

Scheme of Learning: Year 9 Autumn Term

Topic Sequence: Constructing in 2 and 3 Dimensions

4	5
Three-dimensional Shapes	Constructions and Congruency

Topic Overview: Constructions and Congruency

This block builds upon constructions students learnt in year 7 and 8 to formally look at the idea of a locus and the standard constructions using a straight edge and a pair of compasses. Students will also explore the idea of congruency, before looking at the formal aspect of identifying congruent triangles.

Learning Sequence:

Draw and measure angles (R): Students will recap measuring angles as it is a vital skill in constructions, and this will help students develop better accuracy. Recapping the types of angles and estimation can help prevent students using the wrong scale on a protractor.

Construct and interpret scale drawings (R): Students will recap scale, linking it to ratio and enlargement. Students will need to determine whether to divide or multiply when performing calculations, and may need to convert units of length.

Locus of distance from a point: Students will learn about locus, looking at how locus are a set of points with a common property, such as all the points being equally distanced from a central point, such as the circumference of a circle. Students will also consider the locus of points that are the same distance from a vertex.

Locus of distance from a straight line: Students will now look at how to find the locus of points at the same distance from a straight line. Students may be familiar with the concept as sports stadiums are designed to have a set distance between the edges of the pitch and the stands. Practice using a pair of compasses is important for this step.

Locus equidistant from two points: This step builds upon a previous step, students will need to find the locus equidistant from two points, and will start to build up the knowledge that is explored in the next step.

Construct a perpendicular bisector: Building upon the previous step, students will see that the locus equidistant from two points forms a perpendicular bisector of the two points, and will explore the formal method of bisecting a line using a pair of compasses.

Construct a perpendicular from a point: Expanding upon the previous step, students will learn how to create a perpendicular line from a given point separate to a line segment, and will compare the similarities and differences between this step and the previous. This step can also be used to demonstrate facts about shape construction, and topics such as the area of a triangle can be revisited, particularly with triangles where the vertex is beyond the end of the base, looking at the concept of perpendicular height.

Construct a perpendicular to a point: Following the previous step, students will learn the formal method to create a perpendicular from a given point of a line segment.

Locus of distance from two lines: This step provides the introduction to the construction of angle bisectors, looking at finding points that are equally distant from the two line segments meet. This helps students see the similarities between perpendicular and angle bisectors, and can help reduce the chances of students mixing up which process to follow.

Construct an angle bisector: Students will now learn the formal method of constructing an angle bisector using a pair of compasses, practicing on different size angles in different orientations.

Construct triangles from given information (R): Students will recap constructing triangles given SSS, SAS and ASA, and this step can be linked to previous steps, exploring how angles can be bisected to form an angle half the size.

Identify congruent figures: Students will learn to recognise congruent figures, looking to find matching side lengths and angles to identify which shapes are congruent and which are not.

Explore congruent triangles: In this step, students will use the different triangle construction methods to help them learn how to identify and prove when triangles are congruent and when they are not. Students need to remember that a given angle and two sides is different from an included angle and two sides.

Identify congruent triangles: Students will now use the knowledge of the four different conditions to prove and recognise pairs of congruent triangles. Students will also look at cases of AAS where they need to identify the missing angle in the triangle to identify whether the triangles are congruent. More formal proof is covered in year 10.

Sequence of Learning:		Topic Resources:	
1	Draw and measure angles (R)	Knowledge Maps:	Constructions
2	Construct and interpret scale drawings (R)		
3	Locus of distance from a point		
4	Locus of distance from a straight line		
5	Locus equidistant from two points	Assessment	
6	Construct a perpendicular bisector	Knowledge:	End of Topic test
7	Construct a perpendicular from a point		
8	Construct a perpendicular to a point	Application of Knowledge:	Termly mixed topic assessment
9	Locus of distance from two lines		
10	Construct an angle bisector	Supportive Reading:	
11	Construct triangles from given information (R)		Sparx Maths www.sparxmaths.co.uk
12	Identify congruent figures		Corbett Maths : www.corbettmaths.com
13	Explore congruent triangles		
14	Identify congruent triangles		AQA Revision Guide