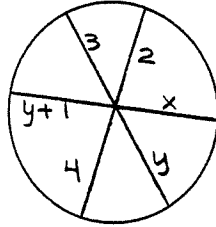


Geometry (H)  
Chapter 9 – Circle review

Name: KEY

1. Find x and y.

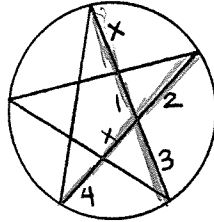


$$\begin{aligned} 2(4) &= x(y+1) \rightarrow 8 = xy + x \\ 2(4) &= 3y \end{aligned}$$

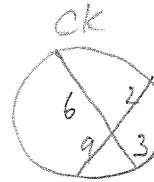
$$\frac{8}{3} = y$$

$$\begin{aligned} 8 &= xy + x \\ 8 &= x(y+1) \\ 8 &= x\left(\frac{11}{3}\right) \\ x &= \frac{8}{\frac{11}{3}} = \frac{24}{11} \end{aligned}$$

2. Find x.



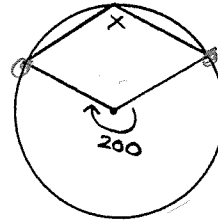
$$\begin{aligned} 2(x+1) &= 3(x+1) \\ 2x + 8 &= 3x + 3 \\ 5 &= x \end{aligned}$$



$$9(2) = 6(3)$$

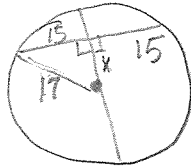
3. Find x.

$$x = 100$$



4. Find the distance from the center of the circle to a chord 30 m long if the diameter of the circle is 34 m.

$$\frac{34}{2} = 17 = r$$



$$\begin{aligned} 15^2 + x^2 &= 17^2 \\ x^2 &= 64 \\ x &= 8 \end{aligned}$$

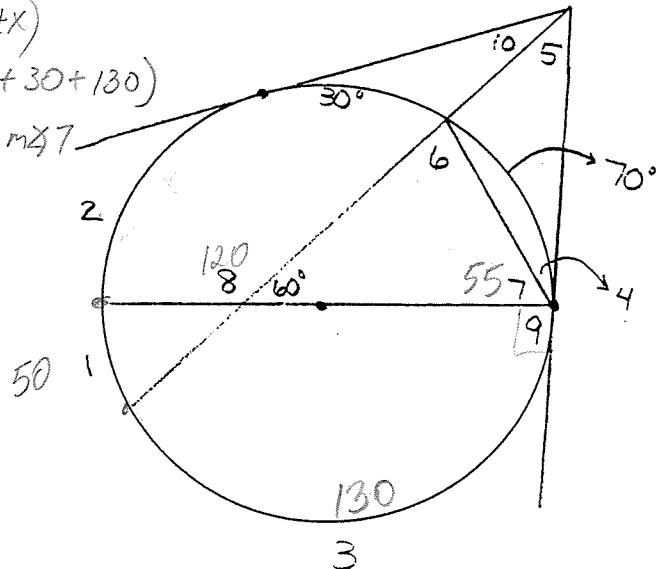
$$\text{distance} = 8 \text{ m}$$

5. Find the measure of all numbered angles and indicated arcs.

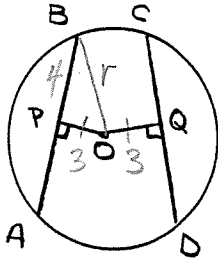
1. 50°
2. 80
3. 130
4. 35
5. 30
6. 65
7. 55
8. 120
9. 90
10. 50

$$\begin{aligned} \textcircled{1} \quad 60 &= \frac{1}{2}(70 + x) \\ \textcircled{2} \quad 120 &= \frac{1}{2}(x + 30 + 130) \\ \textcircled{7} \quad \frac{1}{2}(30 + 80) &= m\angle 7 \end{aligned}$$

$$\frac{1}{2}(130 - 30)$$



6.  $PB = 3x - 17$ ,  $CD = 15 - x$ ,  $OQ = OP = 3$ . Find  $AB$ . Find the radius.



$$2(3x - 17) = 15 - x$$

$$6x - 34 = 15 - x$$

$$7x = 49$$

$$x = 7$$

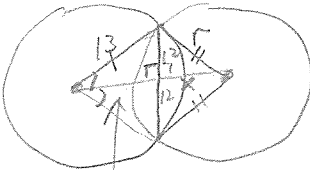
$$PB = 3(7) - 17$$

$$PB = 4$$

$$AB = 8$$

$$\text{radius} = 5$$

7. Two circles intersect and have a common chord 24 cm long. The centers of the circles are 21 cm apart. The radius of one circle is 13 cm. Find the radius of the other circle.



$$(21 - x)^2 + 12^2 = 13^2$$

$$441 - 42x + x^2 + 144 = 169$$

$$x^2 - 42x + 585 = 169$$

$$x^2 - 42x + 416 = 0$$

$$(x - 16)(x - 26) = 0$$

$$x = 16, x = 26 \text{ OMIT.}$$

$$x^2 + 12^2 = r^2$$

$$16^2 + 12^2 = r^2$$

$$256 + 144 = r^2$$

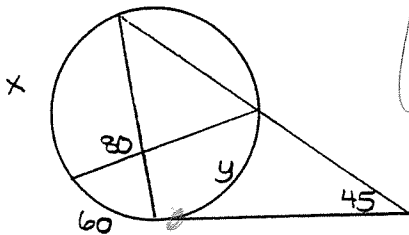
$$400 = r^2$$

$$20 = r$$

$$\text{Radius} = 20$$

8. Find  $x$  and  $y$ .

a.



$$80 = \frac{1}{2}(x + y) \rightarrow 160 = x + y$$

$$45 = \frac{1}{2}(x + 60 - y) \rightarrow 30 = x - y$$

$$190 = 2x$$

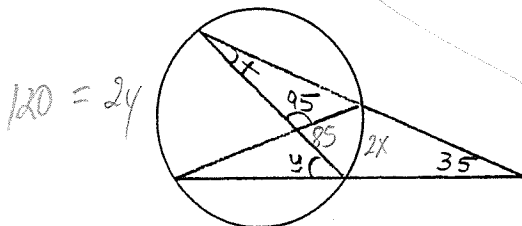
$$95 = x$$

$$80 = \frac{1}{2}(95 + y)$$

$$160 = 95 + y$$

$$65 = y$$

b.



$$120 = 24$$

ck

$$35 = \frac{1}{2}(120 - 50)$$

$$35 = 35$$

$$35 = \frac{1}{2}(2y - 2x) \rightarrow 70 = 2y - 2x$$

$$85 = \frac{1}{2}(2y + 2x) \rightarrow 170 = 2y + 2x$$

$$240 = 4y$$

$$60 = y$$

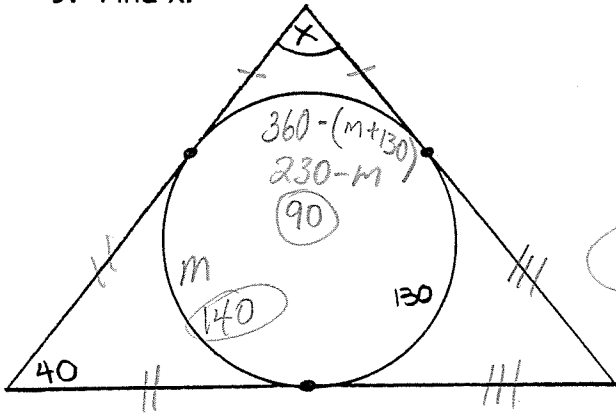
$$70 = 2(60) - 2x$$

$$70 - 120 = -2x$$

$$-50 = -2x$$

$$25 = x$$

9. Find x.



$$40 = \frac{1}{2}(360 - m - m) \rightarrow 80 = 360 - 2m$$

$$140 = m$$

$$x = \frac{1}{2}(m + 130 - (230 - m))$$

$$x = \frac{1}{2}(270 - 90)$$

$$x = 90$$

10. In the circle at the right,  $m\widehat{AD} = 3(m\widehat{AB})$ ,  $m\widehat{AC} = 90$ ,  $m\widehat{DC} = 3(m\widehat{BC})$  and  $m\widehat{BCD} = 5(m\widehat{AB})$ . Find each measure.

a.  $m\widehat{AB} = \underline{40}$

b.  $m\widehat{BC} = \underline{50}$

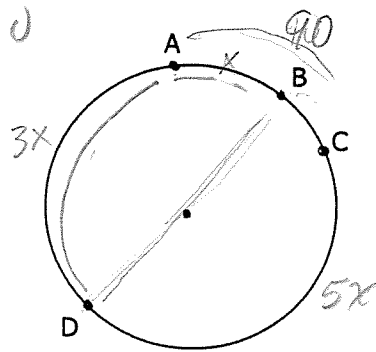
c.  $m\widehat{CD} = \underline{150}$

d.  $m\widehat{AD} = \underline{120}$

$$3x + x + 5x = 360$$

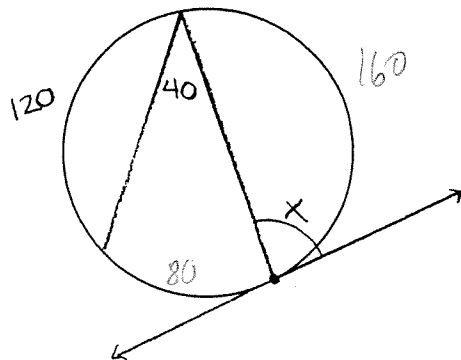
$$9x = 360$$

$$x = 40$$



$$BCD = 5x$$

11. Find x.



$$x = 80$$

12. Find the center and radius of  $x^2 + y^2 - 4x + 10y - 7 = 0$ . Decide if the points  $(2, 1)$ ,  $(6, 0)$ , and  $(-1, -10)$  are on the interior of the circle, exterior of the circle, or on the circle.

$$x^2 - 4x + \frac{4}{4} + y^2 + 10y + \frac{25}{4} = 7 + 4 + \frac{25}{4}$$

$$(x-2)^2 + (y+5)^2 = 36$$

Center  $(2, -5)$   
radius = 6

$(2, 1)$  ON circle  
 $0 + 36 = 36$

$(6, 0)$   
 $41 > 36$

exterior of circle

$(-1, -10)$

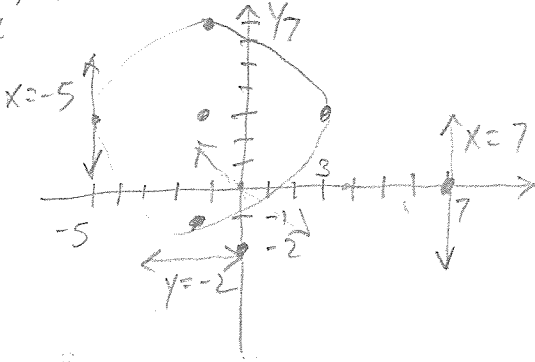
$9 + 25 =$

$34 < 36$

interior

13. Graph  $(x+1)^2 + (y-3)^2 = 16$ . Decide if each line  $x = -5$ ,  $y = -2$ ,  $x = 7$ , and  $y = -x$  is a secant, tangent, or neither.

Center  $(-1, 3)$   
 $r = 4$



$x = -5$  ↑ tangent  
 $y = -2$  ↑ neither  
 $x = 7$  ↑ neither

$y = -x$  secant

14. Write the equation of the line (in slope-intercept form) that contains the center of  $(x+4)^2 + (y-1)^2 = 9$  and the point  $(1, -1)$ .

center  $(-4, 1)$  pt  $(1, -1)$

$$m = \frac{1+1}{-4-1} = \frac{2}{-5}$$

$$-1 = -\frac{2}{5}(1) + b$$

$$-1 + \frac{2}{5} = b$$

$$-\frac{3}{5} = b$$

$$y = -\frac{2}{5}x - \frac{3}{5}$$

15. Write the equations of all circles that are tangent to the lines  $y = 3$ ,  $y = -5$ , and  $x = 1$ .

$r = \frac{8}{2} = 4$   $r = 4$

left circle  
center  $(-3, -1)$

Right circle

center  $(5, -1)$

$$(x+3)^2 + (y+1)^2 = 16$$

$$(x-5)^2 + (y+1)^2 = 16$$

