Acland Burghley Maths	Indices, Standard Form & Transformations	KS3 Year 9 Unit 1+2

Prior Knowledge

- Know the meaning of powers and roots
- Round to a given number of decimal places or significant figures
- Know the meaning of the symbols <, >, ≤, ≥
- Work with coordinates in all four quadrants
- Carry out a reflection in a given vertical or horizontal mirror line

Recall Assessment Topics – Ratio & Proportion

Key Learning Points

1	I can approximate powers or roots as a decimal	
2	I can approximate powers or roots using inequality notation	
3	I can evaluate expressions using the three index laws	
4	I can apply the index laws to simplify expressions	
5	I know that any number raised to the power of zero is equal to 1	
6	I can solve indices problems where there are two different bases	
7	I can use the laws of indices to interpret and evaluate a negative index value	
8	I can use the laws of indices to interpret and evaluate fractional indices of $^1/_2$, $^1/_3$ and $^1/_4$	
9	I can multiply and divide numbers by positive powers of ten eg. 5.43×10^3	
10	I know why standard form is useful to write large numbers	
11	I can write small and large numbers in standard form	
12	I can convert large and small numbers in standard form into ordinary numbers	
13	I can multiply and divide numbers in standard form using the three index laws	
14	I can add and subtract large and small quantities expressed in standard form	
15	I can calculate powers and roots of numbers expressed in standard form	
16	Identify and draw the lines y = x and y = -x	
17	Construct and describe reflections in horizontal, vertical and diagonal mirror lines (45°)	
18	Describe a translation as a 2D vector	
19	Construct and describe rotations using a given angle, direction and centre of rotation	
20	Solve problems involving rotations, reflections and translations	
21	Use the centre and scale factor to carry out an enlargement with a positive integer scale factor	
22	Use the centre and scale factor to carry out an enlargement with a negative or fractional scale factor	
23	Find the centre of enlargement	
24	Find the scale factor of an enlargement	

Acland Burghley Maths	Triangles	KS3 Year 9 Unit 3

Prior Knowledge

- Understand and identify lines of symmetry of 2D shapes
- Solve linear equations, including those with the unknown in the denominator of a fraction

Recall Assessment Topics - Data Handling and Adding, Subtracting, Multiplying & Dividing

Key Learning Points

1	Identify line and rotational symmetry in polygons	
2	Recognise that for congruent shapes both side lengths and angle sizes are preserved	
3	Understand and use the criteria by which triangles are congruent	
4	Recognise that similar shapes have sides in proportion to each other but angle sizes are preserved	
5	Calculate missing lengths and angles in similar shapes	
6	Know and use Pythagoras' theorem	
7	Calculate the hypotenuse of a right-angled triangle using Pythagoras' theorem in two dimensional figures	
8	Calculate one of the shorter sides in a right-angled triangle using Pythagoras' theorem in two dimensional figures	
9	Solve problems using Pythagoras' theorem in two dimensional figures	
10	Know the meaning of a Pythagorean triple	
11	Calculate missing lengths from a 3D shape using Pythagoras	
12	Understand that the trigonometric functions are derived from measurements within a unit circle	
13	Recognise the right-angled triangle within a unit circle and use proportion to scale to similar triangles	
14	Know how the sine, cosine and tangent ratios are derived from the sides of a right-angled triangle	
15	Choose appropriate trigonometric relationships to use to solve problems in right-angled triangles	
16	Use trigonometric ratios to find a missing side in a right-angled triangle	
17	Use trigonometric ratios to find a missing angle in a right-angled triangle	

Acland Burghley Maths	Probability	KS3 Year 9 Unit 4

Prior Knowledge

- Understand the equivalence between fractions, decimals and percentages
- Compare fractions, decimals or percentages
- Simplify a fraction by cancelling common factors

Recall Assessment Topics – Sequences, Expanding Single Brackets and Simplifying Expressions

Key Learning Points

1	Know and use the vocabulary of probability	
2	Understand the use of the 0-1 scale to measure probability	
3	Work out theoretical probabilities for events with equally likely outcomes	
4	Know that the sum of probabilities for all outcomes is 1	
5	Apply the fact that the sum of probabilities for all outcomes is 1	
6	List all elements in a combination of sets using a Venn diagram	
7	List outcomes of an event systematically	
8	Use a table to list all outcomes of an event	
9	Use frequency trees to record outcomes of probability experiments	
10	Calculate probabilities using a probability table	
11	Use theoretical probability to calculate expected outcomes	
12	Use experimental probability to calculate expected outcomes	
13	List outcomes of combined events using a tree diagram	
14	Know and use the multiplication law of probability	
15	Know and use the addition law of probability	
16	Calculate probabilities using a Venn diagram	
17	Calculate probabilities using a 2-way table	
18	Use a tree diagram to solve simple problems involving independent combined events	
19	Use a tree diagram to solve complex problems involving independent combined events	
20	Use a tree diagram to solve simple problems involving dependent combined events	
21	Use a tree diagram to solve complex problems involving dependent combined events	
22	Understand that relative frequency tends towards theoretical probability as sample size increases	

Acland Burghley Maths	Rearranging & Quadratics	KS3 Year 9 Unit 5

Prior Knowledge

- Know basic algebraic notation (the rules of algebra)
- Know how to multiply a single term over a bracket
- Know that $x \times x = x^2$
- Calculate with negative numbers
- Know the grid method for multiplying two two-digit numbers

Key Learning Points

1	Understand that an additive relationship between variables can be written in a number of different ways	
2	Understand that a multiplicative relationship between variables can be written in a number of different ways	
3	Change the subject of a formula when one step is required	
4	Change the subject of a formula when two steps are required	
5	Change the subject of a formula when more than 2 steps are required	
6	Change the subject of a formula when the subject appears twice	
7	Understand the meaning of an identity	
8	Multiply two linear expressions of the form $(x + a)(x + b)$	
9	Multiply two linear expressions of the form $(ax + b)(cx + d)$	
10	Expand the expression $(x + a)^2$	
11	Factorise a quadratic expression of the form $x^2 + bx$	
12	Factorise a quadratic expression of the form $x^2 + bx + c$	
13	Work out why two algebraic expressions are equivalent	
14	Create a mathematical argument to show that 2 algebraic expressions are equivalent	
15	Plot graphs of quadratic functions of the form $y = x^2 \pm c$	
16	Sketch a simple quadratic graph	
17	Plot graphs of quadratic functions	
18	Plot graphs of cubic functions	
19	Plot graphs of reciprocal functions	
20	Read and interpret points from a graph to solve problems	
21	Model real-life situations graphically	
22	Solve a quadratic equation of the form $x^2 + bx + c = 0$ by factorising	

Acland Burghley Maths	Constructions & Loci	KS3 Year 9 Unit 6

Prior Knowledge

- Use a ruler to measure and draw lengths to the nearest millimetre
- Use a protractor to measure and draw angles to the nearest degree
- Use compasses to draw circles

Key Learning Points

1	Use ruler and protractor to construct triangles, and other shapes, from written descriptions	
2	Use ruler and compasses to construct triangles when all three sides known	
3	Use ruler and compasses to construct the perpendicular bisector of a line segment	
4	Use ruler and compasses to bisect an angle	
5	Use a ruler and compasses to construct a perpendicular to a line from a point and at a point	
6	Use intersecting circles to construct triangles and rhombuses from given lengths	
7	Be aware that the diagonals of a rhombus bisect one another at right angles	
8	Be aware that the diagonals of a rhombus bisect the angles	
9	Use the properties of a rhombus to construct a perpendicular bisector of a line segment	
10	Use the properties of a rhombus to construct a perpendicular to a given line through a given point	
11	Use the properties of a rhombus to construct an angle bisector	
12	Know how to construct the locus of points a fixed distance from a point and from a line	
13	Solve simple problems involving loci	
14	Combine techniques to solve more complex loci problems	
15	Construct a shape from its plans and elevations	
16	Construct the plan and elevations of a given shape	