





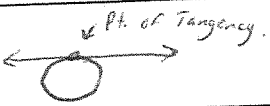


Unit 7: Circles  
PRE-TEST

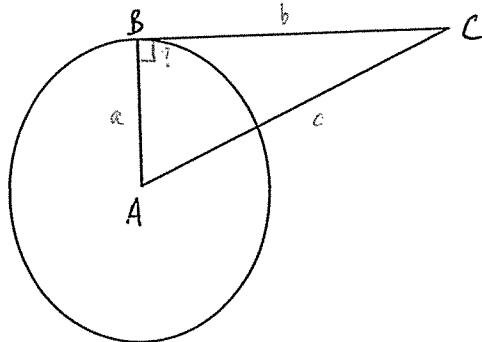
Define each of the following terms and provide a visual:

1. Circle - The set of points in a plane equidistant from a given point called the center	
2. Radius - A segment whose endpoints are the center and any point on the circle.	
3. Chord - A segment whose endpoints are both on the circle	
4. Diameter - A chord containing the center of the circle.	
5. Secant - A line intersecting a circle at two points.	
6. Tangent - A line intersecting a circle at EXACTLY one point.	
7. Point of Tangency - The point on the tangent line that is touching the circle.	

Solve each of the following:

8. In the diagram, AB is the radius of circle A. Is BC tangent to circle A? Explain why or why not.

AB = 25  
BC = 60  
AC = 67



Pythagorean Thm:

$$25^2 + 60^2 \stackrel{?}{=} 67^2$$

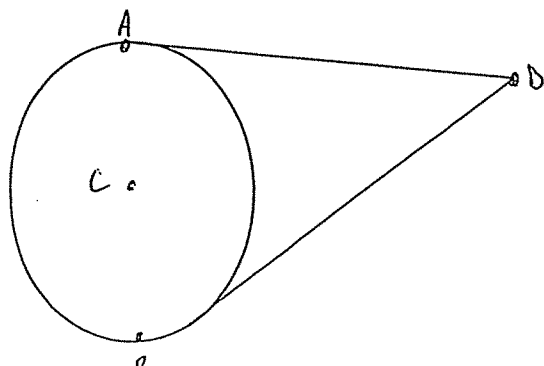
$$625 + 3600 \stackrel{?}{=} 4489$$

$$4225 \neq 4489$$

Not tangent since the sides are not = to each other.

9. Find the value of x.

AD = 25  
BD = 6x - 8



$$\begin{array}{r} 25 = 6x - 8 \\ + 8 \qquad + 8 \end{array}$$

$$\frac{33}{6} = \frac{6x}{6}$$

$$x = \frac{33}{6} = 5.5$$

10. A survey about ages of people in a town are shown.

Find each of the following:

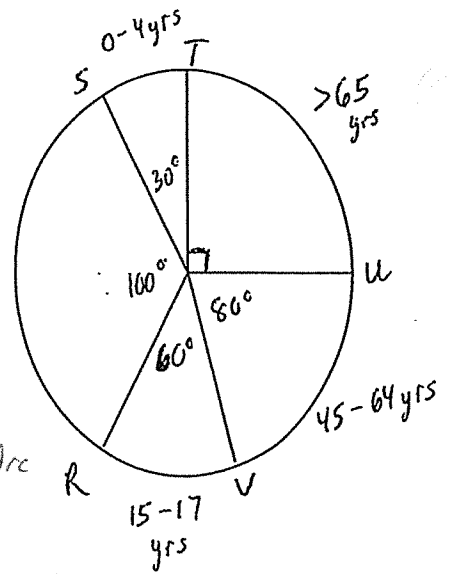
- A.  $m \widehat{RU}$
- B.  $m \widehat{RST}$
- C.  $m \widehat{RVT}$
- D.  $m \widehat{UST}$

(A)  $\widehat{RU} = \widehat{RV} + \widehat{VU} = 60^\circ + 80^\circ = \boxed{140^\circ}$   
minor arc.

(B)  $\widehat{RST} = \widehat{RS} + \widehat{ST} = 100^\circ + 30^\circ = \boxed{130^\circ}$  17-44 yrs  
minor arc

(C)  $\widehat{RVT} = \widehat{RV} + \widehat{VU} + \widehat{UT} = 60^\circ + 80^\circ + 90^\circ = \boxed{230^\circ}$  Major Arc

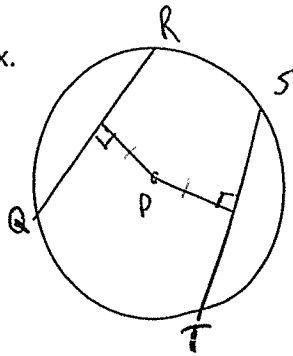
(D)  $\widehat{UST} = \widehat{UV} + \widehat{VR} + \widehat{RS} + \widehat{ST} = 80^\circ + 60^\circ + 100^\circ + 30^\circ = \boxed{270^\circ}$  major Arc



11. Find the value of x.

$ST = 3x - 1$

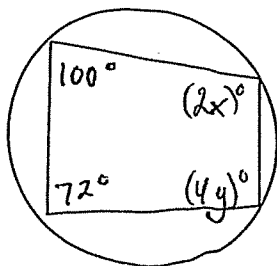
$QR = 2x + 6$



Since  $\widehat{RQ}$  and  $\widehat{ST}$  are equidistant from the center and perpendicular to the line coming from the center  $\widehat{RQ} = \widehat{ST}$

$$\begin{array}{r} 2x + 6 = 3x - 1 \\ -2x \quad -2x \\ \hline 6 = x - 1 \\ +1 \quad +1 \\ \hline \boxed{7 = x} \end{array}$$

12. Find the value of x and y. Opposite angles add to be  $180^\circ$ .



$$\begin{array}{r} 2x + 72 = 180 \\ -72 \quad -72 \\ \hline 2x = 108 \end{array}$$

$$\frac{2x}{2} = \frac{108}{2}$$

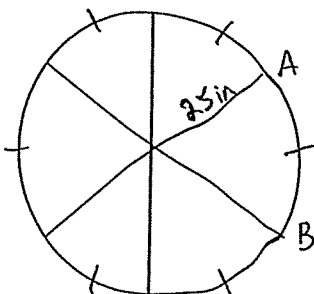
$\boxed{x = 54}$

$$\begin{array}{r} 4y + 100 = 180 \\ -100 \quad -100 \\ \hline 4y = 80 \end{array}$$

$$\frac{4y}{4} = \frac{80}{4}$$

$\boxed{y = 20}$

13. Find the circumference of the given circle and then find the measure of  $\widehat{AB}$ .



The tick marks indicate the circle is split into 6 parts.

Therefore, the central  $\angle = \frac{360}{6} = 60^\circ$

Circumference =  $2\pi r$

$C = 2\pi(25)$

$\boxed{C = 50\pi}$

$\widehat{AB} = \frac{\text{central } \angle}{360} \cdot 2\pi r$

$= \frac{60}{360} \cdot 2(\pi)(25)$

$= \frac{100}{360} \cdot \frac{25}{1} \rightarrow \boxed{\frac{25\pi}{3}}$  150

14. Given that a sector of circle Q has an area of  $48 \text{ ft}^2$ , with a central angle of  $120^\circ$ , what is the area of circle Q itself?

$$A_{\text{sector}} = \frac{\text{central } \angle}{360} \cdot \pi r^2$$

Note  $\pi r^2 = A_{\text{circle}}$

$$48 = \frac{120}{360} \cdot A_{\text{circle}}$$

$$3 [48 = \frac{1}{3} \cdot A]$$

$$\boxed{144 = A}$$

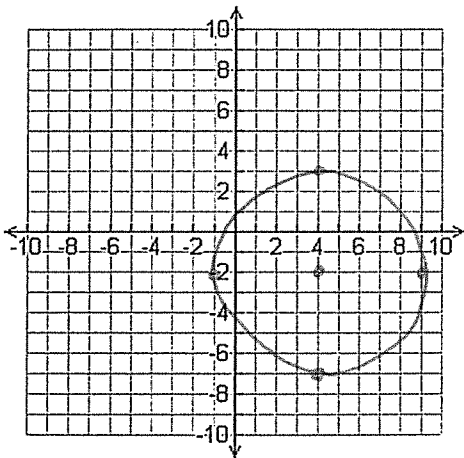
Graph the following circles. Identify each of the following items about the equation:

A. The point of the center.

B. The measure of the radius.

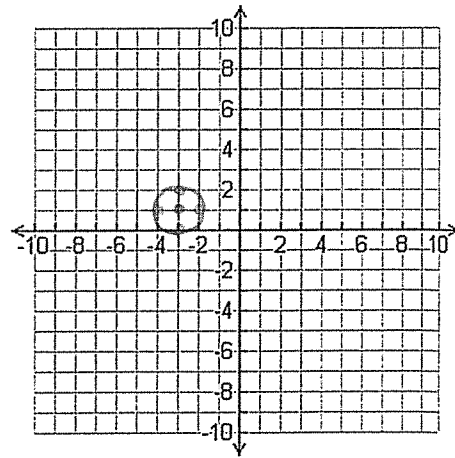
15.  $(x - 4)^2 + (y + 2)^2 = 25$

16.  $9 = 2y - y^2 - 6x - x^2$



Center at  $(4, -2)$

$$\text{Radius} = \sqrt{25} = 5$$



Flip Eqn:

$$-x^2 - 6x - y^2 + 2y = 9$$

$$x^2 + 6x + y^2 - 2y = -9$$

$$x^2 + 6x + (3)^2 + y^2 - 2y + (-1)^2 = -9 + (3)^2 + (-1)^2$$

$$(x + 3)^2 + (y - 1)^2 = 1$$

Center at  $(-3, 1)$

$$\text{Radius} = \sqrt{1} = 1$$

