

Circles – Parts & Theorems (Maths for Primary & Secondary Students)

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1 Parts of Circle

Labels in diagram: tangent, arc, radius, sector, diameter, Centre, chord, secant, segment.

2 Measures of Circle

Area = πr^2

Circumference = $2\pi r$ (Circle's perimeter)

Area = πr^2

Circumference = $2\pi r$

3 Part of chooMantra Maths Initiative

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4 Definitions of Circle and its parts

A circle is a round 2D shape made from one continuous side. It is the set of all points in the plane that are the same distance away from a specific point, called the **centre**.

Radius is the distance from the centre of the circle to its outer rim.

Diameter of a circle is any straight line segment that passes through the centre of the circle and whose endpoints lie on the circle.

Diameter is 2 times **radius**. It cuts the circle exactly in half.

Chord is a line segment with 2 end points are on the circumference.

Diameter is the largest chord

Tangent is line that intersects a circle in exactly one point.

Secant is a line that intersects a circle in two points.

Arc is part of the circumference of a circle. If the arc is over half of the circumference then it is called a **major arc**. If it is less than half of the circumference it is called a **minor arc**.

A **sector** is the area enclosed by 2 radii (**radius**) and an **arc** (It looks like a slice of cake or pizza).

A **segment** is the area enclosed by a chord and an arc.

5 Circle Types

Concentric Circles

Tangential Circles

Congruent Circles

6 Circle Theorems

The **angle** (β) subtended by an **arc** at the **centre** is twice the **angle** (α) subtended at the **circumference**.

$\beta = 2\alpha$

The angles at the circumference subtended by the same arc are equal.

$\alpha_1 = \alpha_2$

The **opposite angles** in a **cyclic quadrilateral** (All vertices of the quadrilateral is on the circumference of the circle) **add up to 180°**.

$\alpha + \gamma = 180^\circ; \beta + \delta = 180^\circ$

The **perpendicular** from the **centre** of a circle to a **chord** **bisects the chord**.

$DT = TE$

The angle at the circumference in a **semicircle** is a right angle.

$\angle BAC = 90^\circ$

The angle between a **tangent** and the **radius** to tangential point is 90° .

$\angle OAT = 90^\circ$

The **lengths** of the two **tangents** (from the point where they touch the circle to the point where they cross) will be the **same**.

$AU = BU$

The angle between a **tangent** and a **chord** is equal to the angle in the **alternate segment**.

$\angle \theta = \angle \lambda; \angle \kappa = \angle \omega$

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Free to Enable

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12 Instructions to Enable and use Alexa Skill

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OR visit <http://bit.do/AlexaCountryCapitalQuiz> And click on "Enable Skill". You will need to be logged into Alexa account

Use Skill

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