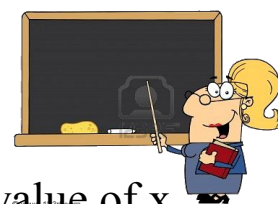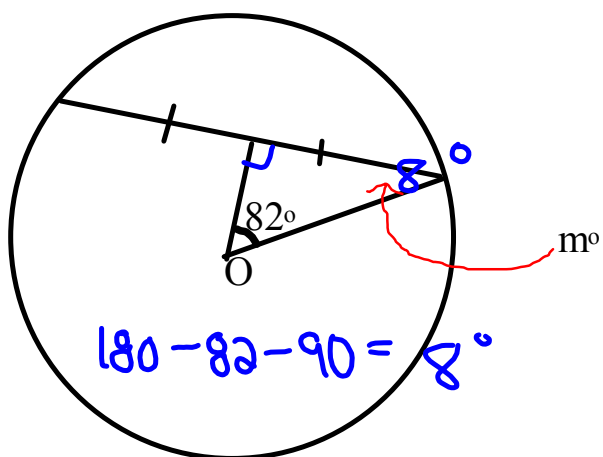Warm Up

Determine the value of m, when O is the centre

82°

O

$180 - 82 - 90 = 8°$

m°
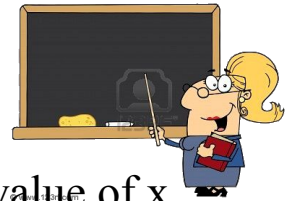
Determine the value of x, when O is the centre

x ?

8

15

O

Determine the value of m,
when O is the centre

82°   O   m°

$$180° - 82° - 90°$$

$$= 8°$$

Determine the value of x,
when O is the centre

12.7   x   12.7

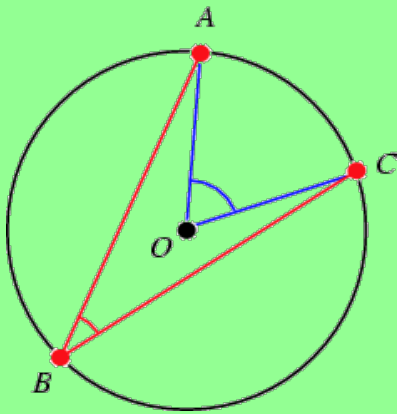8   15   O
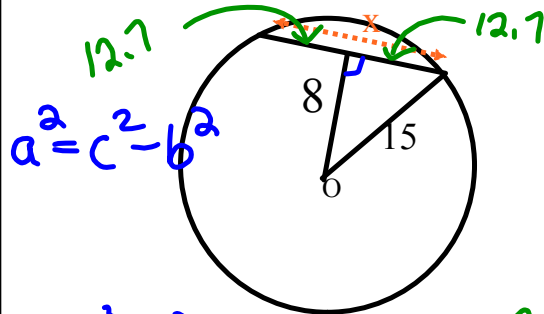
$$a^2 = c^2 - b^2$$

$$c^2 = a^2 + b^2$$

$$15^2 = a^2 + 8^2$$

$$225 = a^2 + 64$$

$$\sqrt{161} = \sqrt{a^2}$$

$$12.7 = a$$

$$x = 12.7 + 12.7$$

$$= 25.4$$

Section 8.3

Properties of Angles in Circles
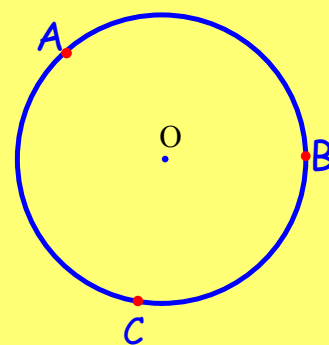
Investigate:

You will need a cut-out of a circle, a protractor and a ruler.

1. Choose 2 points on the circumference of your circle. Label them as A and B, and then choose a third point C on the circle . Join AC and BC. (C on the larger arc)

2. Measure the < ACB with the protractor.

3. Join AO and OB and measure < AOB

4. Record your measurements
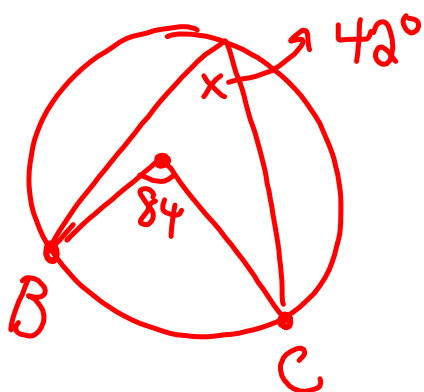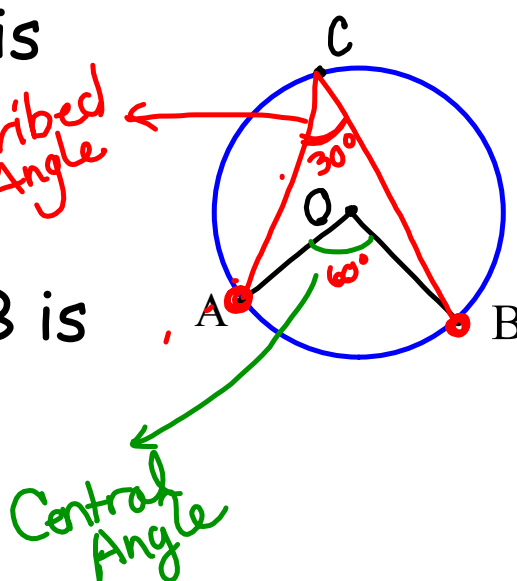
   Are the two angles related

5. Repeat the steps above for points A, B and C on a different circle.
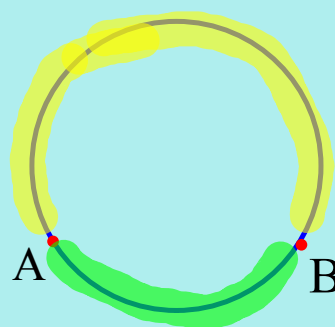
• The longer arc AB is the major arc .

Inscribed Angle

C

30°

O

• The shorter arc AB is the minor arc.

60°

A

B

Contral Angle
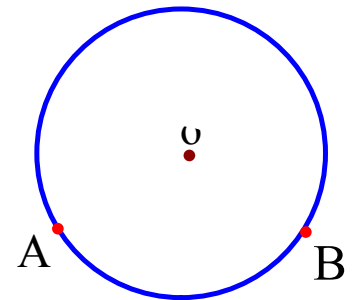
42°

x

84

B

C

- The longer arc AB is the major arc .

- The shorter arc AB is the minor arc.

Central Angle:

The angle formed by joining the endpoints of an arc to the centre of a circle (involves radii)
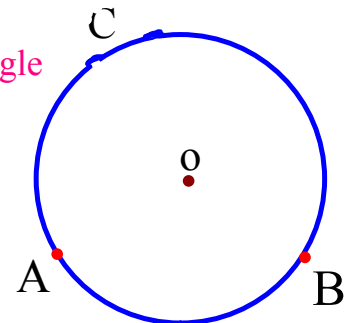
Central Angle

Inscribed Angle:

The angle formed by joinging the endpoints of a arc to a point on the circle

Inscribed Angle

Inscribed and central angles are SUBTENDED by the MINOR arc

START and FINISH at the same points on the circumference

Central Angle & Inscribed Angle Property

In a circle, the measure of a central angle subtended by an arc is TWICE the measure of an inscribe angle subtended by the same arc.

Central angle is twice the inscribed angle
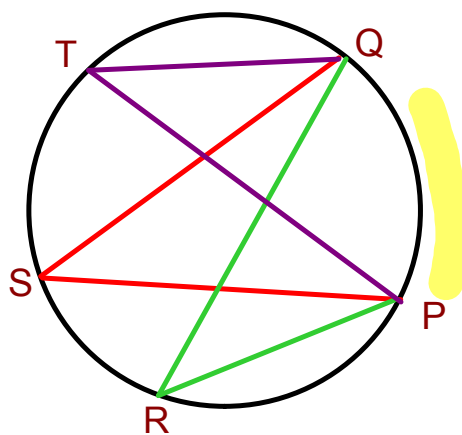
Inscribed angle is half the center angle
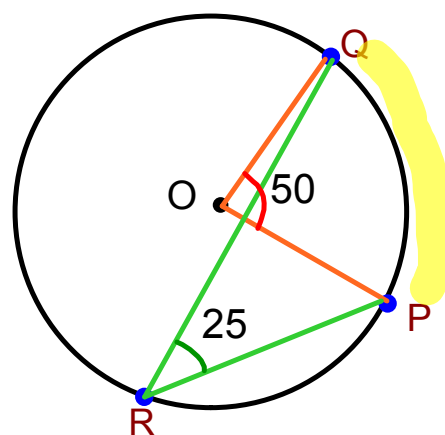
Inscribed Angle Property

In a circle, all inscribed angles
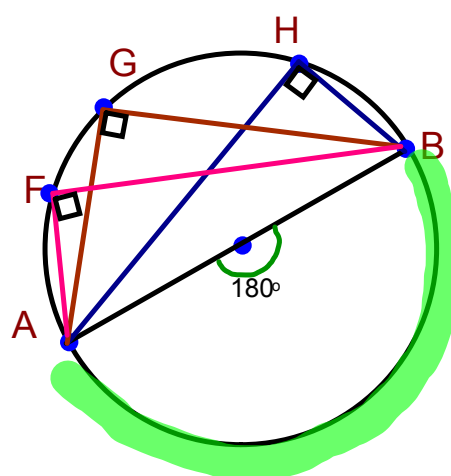subtended by the same arc are
congruent. *(same)*

<PTQ = < PSQ = <PRQ

Angles is a Semicircle Property

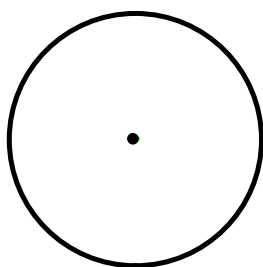All inscribed angles subtended
by a semicircle are right angles

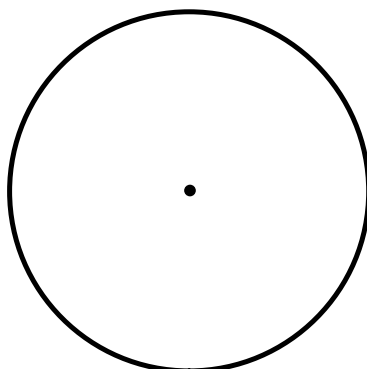**Makes sense**

Inscribed angles are always half the centre

Center Angle = 180⁰   (Straight Line)

Inscribed angle is half the Central Angle

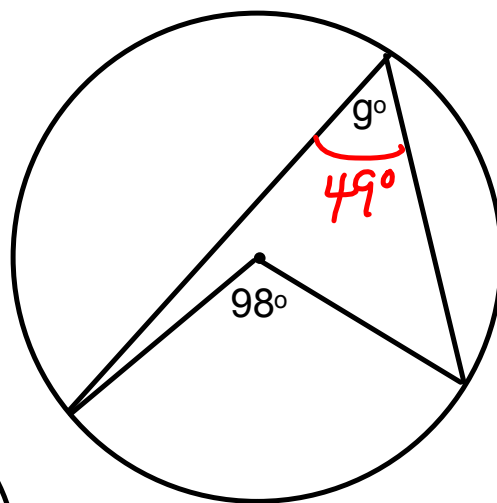Inscribed = (1/2) central
=(1/2) 180⁰
= 90⁰

Draw a
central angle

Draw an
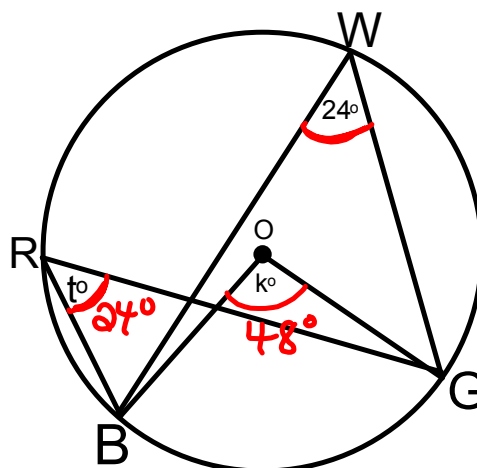inscribed angle

g°

49°
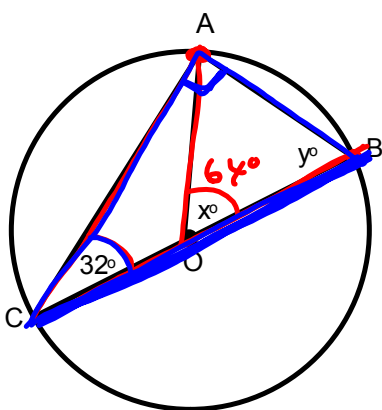
98°

What is the value of $g\circ$?

Example 1
Using Inscribe and Central Angles

Point O is the center of a circle.
Determine the values of k and t.

Example 2
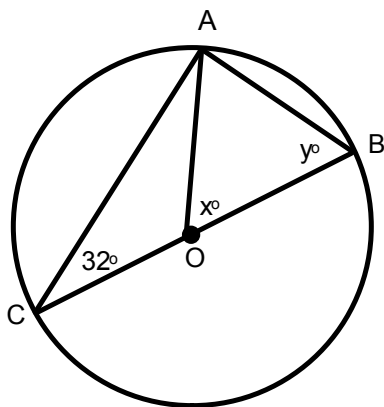## Applying the Property of an Angle Inscribed in a Semicircle

Point O is the center of the circle.
Determine the value of x° and y°.

A

64°

y° B

x°

32° O

C

$$y^\circ = 180 - 32 - 90 = 58^\circ$$

Example 2

Applying the Property of an Angle Inscribed in a Semicircle

Point O is the center of the circle.
Determine the value of $x°$ and $y°$.

For Y°

In Triangle ABC, < A = 90°
(Insribed from the semicircle)

THUS

Find y°
by Angle Sum of Triangle of △ABC

180 - 90 -32 = 48°

y° = 48°

For X°

Central/Inscribe Angle Theorem

<AOB is a Central Angle
subtended from arc AB
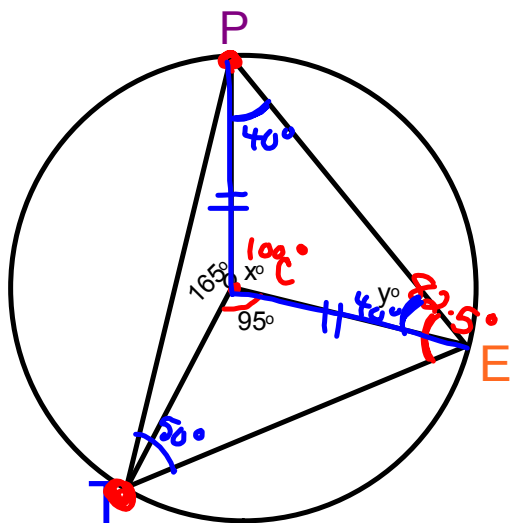
<ACB is an Inscribed Angle
subtended from arc AB

Thus

<AOB = 2 <ACB
      = 2 (32°)
      = 64

Example 3
Determining Angles in an Inscribed Triangle

Determining the values of x ^{o} and y^{o}.

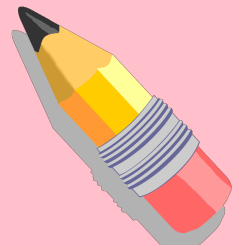Hint: LOOK AT CENTER ANGLES and
Complete the circle for x

Homework:

p.410 - 412

4, 5, 6

Attachments

CSI Crime Scene Investigation.mp3