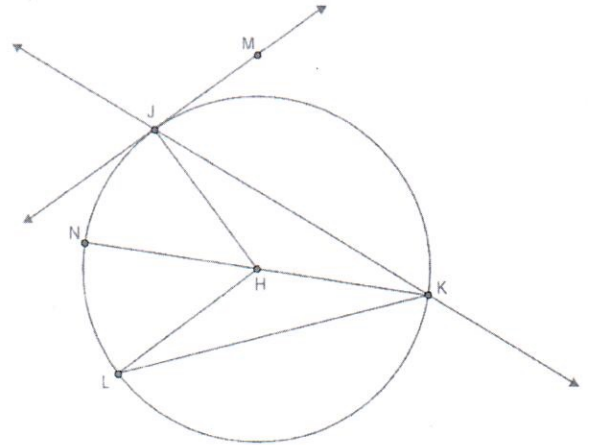Matching: Select the vocabulary term that describes each object listed from the list on the right. Each vocabulary term must be used exactly once.

_C_  1. $\overline{LK}$          A. Radius
_A_  2. $\overline{NH}$          B. Point of tangency
_D_  3. $\overline{KN}$          C. Chord that is not a diameter
_F_  4. $\angle JKL$          D. Diameter
_H_  5. $\overleftrightarrow{MJ}$          E. Center of circle
_G_  6. $\angle LHN$          F. Inscribed Angle
_E_  7. $H$          G. Central Angle
_B_  8. $J$          H. Tangent Line



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9)  Use the figure to answer the questions below:
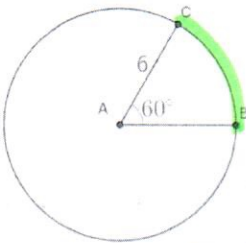


a)  Classify $\overset{\frown}{BC}$: (minor)   semicircle   major
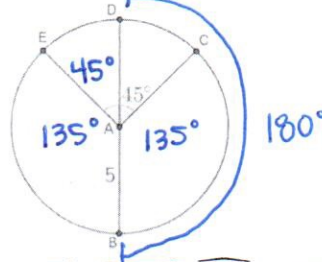
b)  What is the measure of $\overset{\frown}{BC}$?
    $60°$

c)  What is the circumference of the circle?
    $C = 2\pi r = 2\pi(6)$
    $= \boxed{12\pi \text{ OR } 37.7}$ units

d)  What is the length of $\overset{\frown}{BC}$?
    $AL = 2\pi r \left(\frac{\theta}{360}\right)$
    $= 2\pi(6)\left(\frac{60}{360}\right) = \boxed{2\pi \text{ OR } 6.3}$ units

e)  What is the area of $\odot A$?
    $A = \pi r^2$
    $= \pi(6)^2 = \boxed{36\pi \text{ OR } 113.1}$ units²

f)  What is the area of sector $\overset{\frown}{BC}$?
    $AS = \pi r^2 \left(\frac{\theta}{360}\right)$
    $= \pi(6)^2\left(\frac{60}{360}\right) = \boxed{6\pi \text{ OR } 18.8}$ units²

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10)  Use the figure to answer the questions below:



a)  Classify $\overset{\frown}{DBE}$: minor   semicircle   (major)
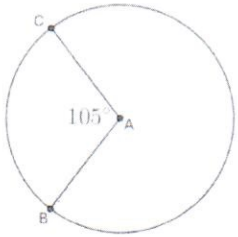
b)  What is measure of $\overset{\frown}{BC}$?
    $135°$

c)  What is the circumference of the circle?
    $C = 2\pi r = 2\pi(5)$
    $= \boxed{10\pi \text{ OR } 31.4}$ units

d)  What is the length of $\overset{\frown}{EC}$?
    $\theta = 90°$   $AL = 2\pi(5)\left(\frac{90}{360}\right)$
    $= \boxed{2.5\pi \text{ OR } 7.9}$ units

e)  What is the area of $\odot A$?
    $A = \pi r^2 = \pi(5)^2$
    $= \boxed{25\pi \text{ OR } 78.5}$ units²

f)  What is the area of sector $\overset{\frown}{BE}$?
    $\theta = 135°$
    $AS = \pi(5)^2\left(\frac{135}{360}\right)$
    $= \boxed{9.375\pi \text{ OR } 29.5}$ units²

**11)**

a. What type of angle is $\angle CAB$ ?

**central angle**

b. $m\widehat{CB} =$ **105°**

(circle diagram: C, A with 105, B)

**12)**
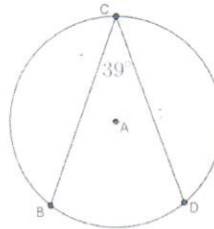
a. What type of angle is $\angle BCD$ ?

**inscribed angle**

b. $m\widehat{BD} =$

$2(39) = $ **78°**

(circle diagram: C with 39, A, B, D)

**13)**
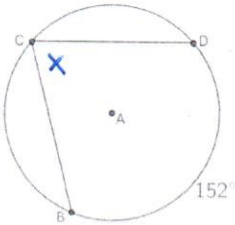
a. What type of angle is $\angle BCD$ ?

**inscribed**

b. $m\angle BCD =$

$\dfrac{2X}{2} = \dfrac{152}{2}$

$\boxed{X = 76°}$

(circle diagram: C, D, A, B with 152°, x)

**14) Solve for x.**

$(x+1) + (2X-7) = 180$

$3X - 6 = 180$

$\phantom{3X}+6 \quad +6$

$\dfrac{3X}{3} = \dfrac{186}{3}$

$\boxed{X = 62}$

(diagram with $(x+1)°$ and $(2x-7)°$ and tangent lines)
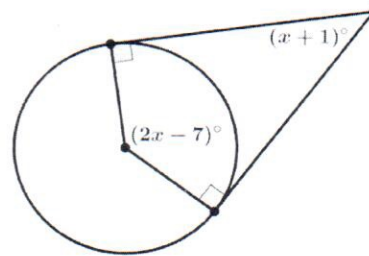
**15) Find the measure of $\angle C$.**

$m\angle C =$

$5(18) - 16$

$\boxed{-74°}$
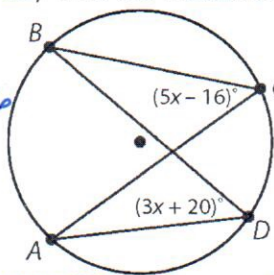
$2(5x-16) = m\widehat{AB}$

$2(3X+20) = m\widehat{AB}$

$2(5X-16) = 2(3X+20)$

$10X - 32 = 6X + 40$

$\phantom{10X}+32 \qquad +32$

$10X = 6X + 72$

$-6X \quad -6X$

$\dfrac{4X}{4} = \dfrac{72}{4} \quad X = 18$

(circle diagram: B, C, A, D with $(5x-16)°$ and $(3x+20)°$)

**16)** $2(c+1) = 3C - 17$
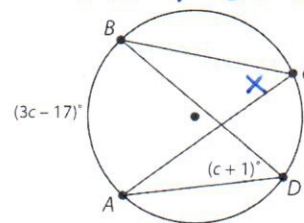
a. What is the value c?

$2c + 2 = 3C - 17$

$\phantom{2c+2}+17 \qquad +17$

$-2C + 19 = 3C$

$\phantom{-2C}-2c \quad -2c$

$\boxed{c = 19}$

b. Find the $m\angle C$

$2X = 3C - 17$

$2X = 3(19) - 17$

$2X = 40 \quad \boxed{X = 20°}$

(circle diagram: B, C, A, D with $(3c-17)°$, x, $(c+1)°$)

**17) Determine if line AB is tangent to the circle.**
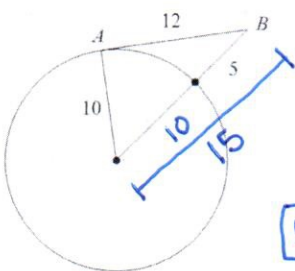
is $\angle A$ 90° ??

$10^2 + 12^2 \overset{?}{=} 15^2$

$100 + 144 \overset{?}{=} 225$

**NO**

$\boxed{\text{NOT TANGENT}}$

(diagram: A, B with 12, 5, 10, 10, 15)

**18) Determine if line AB is tangent to the circle.**
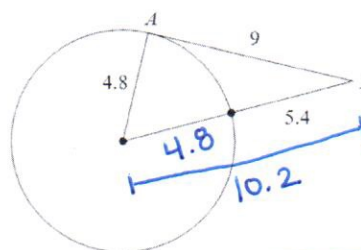
is $\angle A$ 90° ??

$4.8^2 + 9^2 \overset{?}{=} 10.2^2$

$23.04 + 81 \overset{?}{=} 104.04$

$104.04 \overset{\checkmark}{=} 104.04$

**yes**

$\boxed{\text{yes TANGENT}}$

(diagram: A, B with 9, 4.8, 4.8, 5.4, 10.2)

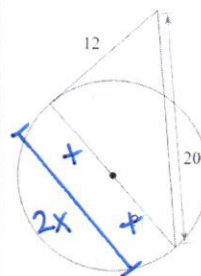**19) Find the segment length indicated. Assume that lines that appear to be tangent are tangent.**
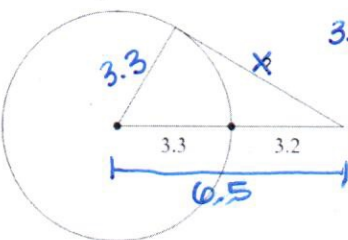
$3.3^2 + x^2 = 6.5^2$

$10.89 + x^2 = 42.25$

$-10.89 \qquad -10.89$

$\sqrt{x^2} = \sqrt{31.36}$

$\boxed{x = 5.6}$
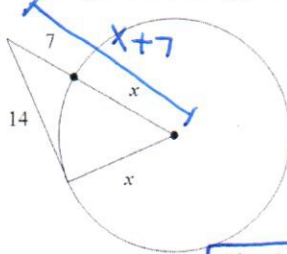
(diagram: 3.3, x, 3.3, 3.2, 6.5)

**20) Find the segment length indicated. Assume that lines that appear to be tangent are tangent.**

$(2x)^2 + 12^2 = 20^2$

$4x^2 + 144 = 400$

$-144 \quad -144$

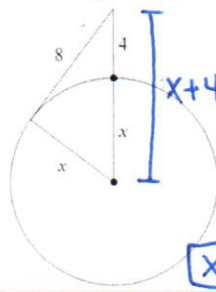$\dfrac{4x^2}{4} = \dfrac{256}{4}$

$\sqrt{x^2} = \sqrt{64}$

$\boxed{x = 8}$

(diagram: 12, 20, x, 2x, x)

| 21) Solve for x. Assume that lines that appear to be tangent are tangent. | 22) Solve for x. Assume that lines that appear to be tangent are tangent. |
|---|---|
| $x^2 + 14^2 = (x+7)^2$ <br> $= (x+7)(x+7)$ <br> $= x^2 + 7x + 7x + 49$ <br> $x^2 + 196 = x^2 + 14x + 49$ <br> $-x^2 \qquad -x^2$ <br> $196 = 14x + 49$ <br> $-49 \qquad -49$ <br> $\boxed{x = 10.5}$ $\quad \frac{147}{14} = \frac{14x}{14}$ <br> (labels: 7, $x+7$, x, 14, x) | $x^2 + 8^2 = (x+4)^2$ <br> $= (x+4)(x+4)$ <br> $= x^2 + 4x + 4x + 16$ <br> $x^2 + 64 = x^2 + 8x + 16$ <br> $-x^2 \qquad -x^2$ <br> $64 = 8x + 16$ <br> $-16 \qquad -16$ <br> $\boxed{x = 6}$ $\quad \frac{48}{8} = \frac{8x}{8}$ <br> (labels: 8, 4, $x+4$, x) |

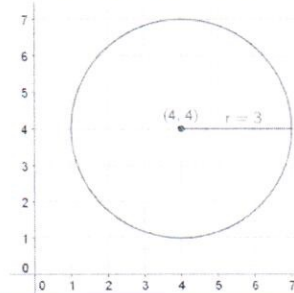| 23) Give the radius and the center and then graph:<br> $(x-3)^2 + (y+2)^2 = 4$ <br> center <br> $r^2 = 4$ <br> $(3, -2)$ <br> $r = 2$ | 24) Give the radius and the center and then graph:<br> $(x+1)^2 + y^2 = 25$ <br> center <br> $r^2 = 25$ <br> $(-1, 0)$ <br> $r = 5$ |
|---|---|

| 25) Write the equation of the circle.<br> center $(1, -2)$ <br> radius 4 <br> $\boxed{(x-1)^2 + (y+2)^2 = 16}$ <br> (points: $(-3,-2)$, $(5,-2)$) | 26) Write the equation of the circle.<br> center $(4, 4)$ <br> $r = 3$ <br> $\boxed{(x-4)^2 + (y-4)^2 = 9}$ <br> (label: $(4, 4)$, $r = 3$) |
|---|---|

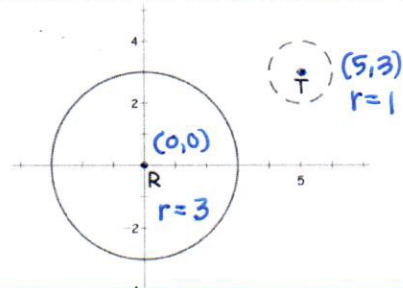| 27) Write the equation of the circle.<br> center $(2, 3)$ <br> $r = 4$ <br> $\boxed{(x-2)^2 + (y-3)^2 = 16}$ <br> (points: $(2, 3)$, $(2, -1)$) | 28) Write the equation of the circle with the given information:<br> Center: $(253, -967)$ <br> Diameter: 20 so $r = 10$ <br> $\boxed{(x-253)^2 + (y+967)^2 = 100}$ |
|---|---|
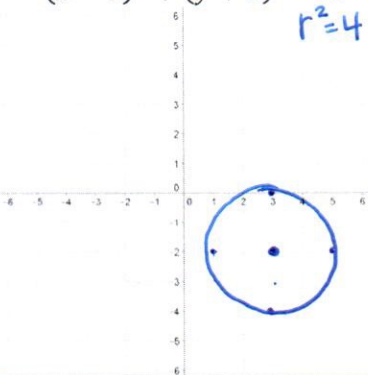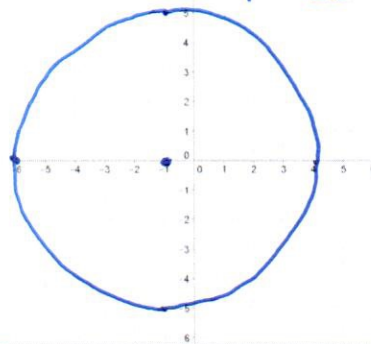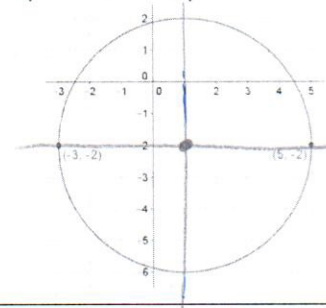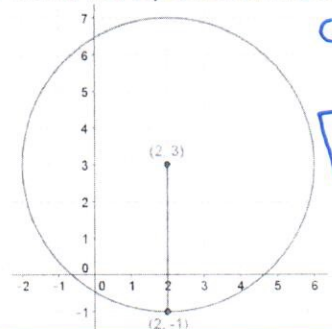
29) Show that the circles are similar by describing the transformations that map $\odot R$ onto $\odot T$. State the scale factor.

(labels: $(5,3)$, $r=1$, T; $(0,0)$, R, $r=3$)

★ Translate R 5 units up 3 units

★ dilate by scale factor of $k = \frac{1}{3}$