KS3 Geometry and Measures Progression Grid

By the end of KS3, pupils will be able to:

- Identify 2D and 3D shapes.
- Solve problems using the perimeter and area of squares, rectangles, parallelograms and triangles.
- Find the perimeter and area of compound shapes.
- Calculate and solve problems using the area of trapezia.
- Find the circumference and area of a circle and parts of a circle.
- Calculate the surface area and volume of cubes, cuboids, prisms and cylinders.
- Sketch and recognise nets of cuboids and other 3D shapes.
- Recognise the plans and elevations of 3D shapes.
- Use rulers, protractors and other measuring equipment to reconstruct mathematical diagrams.
- Measure and draw angles.
- Identify and use the sum of angles on a straight line and around a point, and the equality of vertically opposite angles.
- Identify and calculate with co-interior, alternate and corresponding angles.
- Use geometric reasoning to solve problems with angles.
- Solve angle problems with angles in parallel lines and polygons.
- Calculate and use the sum of the interior angles in any polygon.
- Understand and use the exterior angles of any polygon.
- Reflect shapes in horizontal, vertical and diagonal lines.
- Rotate a shape about a point.
- Translate points and shapes by a given vector.
- Enlarge a shape by a positive integer or fractional scale factor.
- Test conjectures about shapes.
- Use Pythagoras' theorem to calculate missing sides in a right-angled triangle.

	Geometry and Measures - Perimeter, Area and Volume: Acquire and Apply	**Geometry and Measures - Construct and Transform Geometric Figures: Acquire and Apply**	**Geometry and Measures - Shape Properties: Acquire and Apply**	**Geometry and Measures - Angles: Acquire and Apply**	**Geometry and Measures - Pythagoras and Trigonometry: Acquire and Apply**	**Geometry and Measures - Geometric Proof: Acquire and Apply**
Year 9 Greater Depth	Can explore volumes of cones, pyramids, spheres and compound shapes. Can explore the surface area of prisms.	Can find a locus of distance from a point. Can find a locus of distance from a straight line or shape. Can find a locus equidistant from two points. Can find a locus of distance from two lines. Can find the result of a series of transformations. Can enlarge a shape by a negative scale factor.	Can work out missing sides and angles in a pair of given similar shapes. Can solve problems with similar triangles.	Can solve angle problems with algebra.	Can use Pythagoras' theorem in 3D shapes. Can explore ratios in right-angled triangles.	Can link constructions and geometrical reasoning. Can explore proofs of Pythagoras' theorem.
Year 9 Expected Year 8 Greater Depth	Can calculate the surface area of cubes and cuboids. Can calculate the surface area of triangular prisms. Can calculate the surface area of cylinders. Can calculate the volume of cubes and cuboids. Can calculate the volume of prisms and cylinders.	Can construct and interpret scale drawings. Can construct triangles from given information. Can construct an angle bisector. Can construct a perpendicular bisector of a line segment. Can construct a perpendicular to a point. Can construct a perpendicular from a point. Can identify the order of rotational symmetry of a shape. Can compare and contrast rotational symmetry with line symmetry. Can rotate a shape about a point. Can translate points and shapes by a given vector. Can describe translations. Can compare rotation and reflection of shapes. Can enlarge a shape by a positive integer or fractional scale factor.	Can understand and use the properties of diagonals and quadrilaterals. Can test conjectures about shapes. Can identify 2D and 3D shapes. Can recognise prisms. Can sketch and recognise nets of cuboids and other 3D shapes. Can recognise the plans and elevations of 3D shapes. Can recognise enlargement and similarity.	Can investigate and use angles formed by diagonals of quadrilaterals. Can solve angle problems using chains of reasoning. Can test conjectures with angles.	Can identify the hypotenuse of right-angled triangles. Can determine whether a triangle is right-angled. Can calculate missing sides in a right-angled triangle. Can use Pythagoras' theorem on coordinate axes.	Can find and prove simple geometric facts. Can explore and identify congruent figures and triangles. Can develop chains of reasoning to solve angle problems. Can prove a triangle is or isn't right-angled.
Year 8 Expected Year 7 Greater Depth	Can calculate and solve problems using the area of trapezia.	Can work with scale factors. Can recognise line symmetry.	Can investigate and understand the properties of special quadrilaterals.	Can investigate and use parallel line angle rules.		Can use known facts to obtain simple angle proofs.

	Can calculate the perimeter and area of compound shapes. Can find the circumference of a circle. Can investigate and calculate the area of a circle and parts of a circle without a calculator. Can calculate the area of a circle and parts of a circle with a calculator.	Can reflect shapes in a horizontal, vertical or diagonal line.		Can identify and calculate with co-interior, alternate and corresponding angles. Can solve complex problems with parallel line angles. Can identify and calculate with sides and angles in special quadrilaterals. Can understand and use the exterior angles of any polygon. Can calculate and use the sum of the interior angles in any polygon. Can calculate missing interior angles in regular polygons.		
Year 7 Expected	Can solve perimeter problems. Can solve problems using the area of rectangles and parallelograms. Can solve problems using the area of triangles.	Can understand and use geometric notation. Can draw and measure line segments including geometric figures. Can identify perpendicular and parallel lines. Can construct triangles using SSS, SAS and ASA rules. Can construct more complex polygons.	Can recognise the properties of different types of triangles and quadrilaterals. Can identify polygons up to a decagon.	Can classify angles. Can measure and draw angles. Can understand and use the sum of angles at a point. Can understand and use the sum of angles on a straight line. Can understand and use the equality of vertically opposite angles. Can apply the sum of angles in triangles and quadrilaterals. Can solve angle problems using properties of triangles and quadrilaterals. Can solve complex angle problems.		