Circles

Chapter Overview

1. Perpendicular bisector recap

2. Equations of circles

3. Intersections of lines and circles

4. Chords, tangents and perpendicular bisectors

5. Circumscribing Triangles

| 3.2 | Understand and use the coordinate geometry of the circle including using the equation of a circle in the form $(x - a)^2 + (y - b)^2 = r^2$ | Students should be able to find the radius and the coordinates of the centre of the circle given the equation of the circle, and vice versa. |
		Students should also be familiar with the equation $x^2 + y^2 + 2fx + 2gy + c = 0$
	Completing the square to find the centre and radius of a circle; use of the following properties:	
	• the angle in a semicircle is a right angle • the perpendicular from the centre to a chord bisects the chord	Students should be able to find the equation of a circumcircle of a triangle with given vertices using these properties.
	• the radius of a circle at a given point on its circumference is perpendicular to the tangent to the circle at that point.	Students should be able to find the equation of a tangent at a specified point, using the perpendicular property of tangent and radius.

Perpendicular bisectors and mid-points

perpendicular
bisector

chord
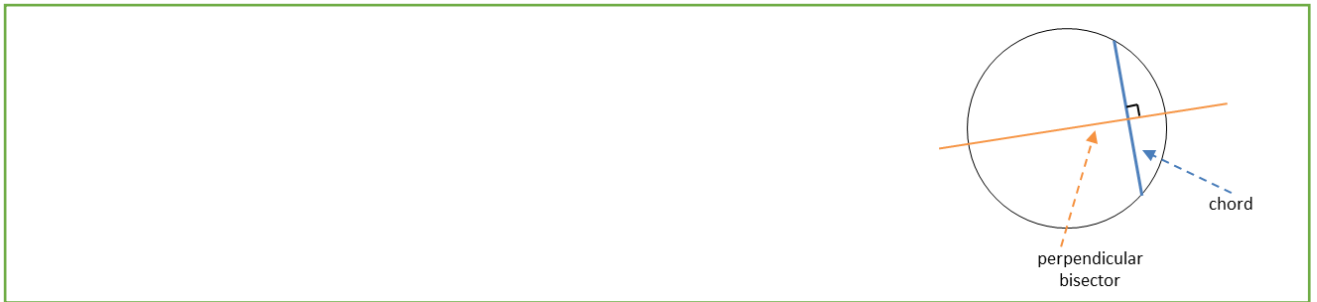
Example:

Find the equation of the perpendicular bisector of A (2,5) and B (6,7).

Test Your Understanding:

1. Find the perpendicular bisector of the line AB where A and B have the coordinates:

   a) $A(4,7)$, $B(10,17)$

2. A line segment AB is the diameter of a circle with centre $(5, -4)$. If A has coordinates $(1, -2)$, what are the coordinates of B?