Name: _____ # _____

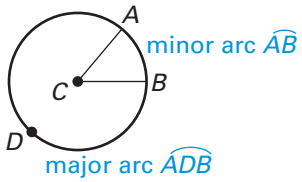
Geometry: Period _____
Ms. Pierre
Date: _____

Arcs & Central Angles

Today's Objective

SWBAT use the measure of central angles to find arc measures.

A *central angle* of a circle is an angle whose vertex is the center of the circle. In the diagram, $\angle ACB$ is a central angle of $\odot C$. A *minor arc* is an arc whose measure is less than 180°. In the diagram, $\overset{\frown}{AB}$ is a minor arc. A *major arc* is an arc whose measure is greater than 180°. In the diagram, $\overset{\frown}{ADB}$ is a major arc.



Explore

Complete the table below. Use a protractor to measure the central angle in each of the diagrams below.

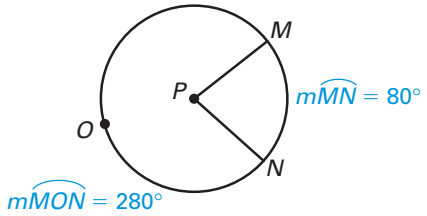


Diagram 1

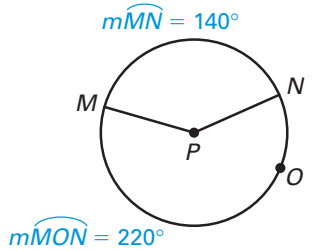


Diagram 2

	$m\angle MPN$	$m\overset{\frown}{MN}$	$m\overset{\frown}{MON}$	$m\overset{\frown}{MN} + m\overset{\frown}{MON}$
Diagram 1	?	?	?	?
Diagram 2	?	?	?	?

Name a minor arc of $\odot P$ in Diagram 1. _____

Name a major arc of $\odot P$ in Diagram 1. _____

What is the relationship between the measure of a central angle and the measure of the minor arc it intercepts? _____

_____

In each diagram, what is the sum of $m\overset{\frown}{MN}$ and $m\overset{\frown}{MON}$?

_____

What is the relationship between the measure of a major arc and its corresponding minor arc?

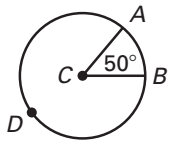
_____

MEASURING ARCS

The measure of a minor arc is the measure of its central angle. The expression $m\overset{\frown}{AB}$ is read as "the measure of arc *AB*."

The measure of the entire circle is _____. The measure of a major arc is the difference between _____ and the measure of the related minor arc.

The measure of a semicircle is _____.



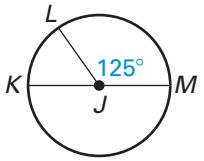
$m\overset{\frown}{AB} = 50°$

$m\overset{\frown}{ADB} = 310°$

Example 1

Find the measure of each arc of $\odot J$, where $\overline{KM}$ is a diameter.

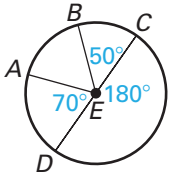
a) $m\overset{\frown}{YZ}$ b) $\angle YWZ$ c) $\angle YWZ$



☑ Check for Understanding

Find the measure of each arc of $\odot E$, where $\overline{CD}$ is a diameter.

1) $\overset{\frown}{AD}$ 2) $\overset{\frown}{AB}$ 3) $\overset{\frown}{CD}$

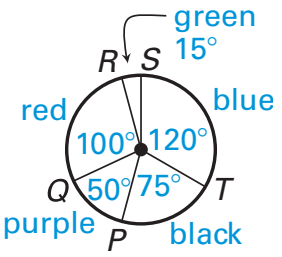


4) $\overset{\frown}{BDC}$ 5) $\overset{\frown}{ACD}$ 6) $\overset{\frown}{BC}$

Example 2

Several students were recently asked about their favorite colo
The results are shown in the graph. Find the indicated arc measures.

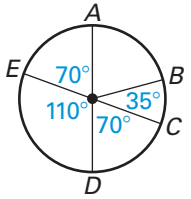
1) $m\overset{\frown}{RT}$ 2) $m\overset{\frown}{PRT}$



3) $m\overset{\frown}{RTQ}$ 4) $m\overset{\frown}{STQ}$

☑ Check for Understanding

Find the measure of each arc.



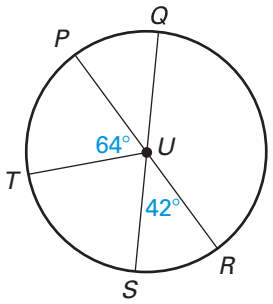
1) $\overset{\frown}{AED}$ 2) $\overset{\frown}{AC}$

3) $\overset{\frown}{ACE}$ 4) $\overset{\frown}{BE}$

5) $\overset{\frown}{CDE}$ 6) $\overset{\frown}{AEC}$

Guided Practice

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



1. $m\widehat{PQ}$

2. $m\widehat{ST}$

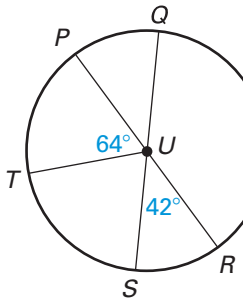
3. $m\widehat{TPS}$

4. $m\widehat{RT}$

5. $m\widehat{RQS}$

Independent Practice

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



1. $m\widehat{QR}$

2. $m\widehat{PQS}$

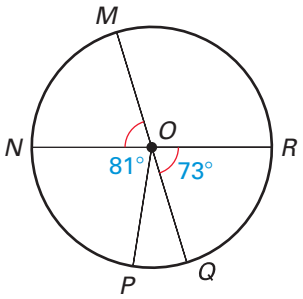
3. $m\widehat{TQR}$

4. $m\widehat{PS}$

5. $m\widehat{PTR}$

Home Work

In the figure, $\overline{MQ}$ and $\overline{NR}$ are diameters of $\odot O$. Find the measure of the indicated arc.



1. $\overset{\frown}{MN}$

2. $\overset{\frown}{NQ}$

3. $\overset{\frown}{NQR}$

4. $\overset{\frown}{MRP}$

5. $\overset{\frown}{PN}$

6. $\overset{\frown}{MNQ}$

7. $\overset{\frown}{QR}$

8. $\overset{\frown}{MR}$

9. $\overset{\frown}{QMR}$

10. $\overset{\frown}{PQ}$

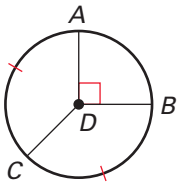
11. $\overset{\frown}{PRN}$

12. $\overset{\frown}{MQN}$

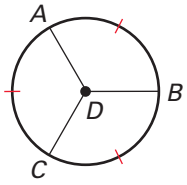
Home Work

Find the indicated arc measure.

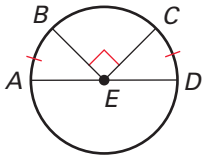
13. $m\overset{\frown}{AC}$



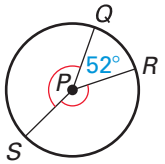
14. $m\overset{\frown}{ACB}$



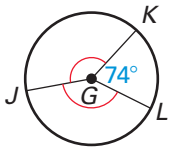
15. $m\overset{\frown}{DAB}$



16. $m\overset{\frown}{QS}$



17. $m\overset{\frown}{LKJ}$



18. $m\overset{\frown}{DH}$