

Scheme of Learning: Year 8 Summer Term

Topic Sequence: Developing Geometry

13	14	15
Angles in Parallel Lines and Polygons	Area of Trapezia and Circles	Line Symmetry and Reflection

Topic Overview:

Students following the Higher strand will have met the formulae for the area of a trapezium in Year 7; this knowledge is now extended to all students, along with the formula for the area of a circle. A key aspect of the unit is choosing and using the correct formula for the correct shape, reinforcing recognising the shapes, their properties and names, and looking explicitly at compound shapes.

Learning Sequence:

Calculate the area of triangles, rectangles and parallelograms

This small step revises and extends KS2 and KS3 work. Teachers might first check that students understand the links between the formulae for area of rectangle, triangle and parallelogram. A possible difficulty can be finding the perpendicular height when triangles are not in 'standard' orientations. Ensure students have exposure to these, and include questions that revisit unit conversions.

Calculate the area of a trapezium

Teachers might start by ensuring students can identify trapezia using different standard (for example, isosceles trapezium) and non-standard (for example, with two right angles) examples. Students can then explore the formula for the area of a trapezium by using congruent trapezia to form a parallelogram. They can then compare the formula with those for the area of other quadrilaterals.

Calculate the perimeter and area of compound shapes (1)

Students sometimes simply multiply all of the dimensions marked in an attempt to find the area. Model splitting up different compound shapes with dimensions labelled. Ensure students are aware that there are different methods of splitting compound shapes and that they should aim to be efficient.

Investigate the area of a circle

Students explore the area of a circle by cutting up circles into sectors and placing them in an arrangement to resemble a parallelogram or (with more sectors) a rectangle. They might need teacher guidance to notice that as the number of sectors increases, the shape that they can make becomes more rectangular. They then use a known area formula to deduce the area of a circle.

Calculate the area of a circle and parts of a circle without a calculator

This small step focuses on how to estimate the area of a circle using the approximations $\pi = 3$ and $\pi = \frac{22}{7}$. It then builds to calculating the exact area of a circle, leaving answers in terms of π . Starting with a recap on squaring and the order of operations can avoid later issues in calculations, so that students can concentrate on new learning.

Calculate the area of a circle and parts of a circle with a calculator

Before considering the area of a circle, students might need to practice entering squares of numbers and π into their calculators. Students need to confidently identify the diameter and radius of a circle and know which to substitute into the formula for area. They also may need a reminder of rounding to an appropriate number of decimal places or significant figures.

Calculate the perimeter and area of compound shapes (2)

In this small step, students are encouraged to identify standard shapes within compound shapes. When two semi-circles are involved, they might discuss whether they can use the formulae for a whole circle, rather than performing separate calculations for each. Students should identify the dimensions required in a formula, and then think about how to calculate these if they are not given.

Sequence of Learning:		Topic Resources:	
1	Calculate the area of triangles, rectangles and parallelograms	Knowledge Maps: Angles Circles 2D Shapes	Assessment:
2	Calculate the area of a trapezium		
3	Calculate the perimeter and area of compound shapes (1)	Knowledge:	End of Topic test
4	Investigate the area of a circle	Application of Knowledge:	Termly mixed topic assessment
5	Calculate the area of a circle and parts of a circle without a calculator	Supportive Reading:	
6	Calculate the area of a circle and parts of a circle with a calculator	Any supported reading listed here	Sparx Maths www.sparxmaths.co.uk
7	Calculate the perimeter and area of compound shapes (2)		Corbett Maths : www.corbettmaths.com
			AQA Revision Guide