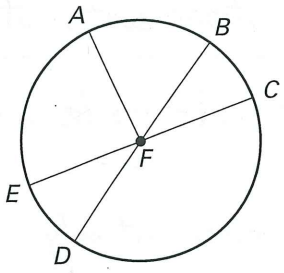
LESSON 6.2

Exercise Set A

MM2G3b Understand and use properties of central, inscribed, and related angles.

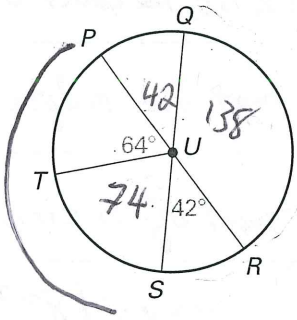
MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.

In ⊙*F*, determine whether the given arc is a *minor arc, major arc,* or *semicircle*.



1. $\overset{\frown}{AB}$ minor
2. $\overset{\frown}{AE}$ minor
3. $\overset{\frown}{EAC}$ semicircle
4. $\overset{\frown}{ACD}$ major
5. $\overset{\frown}{CAD}$ major
6. $\overset{\frown}{DEB}$ semicircle
7. $\overset{\frown}{BAE}$ minor
8. $\overset{\frown}{DEC}$ Major

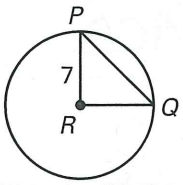
In the figure, $\overline{PR}$ and $\overline{QS}$ are diameters of ⊙*U*. Find the measure of the indicated arc.



9. $m\overset{\frown}{PQ}$ 42°
10. $m\overset{\frown}{ST}$ 74
11. $m\overset{\frown}{TPS}$ 286
12. $m\overset{\frown}{RT}$ 116
13. $m\overset{\frown}{RQS}$ 318
14. $m\overset{\frown}{QR}$ 138
15. $m\overset{\frown}{PQS}$ 222
16. $m\overset{\frown}{TQR}$ 244
17. $m\overset{\frown}{PS}$ 138
18. $m\overset{\frown}{PTR}$ 180

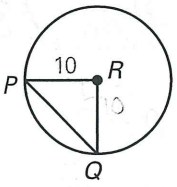
$\overset{\frown}{PQ}$ has a measure of 90° in ⊙*R*. Find the length of $\overline{PQ}$.

19.



$7\sqrt{2}$

20.



$10\sqrt{2}$

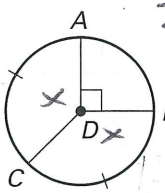
Find the indicated arc measure.

21. $m\overset{\frown}{AC}$

$2x+90=360$

$2x=270$

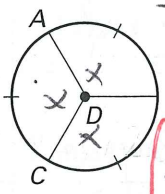
$\boxed{x=135}$



22. $m\overset{\frown}{ACB}$

$3x=360$

$\boxed{x=120}$



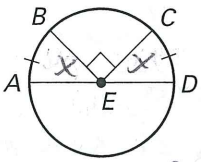
$\boxed{\overset{\frown}{ACB}=240}$

23. $m\overset{\frown}{DAB}$

$180+2x+90=360$

$2x=90$

$\boxed{x=45}$



$DAB=180+45$

$\boxed{\overset{\frown}{DAB}=225}$

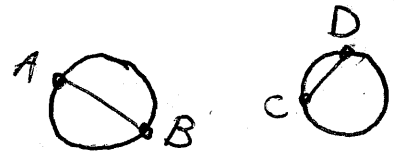
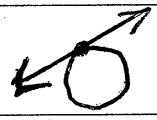
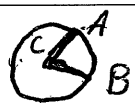
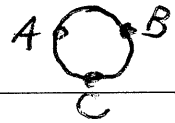
Two diameters of ⊙*T* are $\overline{PQ}$ and $\overline{RS}$. Find the given arc measure if $m\overset{\frown}{PR}=35°$.

24. $m\overset{\frown}{PS}$
25. $m\overset{\frown}{PSR}$
26. $m\overset{\frown}{PRQ}$
27. $m\overset{\frown}{PRS}$

UNIT 6

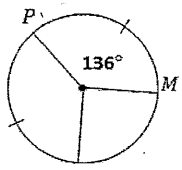
6.1 Properties of Tangents to Circles and 6.2 Arc Measures

VOCABULARY and definitions

Chord a segment whose endpoints are on circle	
Diameter a chord that contains center of circle	
Secant a line that intersects circle in 2 points	
Tangent a line intersecting circle at only 1 point	
Central angle (of circle) angle whose vertex is the center of circle	
Semicircle arc with endpts that are endpts of diameter	 equals 180°
Arc an unbroken part of a circle	
Minor arc an arc less than 180°	 $\overset{\frown}{AB}$
Major arc an arc more than 180°	$\overset{\frown}{ACB}$
Measure of a minor arc $< 180°$	
Measure of a major arc $> 180°$	
Congruent circles two circles with same radius	
Congruent arcs 2 arcs of same measures in congruent circles	

Examples: Refer to the diagrams below-

Calculate $m\,\overset{\frown}{MN}$.



LESSON 6.3

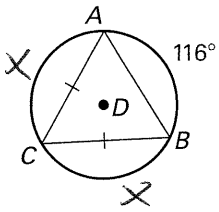
Exercise Set A

MM2G3a Understand and use properties of chords, tangents, and secants as an application of triangle similarity.

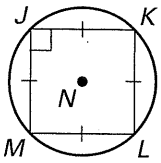
MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.

Find the measure of the given arc or chord.

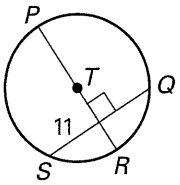
1. $m\widehat{BC}$ $2x+116=360$ $x=122$



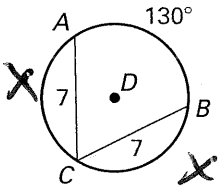
2. $m\widehat{LM}$ $90°$



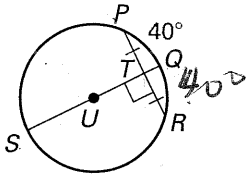
3. $\overline{QS}$ 22



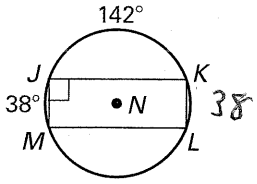
4. $m\widehat{AC}$ 115



5. $m\widehat{PQR}$ $80°$



6. $m\widehat{KLM}$ $180°$



142

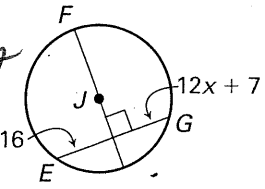
Find the value of *x*.

7.

$3x+16=12x+7$

$9=9x$

$\boxed{x=1}$

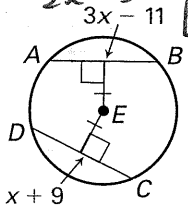


8.

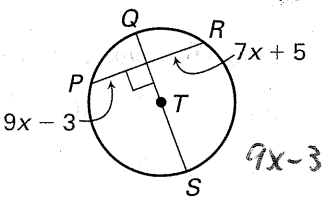
$3x-11=x+9$

$2x=20$

$\boxed{x=10}$



9.

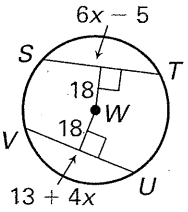


$9x-3=7x+5$

$2x=8$

$\boxed{x=4}$

10.

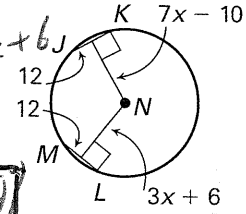


11.

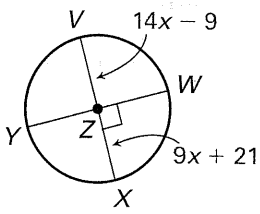
$7x-10=3x+6$

$4x=16$

$\boxed{x=4}$



12.



$14x-9=9x+21$

$5x=30$

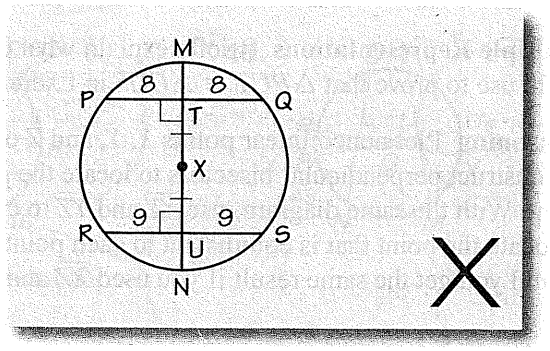
$\boxed{x=6}$

13. Error Analysis *Explain* what is wrong with the diagram of $\odot X$.

$13+4x=6x-5$

$18=2x$

$\boxed{9=x}$



X

UNIT 6

LESSON 6.3

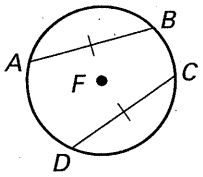
Exercise Set B

MM2G3a Understand and use properties of chords, tangents, and secants as an application of triangle similarity.

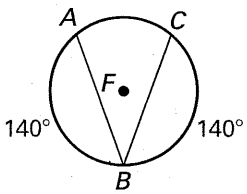
MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.

What can you conclude about the diagram? State a theorem that justifies your answer.

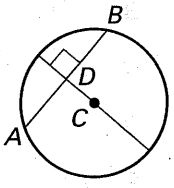
1.



2.

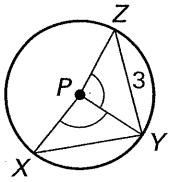


3.



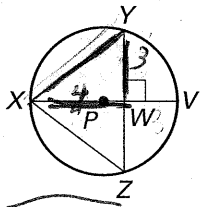
***P* is the center of the circle. Use the given information to find $\overline{XY}$.**

4. $ZY = 3$



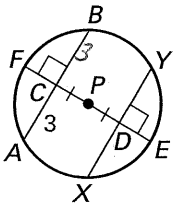
XY=3

5. $ZY = 6, XW = 4$



XY=5

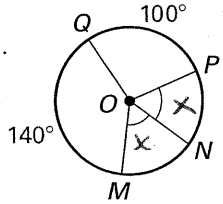
6. $CA = 3$



XY=6

Find the measure of $\widehat{MN}$.

7.

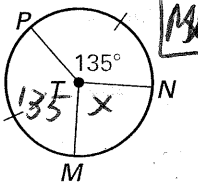


360-240
=2x

x=60

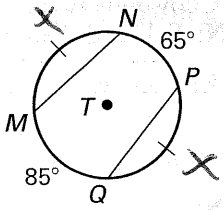
MN=60

8.



MN=90

9.

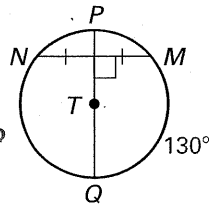


2x+150=360

2x=210

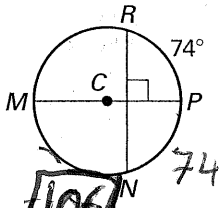
MN=105

10.



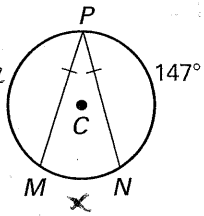
MN=100

11.



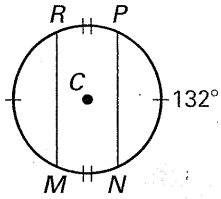
106

12.



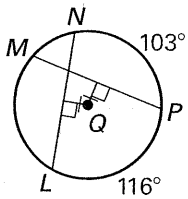
x=66

13.



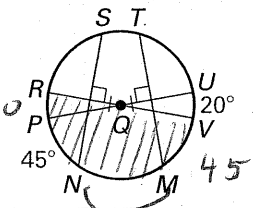
$\widehat{MN}$=48

14.



MN=38

15.



MN=70