cuboid, a prism and a pyramid • identify the solid formed by a given net	• Spatial visualisation	• Pupil Textbook 6A, pp 43 to 49 • Practice Book 6A, pp 45 to 52 • Teacher's Guide 6A, pp 71 to 77
4	*Maths Journal* Pupils will be able to explain why the diagrams shown are not nets of the given solids.	• Spatial visualisation	• Pupil Textbook 6A, p 46 • Practice Book 6A, pp 53 to 54 • Teacher's Guide 6A, p 74
4	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess their understanding of these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to identify different nets of a cube in a given set of diagrams.	• Spatial visualisation Heuristic for problem solving: • Act it out	• Pupil Textbook 6A, pp 50 to 53 • Practice Book 6A, pp 55 to 56 • Teacher's Guide 6A, pp 78 to 81
	Review 1		• Practice Book 6A, pp 57 to 74 • Teacher's Guide 6A, pp 92 to 101

Summative assessment opportunity

Assessment Book 6, Test 3, pp 15 to 20
For extension, Assessment Book 6, Challenging Problems 1, pp 21 to 22
Assessment Book 6, Check-up 1, pp 23 to 38

Unit 4: Fractions

Week	Learning Objectives	Thinking Skills	Resources
5	**(1) Four operations with fractions** Pupils will be able to: • add and subtract fractions or mixed numbers • multiply fractions • divide a fraction by a whole number • solve word problems on fractions		• Pupil Textbook 6A, pp 54 to 55 • Practice Book 6A, pp 75 to 76 • Teacher's Guide 6A, pp 106 to 107
5	**(2) Dividing by a proper fraction** Pupils will be able to: • interpret the division of a whole number by a proper fraction • interpret the division of a proper fraction by another proper fraction • find the quotient by multiplying the dividend by the reciprocal of the divisor	• Comparing • Deduction	• Pupil Textbook 6A, pp 56 to 67 • Practice Book 6A, pp 77 to 84 • Teacher's Guide 6A, pp 108 to 122
5	*Let's Explore!* Pupils will be able to observe that the numerators and denominators of the division calculations are swapped. *Maths Journal* Pupils will be able to: • explain what is found out when dividing by a proper fraction • explain the errors that have been made, based on their understanding of how to divide by a proper fraction	• Translating • Identifying relationships	• Pupil Textbook 6A, p 68 • Teacher's Guide 6A, p 120
5	**(3) Word problems** Pupils will be able to: • solve word problems involving division of a whole number or proper fraction by a proper fraction	• Translating	• Pupil Textbook 6A, pp 71 to 75 • Practice Book 6A, pp 85 to 92 • Teacher's Guide 6A, pp 123 to 127

Let's Wrap It Up! Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked examples with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to draw a table and use guess and check to solve the problem.	• Translating Heuristics for problem solving: • Guess and check • Making a table	• Pupil Textbook 6A, pp 77 to 78 • Practice Book 6A, pp 93 to 94 • Teacher's Guide 6A, pp 129 to 130

Summative assessment opportunity

Assessment Book 6, Test 4, pp 39 to 44

Unit 5: Ratio

Week	Learning Objectives	Thinking Skills	Resources
6	**(1) Ratio and fraction** Pupils will be able to: • write the ratio of one quantity to another quantity in terms of (i) the actual number, and (ii) the number of groups • express one quantity as a fraction of another quantity given their ratio • find how many times larger one value is compared to another, given their ratio *Let's Explore!* Pupils will be able to recognise the relationship of the first and second quantities in a ratio to the numerator and denominator of a fraction. *Maths Journal* Pupils will be able to express the ratio statements as their equivalent fraction statements.	• Comparing • Analysing parts and wholes	• Pupil Textbook 6A, pp 79 to 84 • Practice Book 6A, pp 95 to 102 • Teacher's Guide 6A, pp 145 to 150
6	**(2) Word problems (1)** Pupils will be able to: • express fractions and comparative statements as models • interpret a model and use the unitary method to solve word problems • solve word problems by applying the common multiple concept • apply the ratio concept to solve geometrical problems using the unitary method	• Analysing parts and wholes • Identifying patterns and relationships	• Pupil Textbook 6A, pp 87 to 94 • Practice Book 6A, pp 103 to 108 • Teacher's Guide 6A, pp 153 to 160
7	**(3) Comparing ratios** Pupils will be able to: • recognise that a set of ratios can be expressed in their simplest form as the same ratio and that their corresponding values are multiples of the units in this ratio • apply these concepts and equivalent ratios to solve simple word problems • apply these concepts and the unitary method (together with models) to solve word problems	• Comparing	• Pupil Textbook 6A, pp 95 to 102 • Practice Book 6A, pp 109 to 112 • Teacher's Guide 6A, pp 161 to 168
7	**(4) Word problems (2)** Pupils will be able to solve higher-order word problems involving ratios using model drawing, the 'before-after' concept and the strategy of working backwards.	• Analysing parts and wholes	• Pupil Textbook 6A, pp 103 to 108 • Practice Book 6A, pp 113 to 118 • Teacher's Guide 6A, pp 169 to 174

7	*Let's Explore!* Pupils will be able to use the concept of equivalent ratios to solve the problems.		• Pupil Textbook 6A, p 109 • Teacher's Guide 6A, p 175
7	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to use the heuristics and hints provided to solve the problem.	• Sequencing Heuristics for problem solving: • Make a systematic list • Before-after concept • Guess and check	• Pupil Textbook 6A, pp 109 to 112 • Practice Book 6A, pp 119 to 120 • Teacher's Guide 6A, pp 175 to 178
Summative assessment opportunity			
Assessment Book 6, Test 5, pp 45 to 50			

Unit 6: Percentage

Week	Learning Objectives	Thinking Skills	Resources
1	**(1) Finding percentages** Pupils will be able to: • express a fraction or a decimal as a percentage and vice versa • find the whole given a part and the percentage • find a part given the whole and the percentage of the other part	• Analysing parts and wholes	• Pupil Textbook 6A, pp 113 to 119 • Practice Book 6A, pp 121 to 126 • Teacher's Guide 6A, pp 197 to 203
1	**(2) Word problems (1)** Pupils will be able to: • solve word problems using model drawing and the unitary method • find the percentage change (percentage increase or decrease) using the unitary or fractional methods • find the original or final value given the percentage change • solve word problems involving percentage and discount	• Analysing parts and wholes	• Pupil Textbook 6A, pp 120 to 126 • Practice Book 6A, pp 127 to 132 • Teacher's Guide 6A, pp 204 to 210
2	**(3) Word problems (2)** Pupils will be able to solve higher-order word problems using model drawing, the 'before-after' concept, the strategy of working backwards and the unitary method. *Maths Journal* Pupils will be able to understand and verbalise the steps in solving a word problem involving percentage decrease.	• Analysing parts and wholes	• Pupil Textbook 6A, pp 127 to 136 • Practice Book 6A, pp 133 to 140 • Teacher's Guide 6A, pp 211 to 220
2	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to solve the problem by applying the concept of equal quantities by recognising that the same quantity can represent different percentages.	• Analysing parts and whole Heuristic for problem solving: • Simplify the problem	• Pupil Textbook 6A, pp 137 to 139 • Practice Book 6A, pp 141 to 144 • Teacher's Guide 6A, pp 221 to 223

3	Review 2		• Practice Book 6A, pp 145 to 164 • Teacher's Guide 6A, pp 236 to 246
3	Revision 1		• Practice Book 6A, pp 165 to 186 • Teacher's Guide 6A, pp 246 to 257

Summative assessment opportunity

Assessment Book 6, Test 6, pp 51 to 56
For extension, Assessment Book 6, Challenging Problems 2, pp 57 to 58
Assessment Book 6, Check-up 2, pp 59 to 74

Unit 7: Speed

Week	Learning Objectives	Thinking Skills	Resources
1	**(1) Distance and speed** Pupils will be able to: • understand the concept of speed as the distance travelled per unit of time • use the unitary method or a formula to calculate speed, distance or time • read, interpret and write speed in different units • use different units of speed to solve speed problems *Let's Explore!* Pupils will be able to carry out a practical example to illustrate the concept and relationship between distance and speed.	• Identifying relationships	• Pupil Textbook 6B, pp 2 to 11 • Practice Book 6B, pp 1 to 6 • Teacher's Guide 6B, pp 4 to 13
1–2	**(2) Average speed** Pupils will be able to: • understand the concept of average speed as the total distance travelled divided by the total time taken • find average speed given the total distance travelled and the total time taken • find average speed given different intervals of time and distance, different speeds and distance, or different intervals of time and speed	• Comparing • Identifying relationships	• Pupil Textbook 6B, pp 12 to 18 • Practice Book 6B, pp 7 to 10 • Teacher's Guide 6B, pp 14 to 20
	Maths Journal Pupils will be able to spot common mistakes related to the calculation of average speed and explain how to correct them.	• Identifying relationships	• Pupil Textbook 6B, p 19 • Teacher's Guide 6B, p 21
2	**(3) Word problems** Pupils will be able to solve higher-order word problems involving a combination of concepts such as average, speed and rate.	• Identifying relationships	• Pupil Textbook 6B, pp 20 to 26 • Practice Book 6B, pp 11 to 15 • Teacher's Guide 6B, pp 22 to 28

| 2 | *Let's Wrap It Up!*

Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes.

Put On Your Thinking Caps!

Pupils will be able to use the partial information given to work backwards and obtain the answer. | • Sequencing

Heuristics for problem solving:
• Draw a diagram
• Work backwards | • Pupil Textbook 6B, pp 26 to 28
• Practice Book 6B, pp 16 to 18
• Teacher's Guide 6B, pp 28 to 30 |

Summative assessment opportunity

Assessment Book 6, Test 7, pp 75 to 80

Unit 8: Circles

Week	Learning Objectives	Thinking Skills	Resources

2–3	**(1) Radius, diameter and circumference**
	Pupils will be able to:
	• identify the radius, diameter and circumference of a circle
	• state the relationship between:
	  (i) the radius and the diameter
	  (ii) the circumference and the diameter
	• recognise a semicircle as half of a circle and a quadrant as a quarter of a circle
	• find the circumference of a circle given its radius or diameter
		• Identifying relationships
		• Sequencing
			• Pupil Textbook 6B, pp 29 to 40
			• Practice Book 6B, pp 19 to 32
			• Teacher's Guide 6B, pp 43 to 54

3	**(2) Area of a circle** Pupils will be able to: • state the relationship between the area of a circle and its radius • find the area of a circle given its radius or diameter • calculate the areas of shapes made up of circles, semicircles and quadrants	• Comparing	• Pupil Textbook 6B, pp 41 to 48 • Practice Book 6B, pp 33 to 44 • Teacher's Guide 6B, pp 55 to 66
3	*Maths Journal* Pupils will be able to use estimation, by rounding the value of π to 3, to explain why the answers given are not reasonable.	• Identifying relationships	• Pupil Textbook 6B, p 49 • Teacher's Guide 6B, p 63
3	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to: • apply the concepts related to circles to a practical situation • use visualisation to simplify the problem before solving it	• Identifying relationships • Spatial visualisation Heuristics for problem solving: • Solve part of the problem • Simplify the problem	• Pupil Textbook 6B, pp 50 to 52 • Practice Book 6B, pp 45 to 46 • Teacher's Guide 6B, pp 64 to 66
Summative assessment opportunity			
Assessment Book 6, Test 8, pp 81 to 86			

Unit 9: Pie Charts

Week	Learning Objectives	Thinking Skills	Resources
4	**(1) Understanding pie charts** Pupils will be able to: • recognise a pie chart as another type of graph • read and interpret pie charts *Maths Journal* Pupils will be able to express their understanding of reading and interpreting a pie chart.	• Identifying relationships • Deduction	• Pupil Textbook 6B, pp 53 to 60 • Practice Book 6B, pp 47 to 64 • Teacher's Guide 6B, pp 83 to 90
4	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to interpret figurative and numerical information and apply concepts from other units, such as ratio and percentage.	• Identifying relationships	• Pupil Textbook 6B, pp 60 to 61 • Practice Book 6B, pp 65 to 66 • Teacher's Guide 6B, pp 90 to 91
4	Review 3		• Practice Book 6B, pp 67 to 84 • Teacher's Guide 6B, pp 102 to 111
Summative assessment opportunity			
Assessment Book 6, Test 9, pp 87 to 96 For extension, Assessment Book 6, Challenging Problems 3, pp 97 to 98			

Unit 10: Area and Perimeter

Week	Learning Objectives	Thinking Skills	Resources
4–5	**(1) Area and perimeter of composite shapes** Pupils will be able to find the area and perimeter of shapes related to squares, rectangles, triangles and circles.	• Spatial visualisation • Identifying relationships	• Pupil Textbook 6B, pp 62 to 71 • Practice Book 6B, pp 85 to 95 • Teacher's Guide 6B, pp 114 to 123
5	*Let's Explore!* Pupils will be able to see that the areas of three different composite shapes formed by a square and a rectangle are equal, but their perimeters are not. *Maths Journal* Pupils will be able to describe the steps needed to find the area of a composite shape.	• Spatial visualisation • Identifying relationships	• Pupil Textbook 6B, pp 68 and 71 • Practice Book 6B, pp 96 to 97 • Teacher's Guide 6B, pp 120 and 123
5	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to use their understanding of the properties of basic shapes to solve these problems.	• Spatial visualisation Heuristic for problem solving: • Draw a diagram	• Pupil Textbook 6B, pp 72 to 73 • Practice Book 6B, pp 98 to 102 • Teacher's Guide 6B, pp 124 to 125

Summative assessment opportunity

Assessment Book 6, Test 10, pp 99 to 106

Unit 11: Volume of Solids and Liquids

Week	Learning Objectives	Thinking Skills	Resources
5–6	**(1) Volume of solids** Pupils will be able to: • find one dimension of a cuboid given the volume and two other dimensions, or the volume and the area of one face • use the square root of a number to find the side of a square given its area • use the cube root of a number to find the edge of a cube given its volume	• Spatial visualisation • Identifying relationships • Deduction	• Pupil Textbook 6B, pp 74 to 85 • Practice Book 6B, pp 103 to 116 • Teacher's Guide 6B, pp 140 to 151
6	*Let's Explore!* Pupils will be able to state how an increase in the length of an edge of a cube is related to the increase in its volume. *Maths Journal* Pupils will be able to: • express their understanding of square roots and cube roots • explain why the volume of a cuboid is the product of its base area and height	• Identifying relationships	• Pupil Textbook 6B, pp 82 to 83 • Teacher's Guide 6B, pp 148 to 149
6	**(2) Volume of liquids** Pupils will be able to: • find the volume of liquid in a cubical or a cuboid tank with given dimensions • find the height of the water in a cuboid tank given the volume of water and the length and width of the tank • find the time taken to fill a cuboid tank with water given the volume and the rate of flow • find the side of the square base of a cuboid tank given the volume and height of water • find the edge of a cubical tank given the volume of water	• Spatial visualisation • Identifying relationships	• Pupil Textbook 6B, pp 86 to 95 • Practice Book 6B, pp 117 to 128 • Teacher's Guide 6B, pp 152 to 161
6	*Let's Wrap It Up!* Emphasise the key concepts, skills and processes that have been taught in the unit. Discuss the worked example with pupils to assess whether they have mastered these concepts, skills and processes. *Put On Your Thinking Caps!* Pupils will be able to draw 'Before' and 'After' models, and to use the relationship between the amount of water in the tank and the amount in the drum to solve the problem.	Identifying relationships Heuristics for problem solving: • Draw a diagram • Use before-after concept	• Pupil Textbook 6B, pp 96 to 98 • Practice Book 6B, pp 129 to 132 • Teacher's Guide 6B, pp 162 to 164

7	*Think It Through*		• Pupil Textbook 6B, pp 99 to 118 • Teacher's Guide 6B, pp 166 to 176
7	Review 4		• Practice Book 6B, pp 133 to 154 • Teacher's Guide 6B, pp 192 to 203
7	Revision 2		• Practice Book 6B, pp 155 to 178 • Teacher's Guide 6B, pp 203 to 215

Summative assessment opportunity
Assessment Book 6, Test 11, pp 107 to 114