

Properties of Angles in a Circle

A section of the circumference of a circle is an **arc**.
 The shorter arc AB is the **minor arc**.
 The longer arc AB is the **major arc**.

Major arc AB

Minor arc AB

What's an arc

The angle formed by joining the endpoints of an arc to the centre of the circle is a **central angle**;
 $\angle AOB$ is the central angle

The angle formed by joining the endpoints of an arc to a point on the circle is an **inscribed angle**;
 $\angle ACB$ is an inscribed angle

The inscribed and central angles in this circle are **subtended** by the minor arc AB

Subtended just means that two points in a "triangle" are joined by two points on an arc.

Inscribed and central angles

a)

b)

c)

Identify the inscribed and central angle

Central Angle and Inscribed Angle Property

In a circle, the measure of a central angle subtended by an arc is twice the measure of an inscribed angle subtended by the same arc.

$$\angle POQ = 2 \angle PRQ, \text{ or}$$

$$\angle PRQ = \frac{1}{2} \angle POQ$$

Central Angle and Inscribed Angle Property

Point O is the centre of the circle. Determine each value of x.

a)

Use the central angle and inscribed angle property

Inscribed Angles Property

In a circle, all inscribed angles subtended by the same arc are congruent.

$$\angle PTQ = \angle PSQ = \angle PRQ$$

Inscribed angles property

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Point O is the centre of the circle. Determine each value of x.

Use the inscribed angles property

Angles in a Semicircle Property
 All inscribed angles subtended by a semicircle are right angles.

Since $\angle AOB = 180^\circ$
 then $\angle AFB = \angle AGB = \angle AHB = 90^\circ$

Angles in a semicircle

Point O is the centre of the circle. Determine the values of x, y, and z

Use the angles in a semicircle property

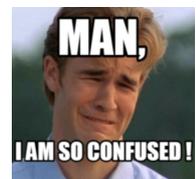
Using Inscribed and Central Angles
 Point O is the centre of a circle. Determine the values of x and y

Skill #1: Using inscribed and central angles

Applying the Property of an Angle Inscribed in a Semicircle
 Rectangle ABCD has its vertices on a circle with radius 8.5 cm. The width of the rectangle is 10.0 cm. What is its length? Give the answer to the nearest tenth.

Skill #2: Apply the property of an angle inscribed in a semicircle

Determining Angles in an Inscribed Triangle
 Triangle ABC is inscribed in a circle, centre O.
 $\angle AOB = 100^\circ$ and $\angle COB = 140^\circ$
 Determine the values of x, y and z



The BIG DADDY of circle geometry