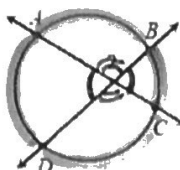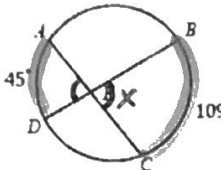Name: _____

ARC & ANGLE MEASURES: *Intersecting Chords, Secants, & Tangents*

INTERIOR INTERSECTIONS ✱ Vertex inside

If two secants or chords intersect inside a circle, then the measure of the angle formed is equal to half the sum of the measures of the intercepted arcs.

$$m\angle 1 = \frac{m\,\overset{\frown}{AD} + m\,\overset{\frown}{BC}}{2}$$

$$m\angle 2 = \frac{m\,\overset{\frown}{AB} + m\,\overset{\frown}{DC}}{2}$$

1. $m\angle AED$

$$X = \frac{109 + 45}{2}$$
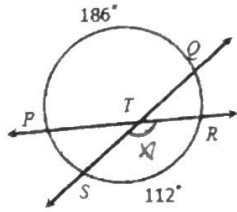
$$\boxed{X = 77°}$$

2. $m\angle STR$

$$X = \frac{186 + 112}{2}$$

$$\boxed{X = 149°}$$
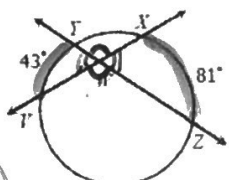
3. $m\angle YWX$

$$X = \frac{43 + 81}{2}$$

$$X = 62°$$

$$180 - 62 = \boxed{118°}$$
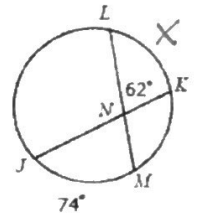
4. $m\overset{\frown}{LK}$

$$62 = \frac{X + 74}{2}$$

$$124 = X + 74$$
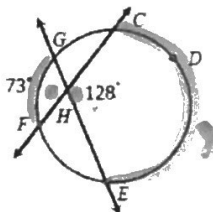
$$\boxed{50 = X}$$

5. $m\overset{\frown}{CDE}$

$$128 = \frac{73 + X}{2}$$

$$\boxed{X = 183°}$$

6. $m\overset{\frown}{QT}$
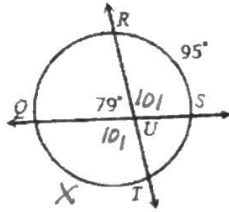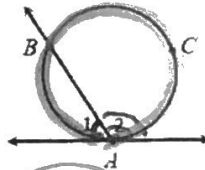
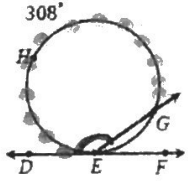$$101 = \frac{95 + X}{2}$$

$$202 = 95 + X$$

$$\boxed{107° = X}$$

ON THE CIRCLE INTERSECTIONS ✱ Vertex ON

If a secant and a tangent intersect at the point of tangency, then the measure of each angle formed is equal to half the measure of its intercepted arc.

$$m\angle 1 = \frac{1}{2}\left(m\,\overset{\frown}{AB}\right)$$

$$m\angle 2 = \frac{1}{2}\left(m\,\overset{\frown}{BCA}\right)$$

7. $m\angle DEG$

$$\boxed{154°}$$

308°

8. $m\angle DBC$

$$\boxed{84°}$$

192°

168°

9. $m\overset{\frown}{XY}$
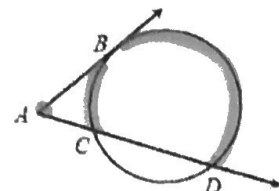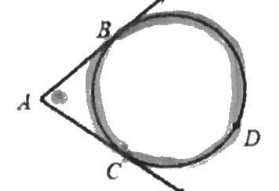
$$(29)\cdot 2 = \boxed{58°}$$

151°
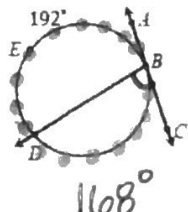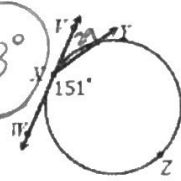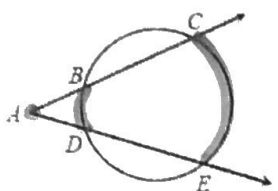
Angle = $\dfrac{\text{Big Arc} - \text{Small Arc}}{2}$

Name: _____

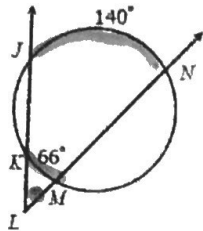## EXTERIOR INTERSECTIONS   ✱Vertex OUTSIDE

If secants and/or tangents intersect on the exterior of a circle, then the
measure of the angle formed is equal to half the difference of the intercepted arcs.

TWO SECANTS	SECANT & TANGENT	TWO TANGENTS
$m\angle A = \dfrac{m\widehat{CE} - m\widehat{BD}}{2}$	$m\angle A = \dfrac{m\widehat{BD} - m\widehat{BC}}{2}$	$m\angle A = \dfrac{m\widehat{BDC} - m\widehat{BC}}{2}$

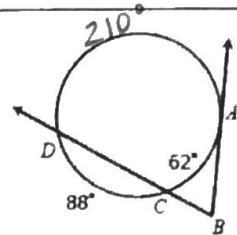**10.** $m\angle KLM$

$X = \dfrac{140 - 66}{2}$

$\boxed{X = 37°}$
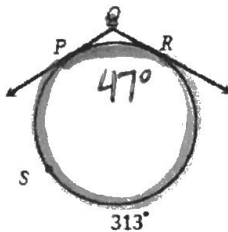
11. $m\angle ABC$

$X = \dfrac{210 - 62}{2}$

$\boxed{X = 74°}$

12. $m\angle PQR$

$X = \dfrac{313 - 47}{2}$

$\boxed{X = 133°}$

13. $m\angle BCD$

$X = \dfrac{67 - 19}{2}$

$\boxed{X = 24°}$
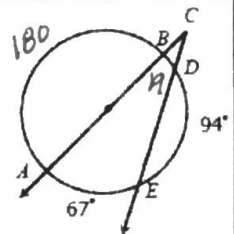
14. $m\widehat{SW}$

$40 = \dfrac{X - 75}{2}$

$80 = X - 75$

$\boxed{155° = X}$
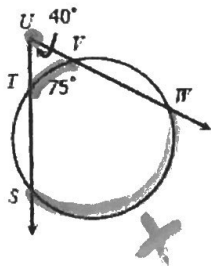
15. $m\widehat{QU}$

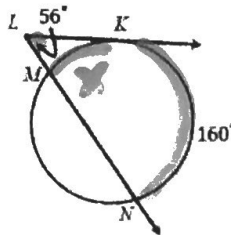$35 = \dfrac{X - 46}{2}$

$\boxed{X = 116°}$
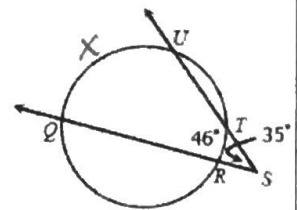
16. $m\widehat{MK}$

$56 = \dfrac{160 - X}{2}$

$\boxed{X = 48°}$

17. $m\widehat{EF}$

$77 = \dfrac{191 - X}{2}$

$154 = 191 - X$

$X = 37$

$360 - 37 - 191 = \boxed{132°}$