Practice QUIZ

Unit 4 Quiz 1 – Angles & Arcs Name _____ S: ____

For 1-14, Match the vocabulary word with its definition. Each word will be used once.

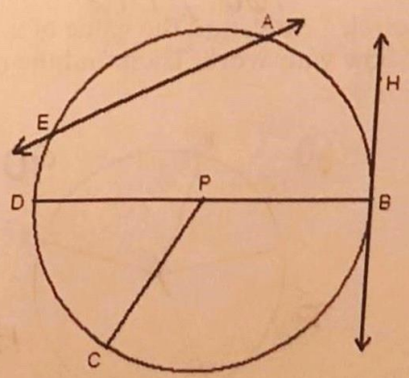
F 1. Center
D 2. Radius
A 3. Diameter
G 4. Chord
C 5. Secant
B 6. Tangent Line
E 7. Point of Tangency
H 8. Minor Arc
J 9. Major Arc
K 10. Semi-circle
M 11. Arc
L 12. Congruent Arcs
I 13. Central Angle
N 14. Circle

A. segment between two points on the circle whose midpoint is the center.
B. a line that touches or intersects the circle at exactly one point.
C. a line that touches or intersects the circle at exactly two points.
D. a segment between the center and a point on the circle.
E. the point of intersection of a tangent.
F. a point that has an equal distance from each point on the circle.
G. a segment between two points on the circle
H. part of a circle that measures less than 180°
I. an angle whose vertex is the center of the circle and whose sides are radii of the circle.
J. part of a circle that measures more than 180°
K. an arc of a circle that equals 180°.
L. two or more arcs that have the same measure.
M. an unbroken part of a circle
N. a set of points in a plane that have an equal distance from a given point.

For 15-21, Using the diagram, match the notation with the term that <u>BEST</u> describes it.

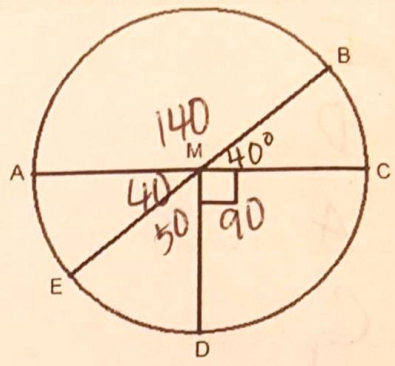
D 15. $\overline{PC}$
G 16. $\overline{BH}$
C 17. $\overline{BD}$
F 18. $\overline{AE}$
B 19. $\overline{AE}$
E 20. B
A 21. P

A. Center
B. Chord
C. Diameter
D. Radius
E. Point of tangency
F. Secant
G. Tangent



For 22-28, Use Circle M below to find the measures of each arc or angle.

In circle M, $m\angle BMC = 40^0$, $m\angle CMD = 90^0$, $\overline{AC}$ and $\overline{BE}$ are diameters.



21. $\widehat{BC}$ = 140°

22. $\widehat{CD}$ = 90°

24. $\widehat{AE}$ = 40°

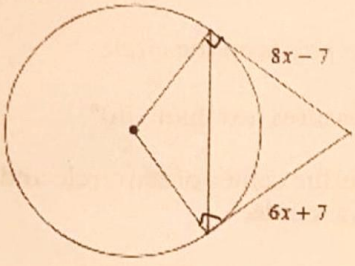
25. $\widehat{DE}$ = 50°

26. $\widehat{BAE}$ = 140°

27. $m\angle AMB$ = 140°

28. $m\angle EMC$ = 140

29. Solve for x. The lines that appear are tangents lines. Be sure to write the equation below and show your work.



$8x - 7 = 6x + 7$

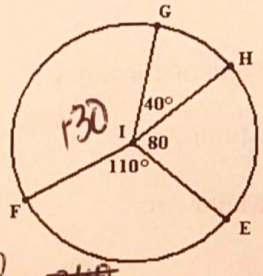
$-6x \quad -6x$

$2x - 7 = 7$

$2x = 14$

$x = 7$

30. Find the missing measures of the indicated angle or arcs.



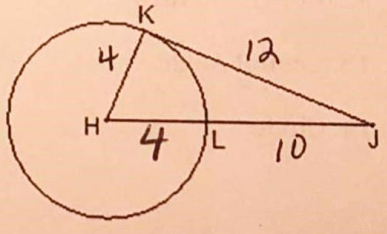
120 ~~130~~ ~~240~~

$\widehat{GE}$ = ~~130~~ 120 ° $\widehat{GEF}$ = 230 °

$\widehat{GF}$ = 130 ° $\widehat{HF}$ = 190 °

31. Use the circle at the right. Determine if $\overline{KJ}$ is tangent to the circle. Show work that justifies your answer.

(Hint: Use $a^2 + b^2 = c^2$)



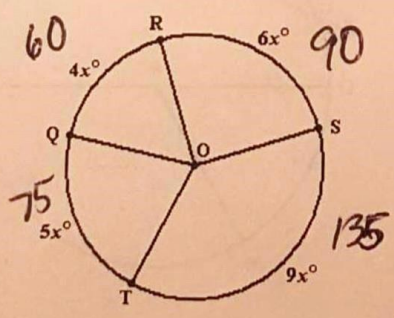
$12^2 + 4^2 \stackrel{?}{=} 14^2$

NO

$144 + 16 \neq 196$

$160 \neq 196$

32. Given the circle below, find the value of x. Be sure to write the equation. Show your work. Then find the missing angles or arcs.



$24x = 360$

$x = 15$

$\widehat{QR}$ = 60 ° $\widehat{RS}$ = 90 °

$\widehat{ST}$ = 135 ° $\widehat{TQ}$ = 75 °

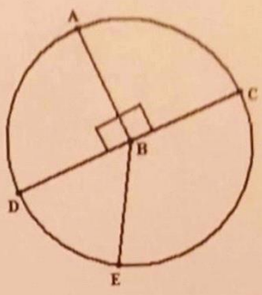
ARCS AND CENTRAL ANGLES OF A CIRCLE

EQ: What is the relationship between major arcs, minor arcs and central angles of a circle?

- An arc is an unbroken part of a circle. There are several arcs and angles of a circle that are of interest to us.

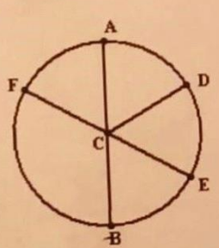
  In the given circle below, some of these parts are ∠DBE, $\overset{\frown}{DEC}$, $\overset{\frown}{DA}$, $\overset{\frown}{AC}$ and $\overset{\frown}{DEA}$.

Read each of the questions below. How can you respond to the questions using the mentioned circle parts and the given visual?



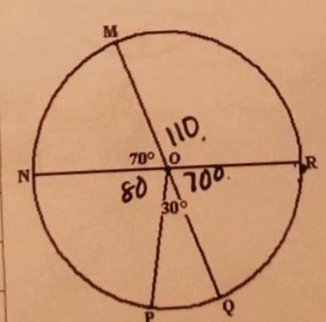
- A central ***angle*** of a circle is an angle whose vertex is the center of the circle and whose sides are radii of the circle. Which mentioned part is a ***central angle***? ∠CBA, ∠DBA, ∠EBD, ∠EBC
- A Minor ***arc*** is part of a circle that measures less than 180°. Which two mentioned parts are ***minor arcs***? $\overset{\frown}{AC}$, $\overset{\frown}{DA}$, $\overset{\frown}{ED}$, $\overset{\frown}{EC}$
- A Semicircle is an arc of a circle that equals 180°. Which mentioned part is a ***semicircle***? $\overset{\frown}{DAC}$, $\overset{\frown}{DEC}$
- A major ***arc*** is part of a circle that measures more than 180°. Which mentioned part is a ***major arc***? $\overset{\frown}{DCE}$, $\overset{\frown}{CEA}$
- Congruent ***arcs*** are two or more arcs that have the same measure. Which pair of mentioned parts are ***congruent arcs***? $\overset{\frown}{DA}$, $\overset{\frown}{CA}$ or $\overset{\frown}{DAC}$, $\overset{\frown}{DEC}$

EX	How can we check ✓ whether the given arc is a minor arc, major arc or semicircle of ⊙C?			
	Given Arc	Minor Arc	Major Arc	Semicircle
1	$\overset{\frown}{AE}$	✓		
2	$\overset{\frown}{AEB}$			✓
3	$\overset{\frown}{FE}$			✓
4	$\overset{\frown}{DFB}$		✓	
5	$\overset{\frown}{BDF}$		✓	
6	$\overset{\frown}{FB}$	✓		



- How many degrees is a circle? 360° How many degrees is a semicircle? 180° How can we use this information to help us find the measure of each arc?

Example: Find the measure of the given arc,

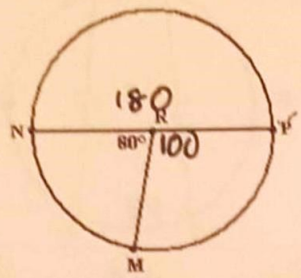


1. $m\overset{\frown}{QR}$ = 70°
2. $m\overset{\frown}{NMR}$ = 180°
3. $m\overset{\frown}{MR}$ = 110°
4. $m\overset{\frown}{MRP}$ = 250°
5. $m\overset{\frown}{NP}$ = 80°
6. $m\overset{\frown}{RQM}$ = 250°
7. $m\overset{\frown}{PRN}$ = 280°
8. $m\overset{\frown}{QMR}$ = 290°

#1-18, how do we justify the measures of each requested arc?

OUR TURN

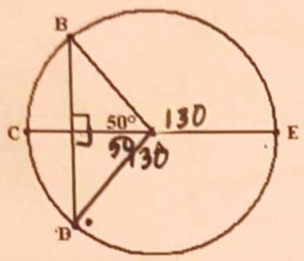
1.



$m\overset{\frown}{MN} = 80°$ $m\overset{\frown}{MPN} = 280°$

$m\overset{\frown}{PMN} = 180$ $m\overset{\frown}{MP} = 100°$

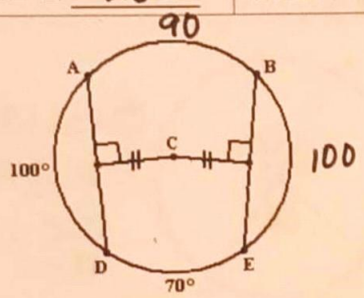
3.



$m\overset{\frown}{CD} = 50°$ $m\overset{\frown}{BE} = 130°$

$m\overset{\frown}{DEB} = 260°$ $m\overset{\frown}{DEC} = 310°$

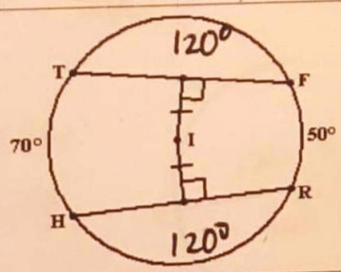
5.



$m\overset{\frown}{BE} = 100°$ $m\overset{\frown}{AB} = 90°$

$m\overset{\frown}{ABE} = 190°$ $m\overset{\frown}{ABD} = 260°$

7.



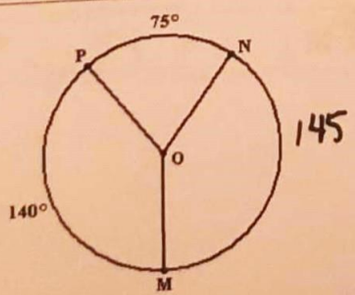
120

360
−120
240/2

$m\overset{\frown}{FT} = 120°$ $m\overset{\frown}{RHT} = 190°$

$m\overset{\frown}{RFT} = 170°$ $m\overset{\frown}{TRF} = 240°$

9.

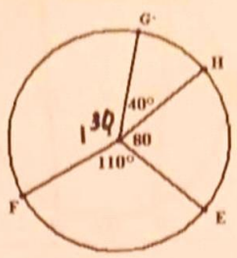


$m\overset{\frown}{NM} = 145°$ $m\overset{\frown}{MNP} = 220°$

$m\overset{\frown}{NMP} = 285°$ $m\overset{\frown}{NPM} = 215°$

YOUR TURN

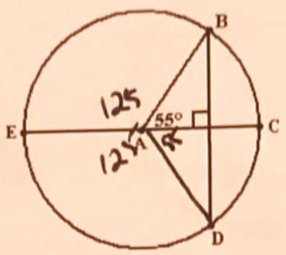
2.



$m\overset{\frown}{GE} = 120°$ $m\overset{\frown}{GEF} = 230°$

$m\overset{\frown}{GF} = 130°$ $m\overset{\frown}{HF} = 190°$

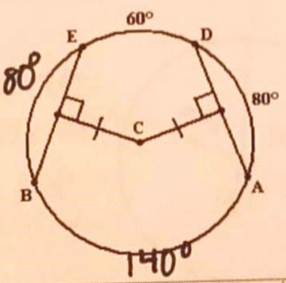
4.



$m\overset{\frown}{CD} = 55°$ $m\overset{\frown}{BE} = 125°$

$m\overset{\frown}{DEB} = 250°$ $m\overset{\frown}{DEC} = 305°$

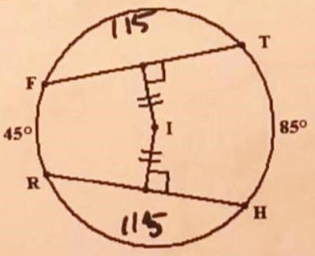
6.



$m\overset{\frown}{BE} = 80°$ $m\overset{\frown}{AB} = 140°$

$m\overset{\frown}{ABE} = 220°$ $m\overset{\frown}{ABD} = 280°$

8.



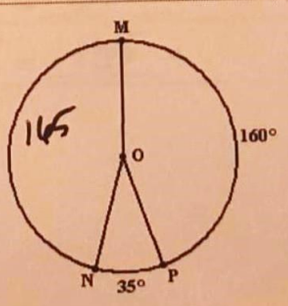
135

360
−135
230/2

$m\overset{\frown}{FT} = 115°$ $m\overset{\frown}{RHT} = 200°$

$m\overset{\frown}{RFT} = 160°$ $m\overset{\frown}{TRF} = 245°$

10.



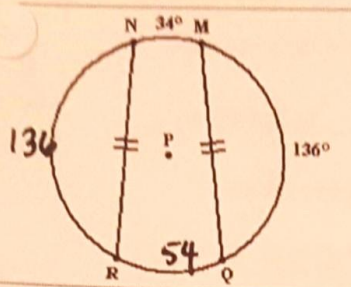
$m\overset{\frown}{NM} = 165°$ $m\overset{\frown}{MNP} = 200°$

$m\overset{\frown}{NMP} = 325°$ $m\overset{\frown}{NPM} = 195°$

INSCRIBED ANGLES OF A CIRCLE

OUR TURN

1



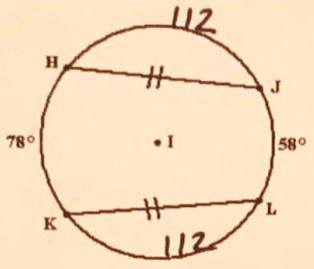
$m\overset{\frown}{QR}$ = 54° $m\overset{\frown}{QRN}$ = 190°

$m\overset{\frown}{QRM}$ = 224° $m\overset{\frown}{NQM}$ = 326°

13.

136

360
−136
224/2

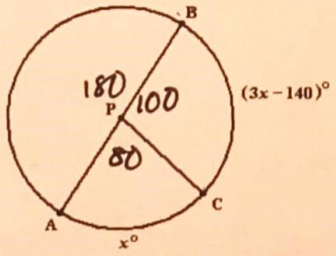


$m\overset{\frown}{HJ}$ = 112° $m\overset{\frown}{LKH}$ = 190

$m\overset{\frown}{KLJ}$ = 170° $m\overset{\frown}{HLJ}$ = 248°

15.

3x − 140 + x = 180
4x − 140 = 180
4x = 320
x = 80

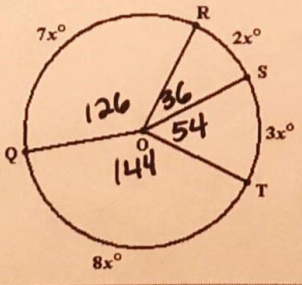


$m\overset{\frown}{AC}$ = 80° $m\overset{\frown}{CB}$ = 100°

$m\overset{\frown}{BAC}$ = 260° $m\overset{\frown}{CBA}$ = 260

17.

20x = 360
x = 18

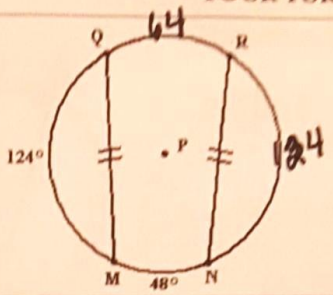


$m\overset{\frown}{QR}$ = 126° $m\overset{\frown}{RS}$ = 36

$m\overset{\frown}{ST}$ = 54° $m\overset{\frown}{TQ}$ = 144

YOUR TURN

12.



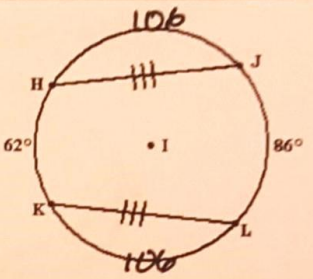
$m\overset{\frown}{QR}$ = 64° $m\overset{\frown}{QRN}$ = 188°

$m\overset{\frown}{QRM}$ = 236° $m\overset{\frown}{NQM}$ = 312°

14.

148

360
−148
212/2

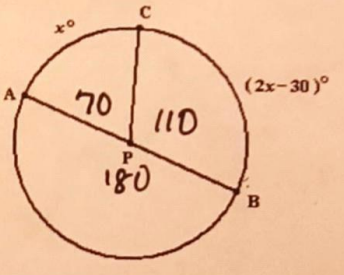


$m\overset{\frown}{HJ}$ = 106° $m\overset{\frown}{LKH}$ = 168°

$m\overset{\frown}{KLJ}$ = 192° $m\overset{\frown}{HLJ}$ = 254°

16.

2x − 30 + x = 180
3x − 30 = 180
3x = 210
x = 70

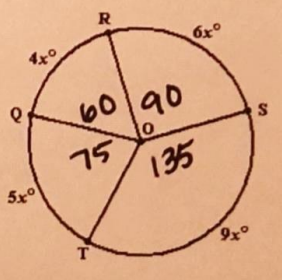


$m\overset{\frown}{AC}$ = 70° $m\overset{\frown}{CB}$ = 110°

$m\overset{\frown}{BAC}$ = 250° $m\overset{\frown}{CBA}$ = 290°

18.

24x = 360
x = 15



$m\overset{\frown}{QR}$ = 60° $m\overset{\frown}{RS}$ = 90°

$m\overset{\frown}{ST}$ = 135° $m\overset{\frown}{TQ}$ = 75°