

Test Results 7B:

Class Average

78.8%

High Score

98%

Test Results 8B:

Class Average

80.1%

High Score

98%

Lesson 6.1 Objective

I can apply properties of circles to solve problems

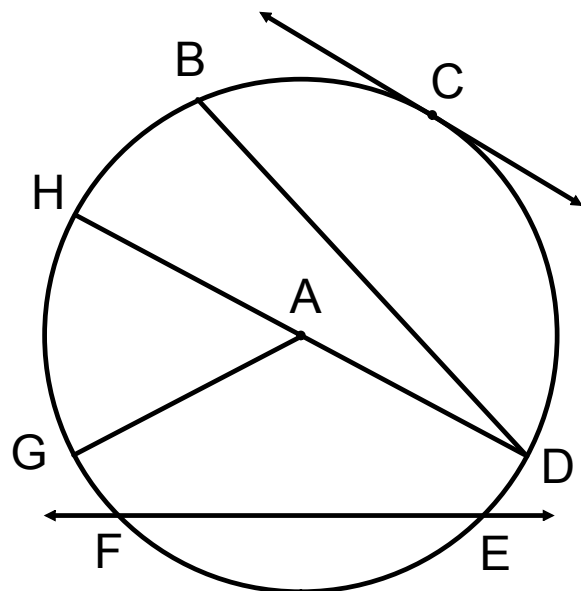
Circle Terminology

Radius: Line segment from center to edge

\overline{AG} \overline{AD} \overline{AH}

Diameter: Line segment from edge to edge, through the center

\overline{HE}



Circle Terminology

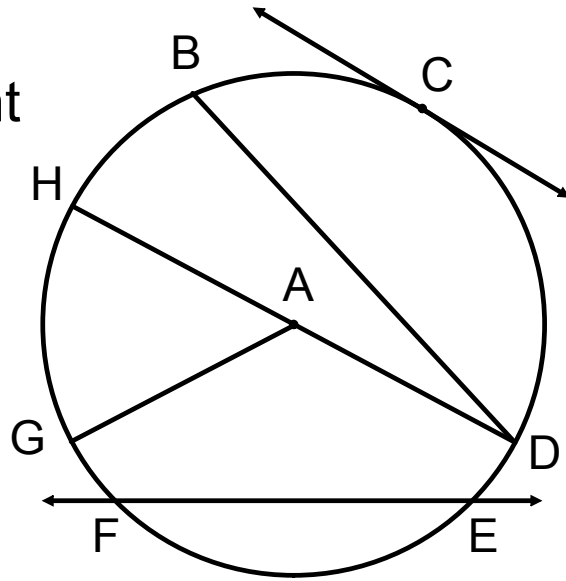
Chord

Chord: Line segment from edge to edge

BD

Secant: Line that intersects the circle at two points

FE



Circle Terminology

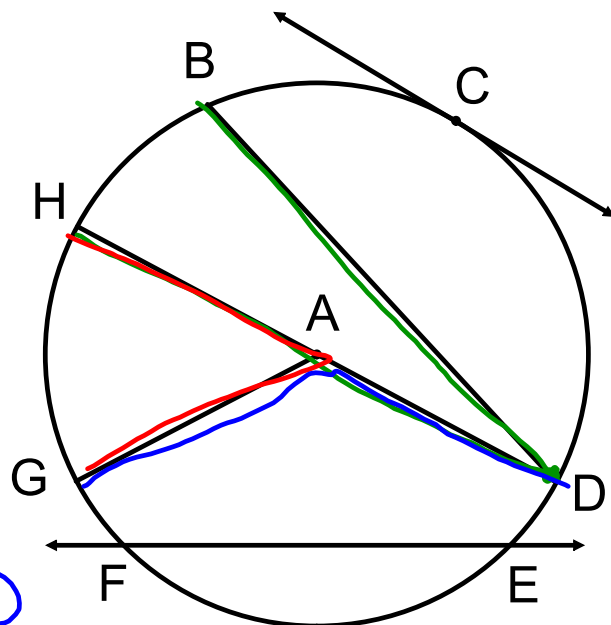
Inscribed Angle:

Angle formed by two chords, with vertex at edge

∠HDB

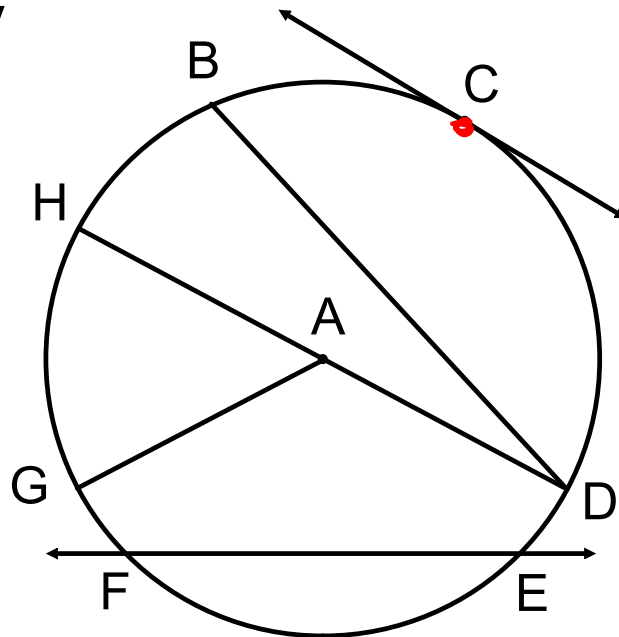
Central Angle: Angle formed by two radii, with vertex at center.

∠HAG ∠GAD



Circle Terminology

Tangent: Line that intersects the circle at exactly one point, called the **Point of Tangency**

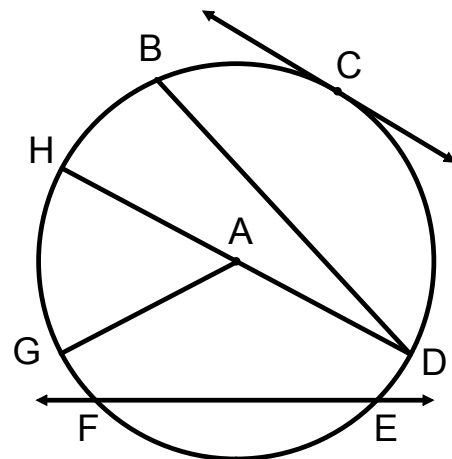


Circle Terminology

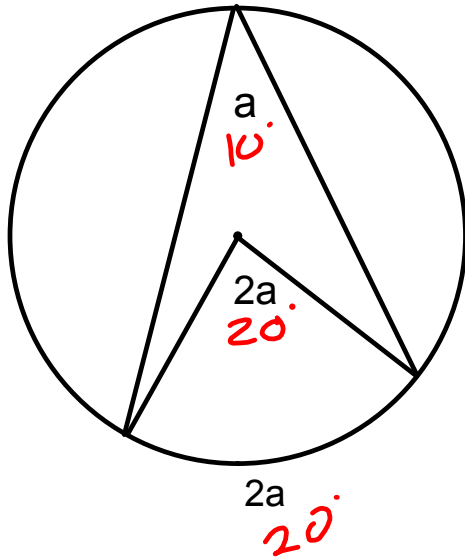
Arc: An arc is any portion of the curved edge of a circle.

The **measure** of an arc is in degrees, and any circle measures a total of 360° , no matter its size.

The **length** of an arc, or **arclength**, is a distance measured in a unit of length, like inches.



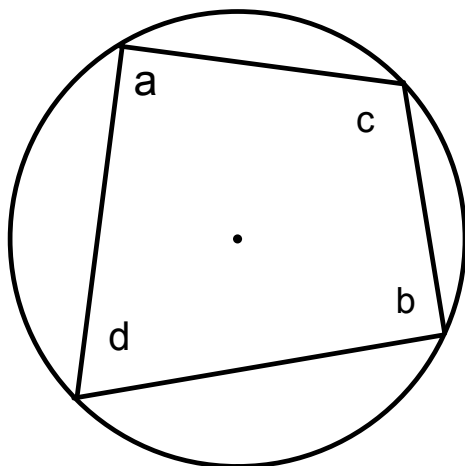
Circle Theorems



Star Trek Thm.: The arc intercepted by an inscribed angle is twice the measure of the angle.

Also, a central angle is equal to the arc it intercepts.

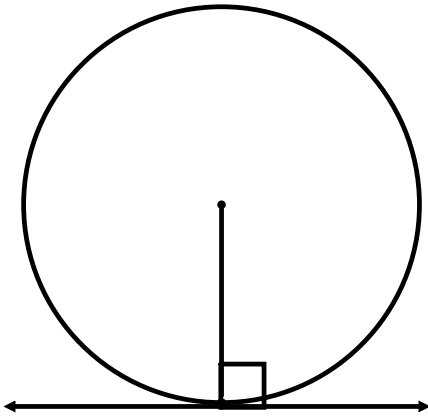
Circle Theorems



Cyclic Quadrilateral Thm.: If a quadrilateral is inscribed in a circle, then opposite angles are supplementary. That is:

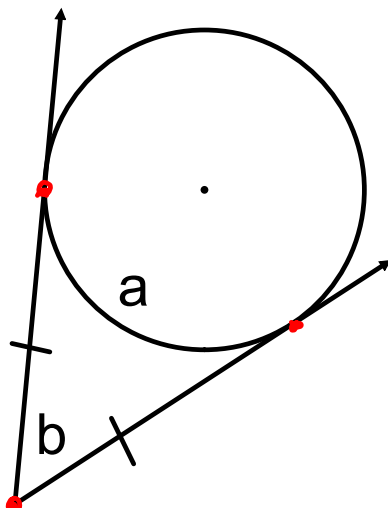
$$a+b=180^\circ \text{ and } c+d=180^\circ$$

Circle Theorems



Rad Tan Thm.: A radius is perpendicular to a tangent line at its point of tangency

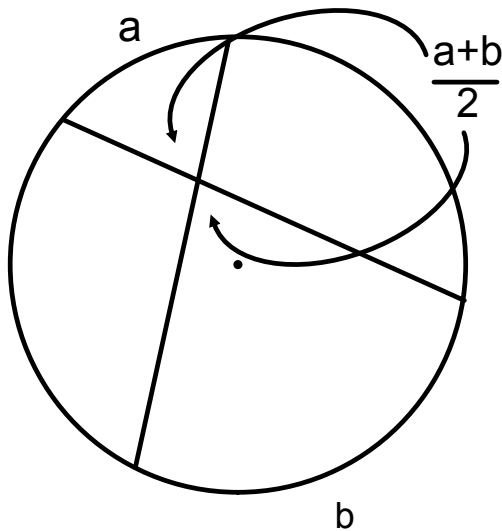
Circle Theorems



Two Tangents Thm. (Ice Cream Cone Thm): If two distinct tangents are drawn from an exterior point, the distances from the exterior point to the points of tangency are equal.

Also, In the figure shown,
 $a+b=180^\circ$

Circle Theorems

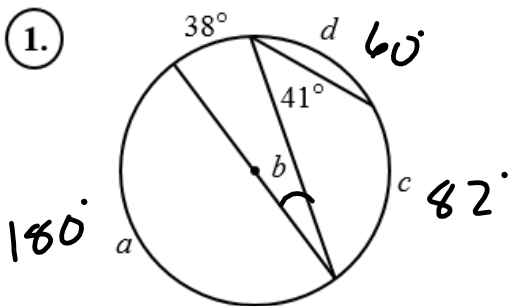


Intersecting Chords

Thm.: If two chords intersect in a circle, then the measure of the vertical angles formed is the average of the two arcs intercepted by those vertical angles

Find the value of each labeled part in degrees. Assume bold points are centers or points of tangency.

1.



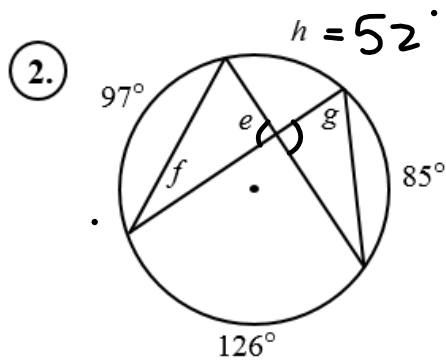
$$a = 180^\circ$$

$$b = \frac{38}{2} = 19^\circ$$

$$c = (41)2 = 82^\circ$$

$$d = 360 - (180 + 82 + 38) = 60^\circ$$

Find the value of each labeled part in degrees. Assume bold points are centers or points of tangency.



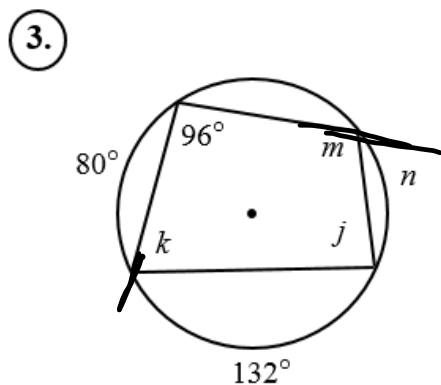
$$h = 52^\circ$$

$$f = 92/2 = 26^\circ$$

$$g = 126/2 = 63^\circ$$

$$e = \frac{97 + 85}{2} = 91^\circ$$

Find the value of each labeled part in degrees. Assume bold points are centers or points of tangency.



$$j = 180 - 96 = 84^\circ$$

$$m = \frac{132 + 80}{2} = \frac{212}{2}$$

$$= 106^\circ$$

$$k = 180 - 106 = 74^\circ$$

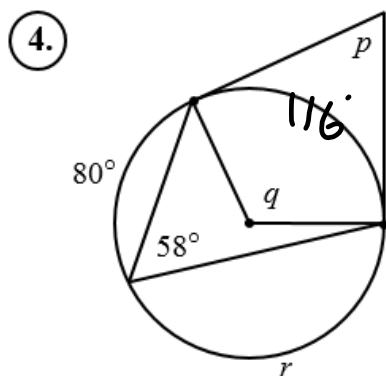
$$2(96) = 132 + n$$

$$192 = 132 + n$$

$$\begin{array}{r} -132 \quad -132 \\ \hline \end{array}$$

$$n = 60^\circ$$

Find the value of each labeled part in degrees. Assume bold points are centers or points of tangency.



$$q = 116^\circ$$

$$p = 180 - 116 = 64^\circ$$

$$r = 360 - (80 + 116) = 164^\circ$$