Topic Sequence: Geometry

5	6	7
Angles and Bearings	Working with Circles	Vectors

Topic Overview: Angles and Bearings

This block introduces new content whilst making use of and extending prior learning. The formulae for arc length and sector area are built up from students' understanding of fractions. They are also introduced to the formulae for surface area and volume of spheres and cones, here higher students can enhance their knowledge and skills of working with are and volume ratio. Higher tier students are introduced to four of the circle theorms, the remaining theorems will be introduced in year 11.

Learning Sequence:

Recognise and label parts of a circle(R):
In this small step, students revisit vocabulary associated with circles

Calculate fractional parts of a circle:
This step reinforces basic fraction work and links to major and minor sectors of the circle

Calculate the length of an arc:
Building from the previous step and also revisiting the formula of the circumference of a circle, students realise that the length of an arc is the same fraction of the circumference as the fraction of a full turn given by the related angle

Calculate the area of a sector:
As with the previous step, students establish the proportion of a full turn taken up by the sector as identical to its proportion of the area of the circle

Circle theorems: Angles at the centre and circumference, Angles in a semicircle, Angles in the same segment, Angles in a cyclic quadrilateral: (H)
The first four circle theorems are investigated. The first circle theorem is the basis of many others. Students need to prove the circle theorems

Understand and use the volume of a cylinder and cone:
Students revisit the formula for the volume of a prism and explore similarities and differences between these two shapes

Understand and use the volume and surface area of a sphere:
Students also consider parts of shapes such as hemispheres in this section

Understand and use the surface area of a cylinder and cone:
Students deduce the surface area of a cylinder by considering its net, whilst the formula for the curved surface area will be given. Pythagoras' theorem may be needed to calculate the slant height or perpendicular height.

Solve area and volume problems involving similar shapes (H):

	Sequence of Learning:	Topic Resources:	
1	Recognise and label parts of a circle(R):	**Knowledge Map:**	Circle facts Circle Theorems 3D shapes 2D shapes Scale factor
2	Calculate fractional parts of a circle:		
3	Calculate the length of an arc:		
4	Calculate the area of a sector:	**Assessment:**	
5	Circle theorems: Angles at the centre and circumference, Angles in a semicircle, Angles in the same segment, Angles in a cyclic quadrilateral: (H)	**Knowledge:**	End of Topic Test
6	Understand and use the volume of a cylinder and cone:	**Application of Knowledge:**	Termly Summative Assessments
7	Understand and use the volume and surface area of a sphere:	**Supportive Reading:**	
		Any supported reading listed here	Sparx maths: www.sparxmaths.co.uk
8	Understand and use the surface area of a cylinder and cone:		Corbett Maths: www.corbettmaths.com
9	Solve area and volume problems involving similar shapes (H):		AQA Revision guide