Definition: A circle is the set of all points in a plane that are at a fixed distance from a given point known as the center.

Definitions:

radius - a segment that has one endpoint at the center of a circle and the other endpoint on the circle. Its measure is ½ the measure of the diameter.

diameter - a chord that contains the center of a circle. Two (2) radii make up the diameter.

chord - a segment that has endpoints that lie on the circle. The diameter is considered a chord.

Formulas:

$r = \frac{d}{2}$ $d = 2r$ (r = radius, d = diameter)

The circumference of a circle (that is…the measure around the circle) is represented by the formula:

$C = 2\pi r$ or $C = d\pi$

When asked to find the EXACT circumference - leave the π in your answer (do not multiply it through).

Example 1:

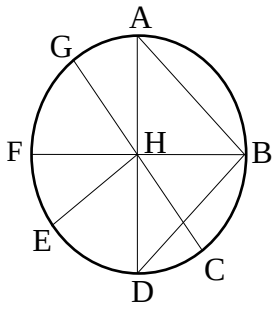
For the given circle name all the:

center:

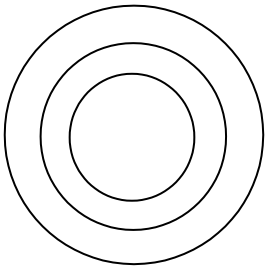
diameters:

chords :

radii:



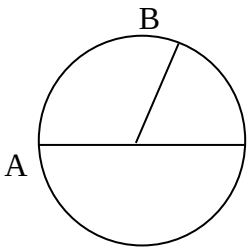
Definition: Concentric circles are coplanar circles that have a common center.



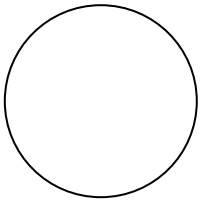
Semi-circle

Minor arc

Major arc



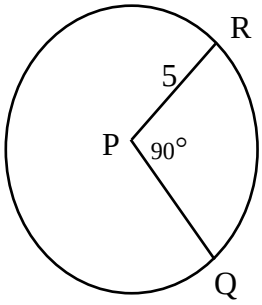
Definition: A central angle of a circle is an angle whose vertex is the center of the circle whose sides are radii.



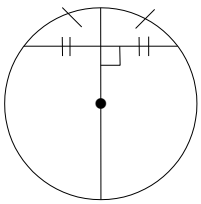
Example 2:

Given the circle below, find the ***length*** of PQ and arc RQ

.

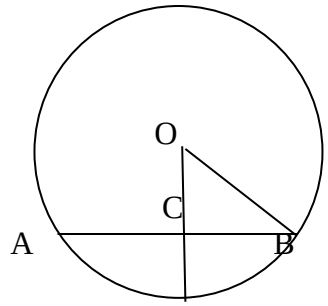


Theorem 6.1.1: A radius that is perpendicular to a chord bisects the chord.

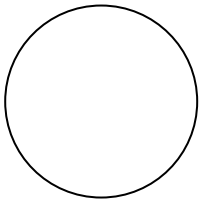


Example 3:

Given $\overline{\mathbf{OD}} \perp \overline{\mathbf{AB}}$ at point C. If AB = 8 and OB = 5, find OC.



Postulate 16: (Central Angle Postulate) In a circle, the degree measure of a central angle is equal to the degree measure of its intercepted arc.

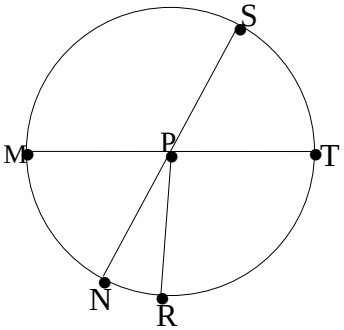


Note: the sum of the measures of consecutive arcs that form a circle is exactly $360°$.

Example 4:

If $\overline{SN}$ and $\overline{MT}$ are diameters with m∠SPT = 51 and m∠NPR = 29, determine whether each arc is a minor arc, a major arc, or a semicircle. Then find the **degree measure** of each arc.

1. m NR
2. m ST
3. m TRS
4. m MST



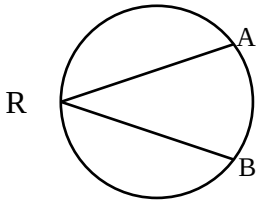
Definition: In a circle or congruent circles, congruent arcs with equal measures.

Postulate 17: (Arc –Addition postulate) If B lies between circle A and C on a circle, then measure of arc AB + the measure of arc BC = the measure of arc ABC.

Definition: An inscribed angle of a circle is an angle whose vertex is a point on the circle and whose sides are chords of the circle.

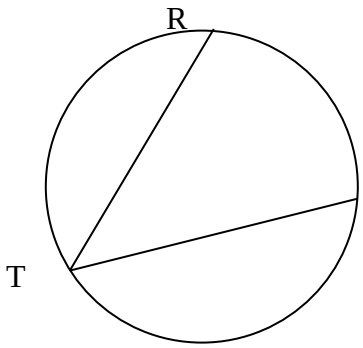
Theorem6.1.2: The measure of an inscribed angle of a circle is one half the measure of its intercepted arc.

Inscribed Angle - an angle whose vertex is on the circle (not in the center of the circle) and whose sides contain chords.



$m\overset{\frown}{AB} = 40$ So $m\angle ARB = 20°$

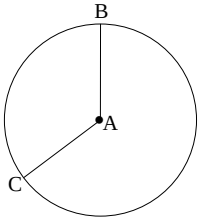
Example 5: Find the measure of arc RS if the $m\angle T = 30°$



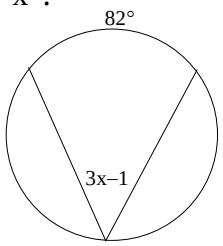
Example 6:
Given center A. Find the indicated information to the nearest tenth.

A. mBC = _____

a. $m\angle BAC = 110$

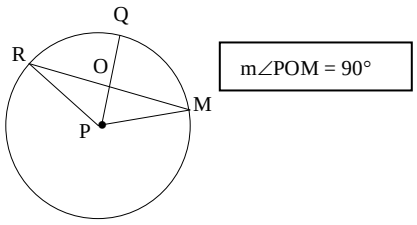


b. Find “x”.



b. x = _____

c. If PR=13 and RM=24, find PO.



Note: Theorems 6.1.3-6.1.10 please read over.