

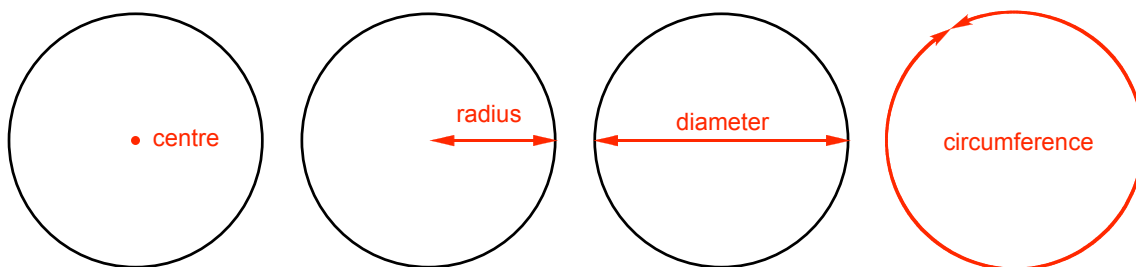
# Circles summary

## Definition

A circle is a set of points that are all a certain distance from a fixed point called the centre.

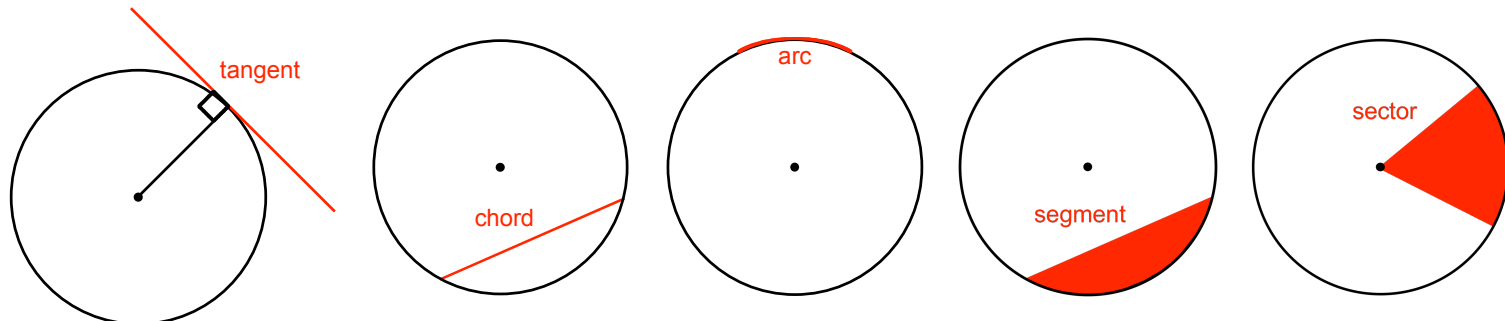
## Important parts of circles

Centre, radius, diameter and circumference are important characteristics.



## Other parts of circles

Tangent, sector, chord, segment and arc sometimes appear in exams. The tangent at any point on a circle is perpendicular to the radius at that point.

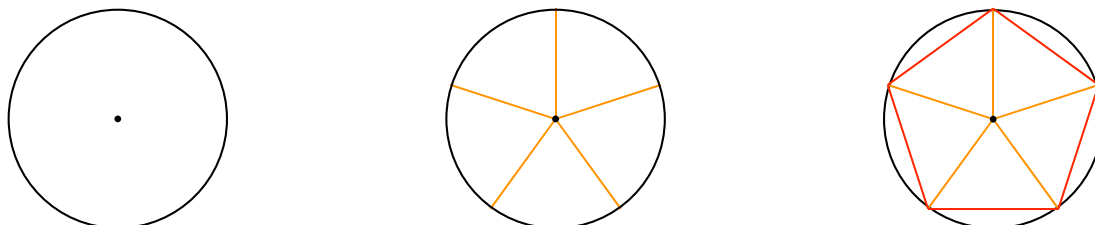


**Circumference of a circle:**  $c = \pi d$  and  $c = 2\pi r$

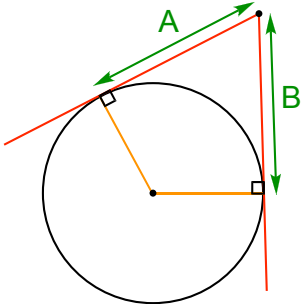
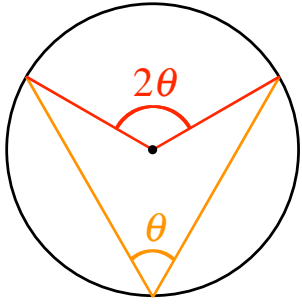
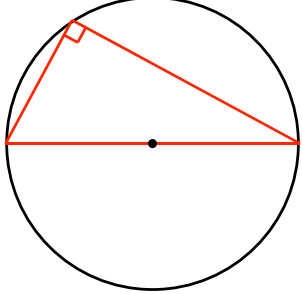
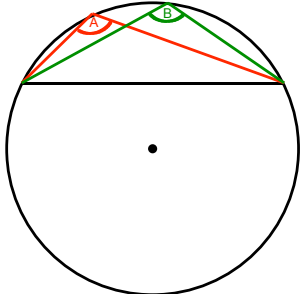
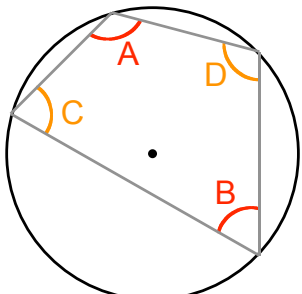
**Area of a circle:**  $A = \pi r^2$

## Inscribed regular polygons

To create a regular polygon with  $n$  sides, divide a circle into  $n$  equal sectors. Each sector will occupy  $(360/n)^\circ$ . Then join the points where the sector boundaries intersect the circumference.



## Circle theorems

	<p>Tangents from an external point are equal in length. In the diagram, <math>A = B</math>.</p>
	<p>The angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference.</p>
	<p>The angle subtended at the circumference by a semicircle is a right angle.</p>
	<p>Angles in the same segment are equal. In the diagram, angle <math>A = \text{angle } B</math>.</p>
	<p>Opposite angles of a cyclic quadrilateral add up to <math>180^\circ</math>. In the diagram, <math>A + B = 180^\circ</math> and <math>C + D = 180^\circ</math>.</p>