

ESSENTIAL QUESTION: How do you find the measure of an arc of a circle?

QUESTIONS:

Vocabulary:

Central Angle

An angle with its vertex at the center



Minor Arc

An arc less than 180°

Major Arc

An arc more than 180°

Semicircle

An arc = 180°
Half the circle

Adjacent Arcs

Side-by-side arcs

Arc Measure

The degree of an arc

Congruent Circles

Circles with congruent radii

Congruent Arcs

Arcs with congruent measure and congruent radii

Key Concepts

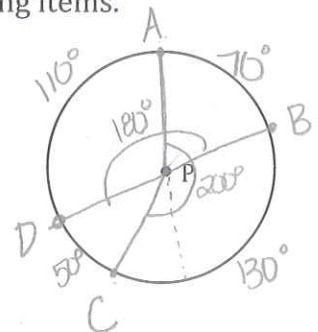
The measure of an arc is the measure of its central angle.

The measure of a semicircle is 180° .



A1. Use $\odot P$ at the right to sketch the following items.

- $m\widehat{AB} = 70^\circ$
- $m\widehat{ABC} = 200^\circ$
- Semicircle \widehat{BAD}
- Diameter \overline{BD}
- Radius \overline{PA}
- Central Angle $\angle APC$



SUMMARY:

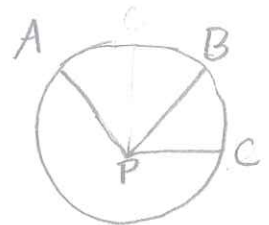
Measure of an arc is equal to the measure of its central angle
Need to also know: full circle = 360° , semicircle = 180°

QUESTIONS:

Postulate 23: Arc Addition Postulate

The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs.

$$m\widehat{AB} + m\widehat{BC} = m\widehat{AC}$$



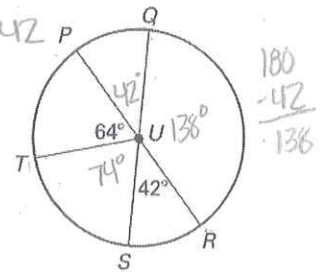
A2. Use the diagram to find the following if \overline{PR} and \overline{SQ} are diameters.

a. $m\widehat{ST}$ 74°

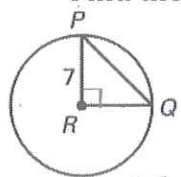
b. $m\widehat{QTR}$ $42 + 64 + 74 + 42 =$ 222°

c. $m\widehat{RSP}$ 180°

d. $m\widehat{QRP}$ $360 - 42 =$ 318°



A3. The measure of \widehat{QP} is 90° . Find the length of \overline{PQ} .



RP and RQ are radii so both = 7

$$7^2 + 7^2 = (PQ)^2$$

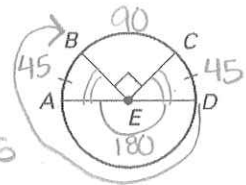
$$49 + 49 = (PQ)^2$$

$$\sqrt{98} = \sqrt{(PQ)^2} \approx \text{span style="border: 1px solid black; padding: 2px;"> $9.9$$$

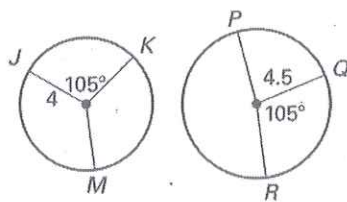
A4. Find $m\widehat{DAB}$.

$$\frac{180}{-90} = 90 \div 2 = 45$$

$$\frac{180}{+45} = \text{span style="border: 1px solid black; padding: 2px;"> $225^\circ$$$



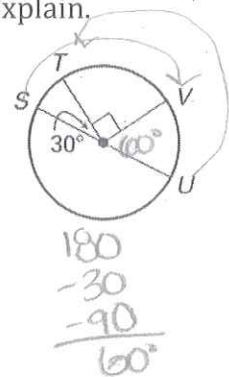
A5. Is $\widehat{JK} \cong \widehat{RQ}$? Explain.



No different radius length.

A6. Is $\widehat{STV} \cong \widehat{UVT}$? Explain.

No different measures



$$\frac{180}{-30} = 60^\circ$$

A7. A game show wheel shown is divided into congruent sections. What is the measure of a single arc?

$$n = 15$$

$$\frac{360}{n} = \frac{360}{15} = \text{span style="border: 1px solid black; padding: 2px;"> $24^\circ$$$

