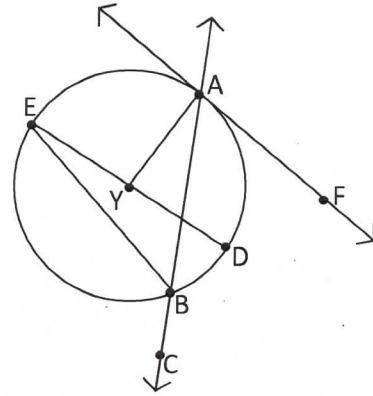
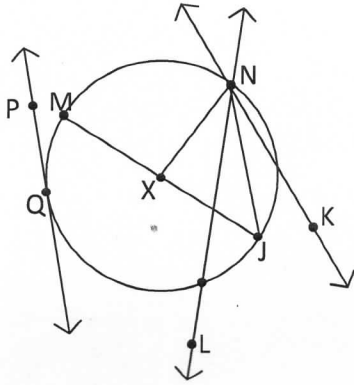


Name Answers

L1 Notes: Parts of the Circle

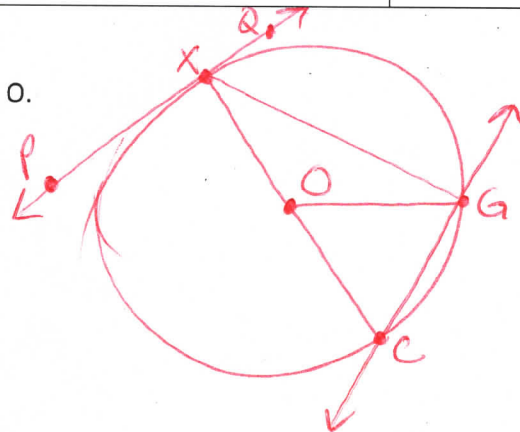
Fill out the table. Use the diagrams to identify examples in the third and fourth columns.



Part	Description	Symbol in Circle X	Symbol in Circle Y
Name	label using center point	$\odot X$	$\odot Y$
Radius	segment from center to any point on circle	$\overline{XN}$	$\overline{YA}$
Diameter	segment thru center with endpoints on circle	$\overline{MJ}$	$\overline{ED}$
Chord	segment with endpoints on circle	$\overline{NJ}$	$\overline{EB}$
Secant Line	line intersecting 2 points on circle	$\overleftrightarrow{NL}$	$\overleftrightarrow{AB}$
Tangent Line	line intersecting 1 point ( $\perp$ to radius)	$\overleftrightarrow{PQ}$	$\overleftrightarrow{AF}$
Point of Tangency	point where tangent intersects circle	Q	A
Minor Arc	curve measuring $< 180^\circ$	$\widehat{MQ}$	$\widehat{BD}$
Major Arc	curve measuring $> 180^\circ$	$\widehat{MNA}$	$\widehat{BAD}$
Semi-Circle	Curve measuring $= 180^\circ$	$\widehat{MJ}$	$\widehat{ED}$

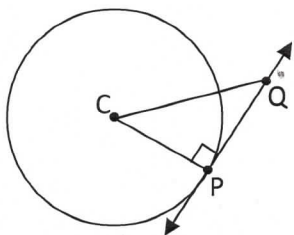
**Sketch Circle O.** Then sketch each of the following on Circle O.

- Radius  $\overline{OG}$ ,
- Diameter  $\overline{XC}$
- Chord  $\overline{XG}$
- $\overleftrightarrow{PQ}$  tangent to Circle O at point X
- $\overleftrightarrow{CG}$  secant to Circle O.



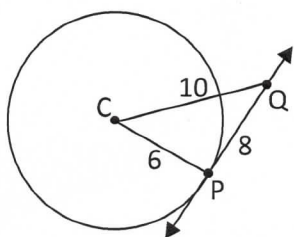
(Answers on this page may vary.)

Tangent Line Theorem:

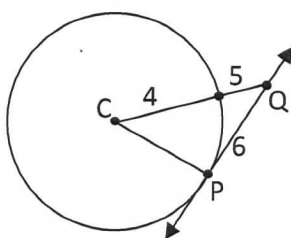


Line  $\overrightarrow{PQ}$  is tangent to circle C at point P  
if and only if  
 $\overrightarrow{PQ}$  forms a right angle with the radius  $\overline{CP}$ .

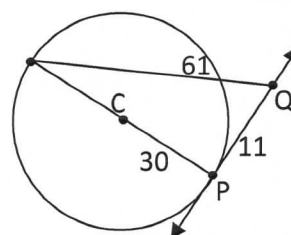
To test if  $\overrightarrow{PQ}$  is tangent to circle C at point P, use Pythagorean Theorem.



$$\begin{aligned} 6^2 + 8^2 &= 10^2 \\ 36 + 64 &= 100 \\ 100 &= 100 \\ \checkmark \\ \text{yes} \end{aligned}$$

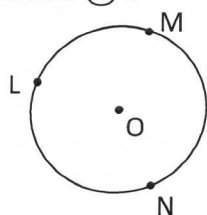


$$\begin{aligned} 4^2 + 6^2 &= (4+5)^2 \\ 16 + 36 &= 81 \\ 52 &\neq 81 \\ \times \\ \text{no} \end{aligned}$$



$$\begin{aligned} 11^2 + (30+30)^2 &= 61^2 \\ 121 + 3600 &= 3721 \\ 3721 &= 3721 \\ \checkmark \\ \text{yes} \end{aligned}$$

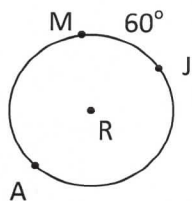
Given:  $\odot O$



- a.) Name three different minor arcs.  $\widehat{LM}$ ,  $\widehat{LN}$ , and  $\widehat{MN}$ .
- b.) Name three different major arcs.  $\widehat{LNM}$ ,  $\widehat{LMN}$ , and  $\widehat{MLN}$ .

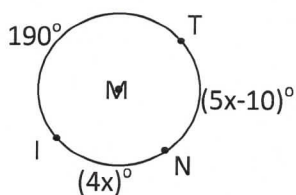
Given:  $\odot R$ , find the measure of each indicated arc.

a.)  $m\widehat{MAJ} = \underline{300^\circ}$



$$360 - 60$$

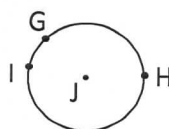
b.)  $x = \underline{20}$



$$\begin{aligned} 4x + (5x - 10) + 190 &= 360 \\ 9x + 180 &= 360 \\ 9x &= 180 \\ x &= 20 \end{aligned}$$

c.)  $m\widehat{GHI} = \underline{337^\circ}$

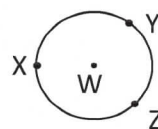
Given:  $m\widehat{GI} = 23^\circ$



$$360 - 23$$

d.)  $m\widehat{XZ} = \underline{170^\circ}$

Given:  $m\widehat{XYZ} = 190^\circ$



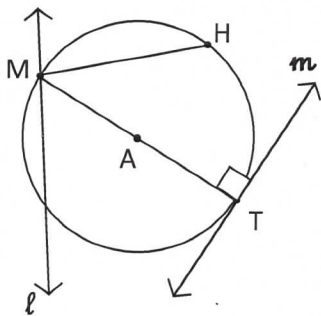
$$360 - 190$$

Name Answers

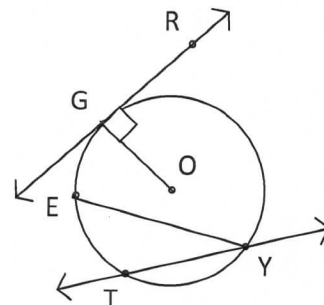
L1 Worksheet: Parts of the Circle

Matching. Use the Word Bank below. Use some words more than once.

- E 1.  $\overline{MH}$   
C 2.  $\overline{AT}$   
F 3. line  $\ell$   
I 4. Point T  
D 5.  $\overline{MT}$   
B 6.  $\widehat{MTH}$   
G 7. line  $m$   
A 8.  $\widehat{MH}$   
H 9. Point A



- H 10. Point O  
G 11.  $\overline{GR}$   
E 12.  $\overline{YE}$   
B 13.  $\widehat{GYE}$   
I 14. Point G  
A 15.  $\widehat{TY}$   
C 16.  $\overline{GO}$   
A 17.  $\widehat{GT}$   
F 18.  $\overline{TY}$

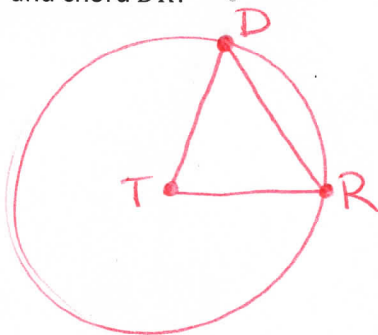


**Word Bank**

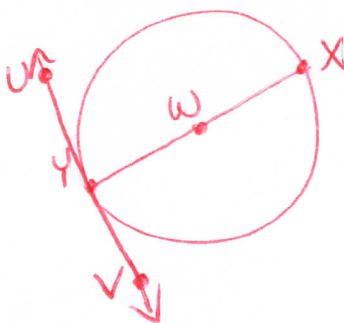
- |              |              |           |                      |          |
|--------------|--------------|-----------|----------------------|----------|
| A. Minor Arc | B. Major Arc | C. Radius | D. Diameter          | E. Chord |
| F. Secant    | G. Tangent   | H. Center | I. Point of Tangency |          |

Sketch a diagram.

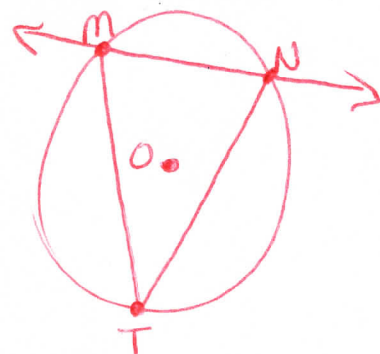
19. Circle T with radii  $\overline{TR}$  and  $\overline{TD}$  and chord  $\overline{DR}$ .



20. Circle W with diameter  $\overline{XY}$ , and  $\overline{UV}$  tangent at point Y.

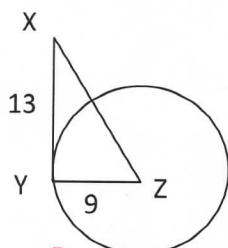


21. Circle O with chords  $\overline{MN}$ ,  $\overline{NT}$  and  $\overline{MT}$ , and secant  $\overline{MN}$



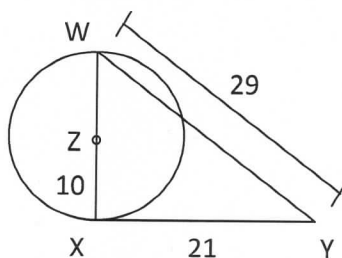
Determine whether XY is tangent to Circle Z.

22. Given: XZ = 15



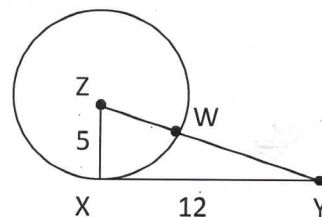
$$\begin{aligned} 9^2 + 13^2 &= 15^2 \\ 81 + 169 &= 225 \\ 250 &\neq 225 \\ &\text{X} \end{aligned}$$

- 23.



$$\begin{aligned} (10+10)^2 + 21^2 &= 29^2 \\ 400 + 441 &= 841 \\ 841 &= 841 \\ &\text{✓} \end{aligned}$$

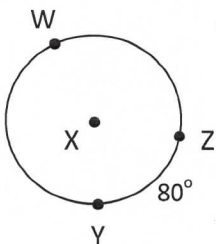
24. Given: WY = 8



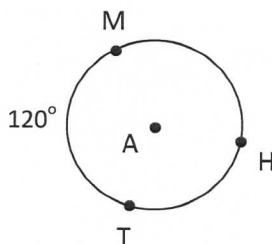
$$\begin{aligned} 5^2 + 12^2 &= (5+8)^2 \\ 25 + 144 &= 169 \\ 169 &= 169 \\ &\text{✓} \end{aligned}$$

Find the indicated arc lengths.

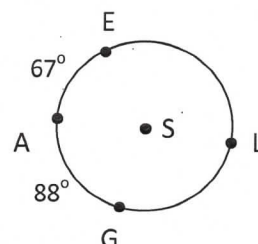
25.  $m \widehat{YWZ} = \underline{280^\circ}$



26.  $m \widehat{MHT} = \underline{240^\circ}$

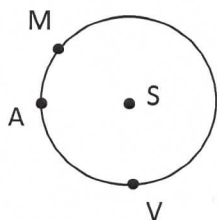


27.  $m \widehat{EG} = \underline{155^\circ}$ ;  $m \widehat{ELG} = \underline{205^\circ}$

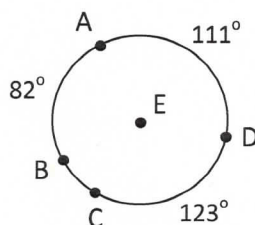


28.  $m \widehat{MA} = \underline{30^\circ}$

Given:  $m \widehat{MVA} = 330^\circ$

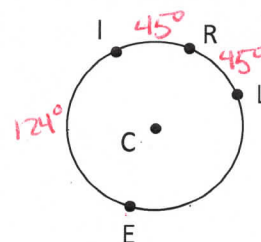


29.  $m \widehat{BDC} = \underline{316^\circ}$ ;  $m \widehat{BC} = \underline{44^\circ}$

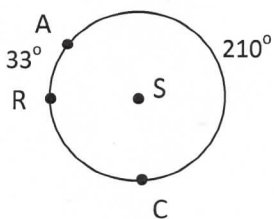


30.  $m \widehat{LE} = \underline{146^\circ}$ ;  $m \widehat{IEL} = \underline{270^\circ}$

Given:  $m \widehat{IR} = 45^\circ$ ;  $m \widehat{RL} = 45^\circ$   
and  $m \widehat{IE} = 124^\circ$

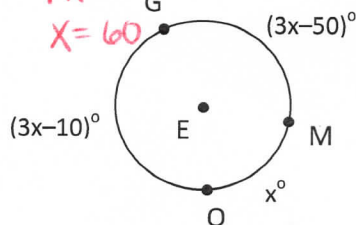


31.  $m \widehat{RC} = \underline{117^\circ}$ ;  $m \widehat{RCA} = \underline{127^\circ}$



32.  $m \widehat{OM} = \underline{60^\circ}$

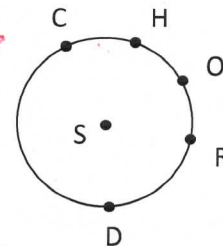
$7x - 60 = 360$   
 $7x = 420$   
 $x = 60$



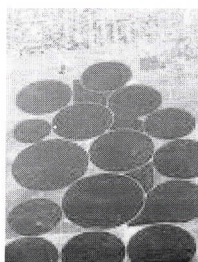
33.  $m \widehat{CH} = \underline{38^\circ}$

Given:  $CH = HO = OR$ ,  
 $m \widehat{CDR} = 246^\circ$

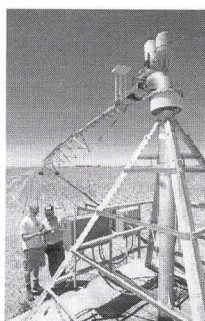
$\frac{360 - 246}{3}$



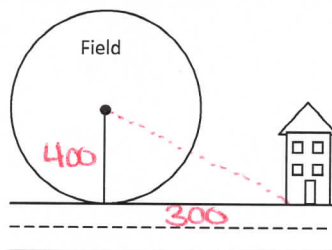
**APPLICATION:** A Center Pivot is a large sprinkler system used to irrigate crops. The long sprinkler system is attached to a pivot in the center of the field and rotates around the center pivot.



Aerial view of center pivot crops/fields.



If the sprinkler system is 400m long, the point of tangency between the circle and the road is 300m from the house how far is the pivot's central hub from the house?



$400^2 + 300^2 = x^2$

$x = 500m$



Name Answers

L1 Quiz: Parts of the Circle

1-6: Match the symbol to the part circle O.

E 1.  $\overline{PQ}$

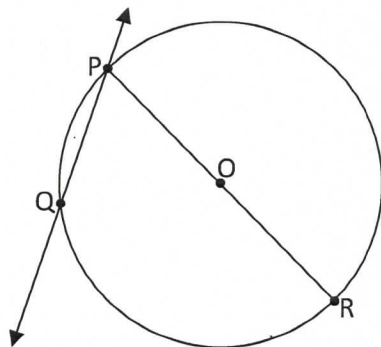
H 2.  $\overrightarrow{PQ}$

A 3.  $\widehat{PQ}$

B 4.  $\widehat{PRQ}$

D 5.  $\overline{PR}$

C 6.  $\overline{OR}$



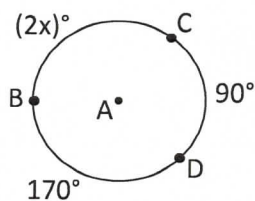
Word Bank:

- |              |                      |
|--------------|----------------------|
| A) Minor Arc | F) Semicircle        |
| B) Major Arc | G) Center            |
| C) Radius    | H) Secant            |
| D) Diameter  | I) Tangent           |
| E) Chord     | J) Point of Tangency |

7-8: Find the indicated measures in circle A.

100° 7.  $m\widehat{BC}$

190° 8.  $m\widehat{BCD}$

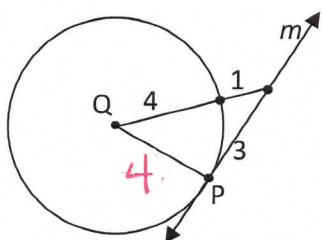


$$\begin{aligned} 2x + 90 + 170 &= 360 \\ 2x + 260 &= 360 \\ 2x &= 100 \\ x &= 50 \end{aligned}$$

$$\begin{aligned} m\widehat{BC} &= 2x \\ &= 2(50) \\ &= 100 \\ m\widehat{BCD} &= 100 + 90 \end{aligned}$$

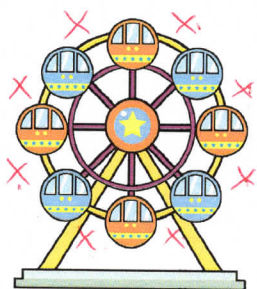
9-10: Answer the question.

yes 9. Is the line  $m$  tangent to circle Q at point P?



$$\begin{aligned} 3^2 + 4^2 &= (4+1)^2 \\ 9 + 16 &= 25 \\ 25 &= 25 \end{aligned}$$

45° 10. A ferris wheel has 8 equidistant cars. What is the measure of the arc between 2 adjacent cars?



$$\begin{aligned} 8x &= 360 \\ x &= 45 \end{aligned}$$