My mathematical journey

What do I need to remember from before?

Lines and angles (KS2)

Measuring (KS2)

What will I learn about in this unit?

Labelling lines and angles

Drawing and measuring lines and angles

Using compasses and a protractor

Constructions and loci

Where does this lead?

Polygons and angles (GM2)

Congruence and similarity (GM4)

Advanced drawing, measuring and constructing (GM7)

Key words and symbols: what I need to say and write accurately

Word	Explanation
point	A point has no length or width (it exists in no dimensions, or 0D)
line	A line has infinite length and no width (it exists in one dimension, or 1D). We use arrows to show its infinity in both directions.
ray	A ray is a section of a line with a starting point that continues infinitely in one direction. We use an arrow to show its infinity in one direction.
line segment	A line segment is a section of a line with a starting point and an end point.
construct	We construct when we only uses our compasses and straight edge (like a ruler).
bisector	'Bisect' means 'cut in half'. A bisector is a line that cuts another in half.
perpendicular	Perpendicular lines meet at a right angle.
equidistant	Equidistant means an equal distance from two points or lines.
locus (pl. loci)	The path of all points that fit a condition.

Angle types:

Acute	Right	Obtuse	Straight	Reflex	Full turn
$0° < \theta < 90°$	$90° = \theta$	$90° < \theta < 180°$	$180° = \theta$	$180° < \theta < 360°$	$360° = \theta$

Greek letters:

α (alpha) β (beta) γ (gamma) θ (theta)

Fingertip facts: what I need to learn by heart

You will need to learn the constructions for:

1. a perpendicular bisector
2. an angle bisector
3. a perpendicular from a point on a line
4. a perpendicular from a point near a line

My mathematical journey

What do I need to remember from before?

Measuring and drawing angles (Key Stage 2, GM1)

Basic angle facts (NP2)

What will I learn about in this unit?

Angle facts about lines and polygons

Types of quadrilaterals and other polygons

Bearings

Where does this lead?

Congruence and similarity (GM4)

Trigonometry (GM5, GM9)

Solving geometric problems, including circle theorems (GM6, GM7, GM11)

Key words and symbols: what I need to say and write accurately

A vertex (plural, vertices) is made when two lines meet. Sometimes called a corner.

Lines: vertical, horizontal, parallel, perpendicular, oblique

Angles: acute, obtuse, reflex, alternate, corresponding, interior

Triangles: scalene, isosceles, equilateral

Quadrilaterals: square, rectangle, parallelogram, rhombus, (isosceles) trapezium, kite, arrowhead

Polygons: triangle, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, decagon

Symmetry can be reflective or rotational

Fingertip facts: what I need to learn by heart

Polygon	Number of sides	Interior angle sum
Triangle	3	180°
Quadrilateral	4	360°
Pentagon	5	540°
Hexagon	6	720°
Heptagon	7	900°
Octagon	8	1080°
Nonagon	9	1260°
Decagon	10	1440°

Notice that the interior angle sum increases by 180° each time.

Angle facts

- Adjacent angles on a straight line sum to 180°.
- Angles around a point sum to 360°.
- Vertically opposite angles are equal.
- Angles in parallel lines on adjacent or corresponding sides of the transversal are equal.
- Three-figure bearings are measured clockwise starting from north.

My mathematical journey

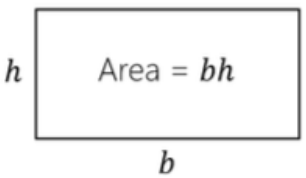
What do I need to remember from before?	What will I learn about in this unit?	Where does this lead?
Area of a rectangle (KS2)	Units of length and of area	Area and circumference of a circle (GM6)
Area of rectilinear shapes (NP3)	Area of a triangle	Surface area and volume (GM8)
Perimeter (KS2 & NP2)	Area of quadrilaterals	Advanced area (GM9)
Types of polygons (GM2)	Area of a circle	Solving geometric problems (GM11)

Key words and symbols: what I need to say and write accurately

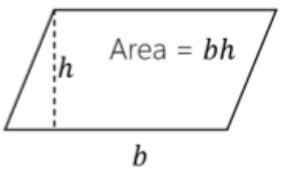
Word	Explanation
Area	A measure of the two-dimensional space inside a shape.
Perimeter	A measure of the one-dimensional boundary that creates a shape.
Perpendicular height	The height of a shape which is at a right angle to its base.
Radius	The length from the centre of a circle to its edge.
Diameter	The length straight across the centre of a circle from edge to edge. Double the radius.

Fingertip facts: what I need to learn by heart

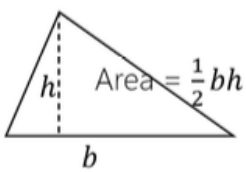
Area of a rectangle = base × perpendicular height



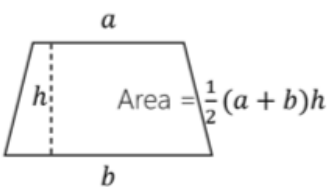
Area of a parallelogram = base × perpendicular height



Area of a triangle = $\frac{1}{2}$ × base × perpendicular height



Area of a trapezium = $\frac{1}{2}$ × sum of the parallel sides × perpendicular height



The area of other polygons can be found by splitting them into triangles.

Area of a circle = pi × square radius