TOPIC: **10.4 Use Inscribed Angles and Polygons**	NAME: KEY DATE:

ESSENTIAL QUESTION: **How do you find the measure of an inscribed angle?**

QUESTIONS:

Vocabulary:

Inscribed Triangle

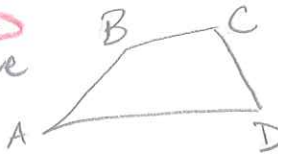
A △ whose vertices are on the circle

Opposite Angles

Non-consecutive

∠A & ∠C

∠B & ∠D



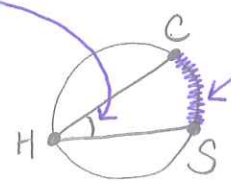
Inscribed Angle

An angle in a circle with its vertex on the circle → ∠CHS

Intercepted Arc

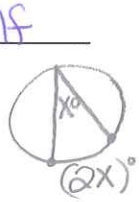
An arc formed by the sides of an angle

$\overset{\frown}{CS}$ is an intercepted arc



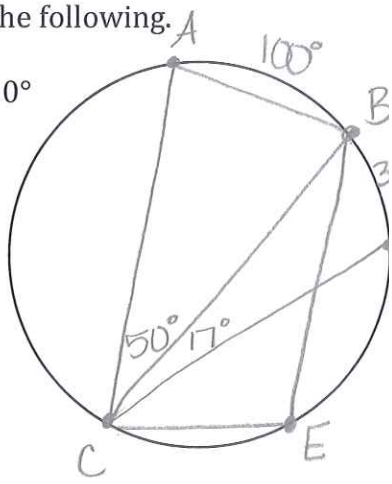
Theorem 10.7:

The measure of an inscribed angle is half the measure of its intercepted arc.

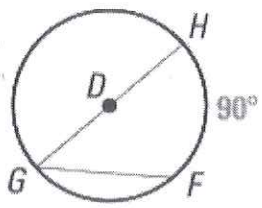


A1. Use the circle at the right to sketch or find the following.

a. Inscribed Angle $\angle ACB$ with measure of 50°
b. $\overset{\frown}{DB}$ with a measure of 34°
c. Chord $\overline{CD}$
d. Inscribed Quadrilateral CABE
e. $m\overset{\frown}{AB}$ $50(2) = 100°$
f. $m\angle DCB$ $\frac{34}{2} = 17°$



A2. Find $m\angle G$ and $m\overset{\frown}{HGF}$.



$\frac{90}{2} = 45$

$m\angle G = 45°$

$360 - 90 = 270$

$m\overset{\frown}{HGF} = 270°$

SUMMARY:

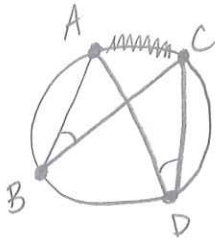
An iscribed angle is half the measure of the intercepted arc.

QUESTIONS:

Theorem 10.8:

If two inscribed angles of a circle intercept the same arc, then the angles are congruent.

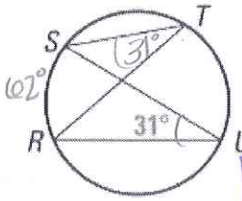
$m\angle ABC = m\angle ADC$



Theorem 10.9:

An inscribed angle is a right angle if and only if the angle intercepts a semicircle.

A3. Find $m\widehat{RS}$ and $m\angle STR$.

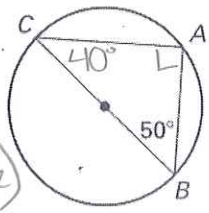


$31(2) = 62$

$m\widehat{RS} = 62°$

$m\angle STR = 31°$

A4. Find $m\angle CAB$.



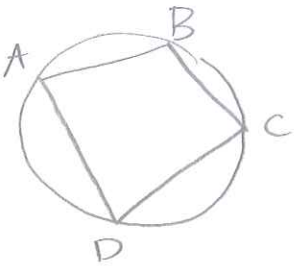
90°

(intercepts a semicircle)

Theorem 10.10:

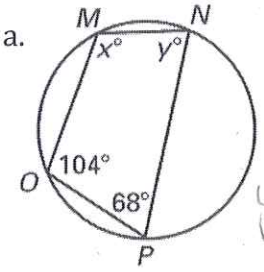
A quadrilateral can be inscribed in a circle if and only if its opposite angles are supplementary.

$m\angle A + m\angle C = m\angle B + m\angle D = 180°$



A5. Find values of the variables.

a.



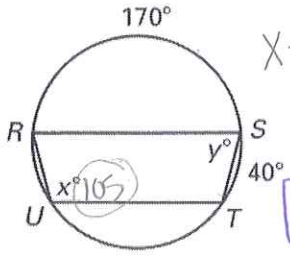
$x + 68 = 180$

$x = 112$

$y + 104 = 180$

$y = 76$

b.



$x = \frac{1}{2}(170 + 40)$

$= \frac{1}{2}(210)$

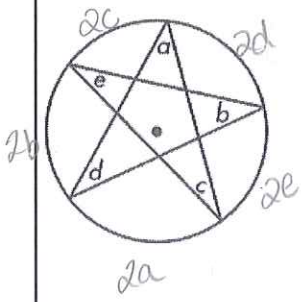
$x = 105$

$y + 105 = 180$

-105

$y = 75$

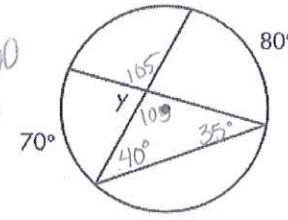
A6. Find $a + b + c + d + e$.



$2(a+b+c+d+e) = 360$

$a+b+c+d+e = 180$

A7. Find the value of y.



$y + 105 = 180$

$y = 75$