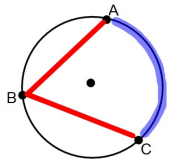
Monday, May 4, 2020

Finish Sec 12-3: Inscribed Angles

Review of Inscribed Angles:

Inscribed angle is an angle whose vertex is on the circle and whose sides are chords of the circle.



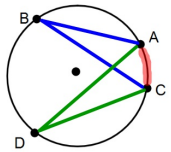
$\angle ABC$ is an inscribed angle.

The measure of an inscribed angle equals half of the intercepted arc.

$m\angle ABC = \frac{1}{2} \bullet m\overset{\frown}{AC}$

Corollaries Corollaries to the Inscribed Angle Theorem

1. Two inscribed angles that intercept the same arc are congruent.



Given $\overset{\frown}{AC}$: $\angle ABC \cong \angle ADC$

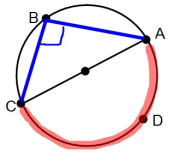
because they both intercept $\overset{\frown}{AC}$.

In other words,

they are both $= \frac{1}{2} \bullet m\overset{\frown}{AC}$

Corollaries Corollaries to the Inscribed Angle Theorem

2. An angle inscribed in a semicircle is a right angle.



Given $\overline{AC}$ is a diameter.

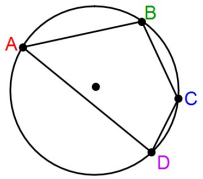
$\overset{\frown}{ADC}$ is a semicircle. $m\overset{\frown}{ADC} = 180^o$

Inscribed $\angle ABC$ inctercepts semicircle $\overset{\frown}{ADC}$.

$m\angle ABC = \frac{1}{2} \bullet 180^o = 90^o$

Corollaries — **Corollaries to the Inscribed Angle Theorem**

3. The opposite angles of a quadrilateral inscribed in a circle are supplementary.



Quadrilateral ABCD is inscribed in the circle.

$m\angle A + m\angle C = 180°$

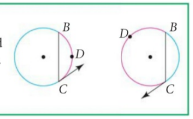
AND

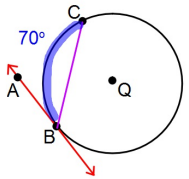
$m\angle B + m\angle D = 180°$

Theorem 12-10

The measure of an angle formed by a tangent and a chord is half the measure of the intercepted arc.

$m\angle C = \frac{1}{2}m\overset{\frown}{BDC}$





Given $\overleftrightarrow{AB}$ is tangent to ⊙Q at pt B and chord $\overline{BC}$.

$\angle ABC$ intercepts $\overset{\frown}{BC}$.

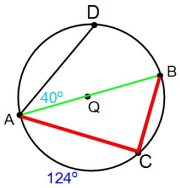
if $m\overset{\frown}{BC} = 70°$ then

$m\angle ABC = \frac{1}{2} \bullet 70° = 35°$

Example Problems are given on the next few pages.

Q is the center in all circles.

$\overline{AB}$ is a diameter.



Find the measure of the following:

$m\angle C = 90°$ it's an angle inscribed in a semicircle

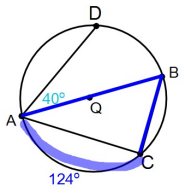
$m\angle ABC =$

$m\angle BAC =$

$m\overset{\frown}{DB} =$

$\overline{AB}$ is a diameter.

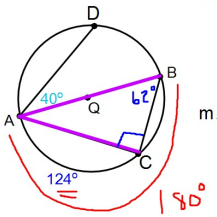
Find the measure of the following:



$m\angle ABC = 62° = \frac{1}{2} \bullet \overset{\frown}{AC}$

$\overline{AB}$ is a diameter.

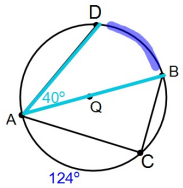
Find the measure of the following:



$m\angle BAC = 28°$ = either 180-90-62 from ΔABC
or half of $\overset{\frown}{BC}$ which is 180-124

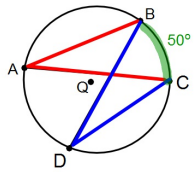
$\overline{AB}$ is a diameter.

Find the measure of the following:



$m\overset{\frown}{DB} = 80° = 2 \bullet \angle DAC$

Find the following:



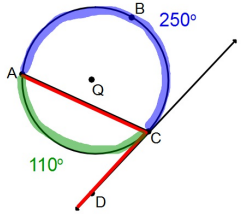
$m\angle BAC$ $m\angle BDC$

Since $\angle BAC$ & $\angle BDC$ intercept the same arc, $\overset{\frown}{BC}$, they must be congruent.

$m\angle BAC = m\angle BDC = \frac{1}{2} \bullet \overset{\frown}{BC} = \frac{1}{2} \bullet 50°$

$m\angle BAC = m\angle BDC = 25°$

$\overline{CD}$ is tangent to the circle at pt C.



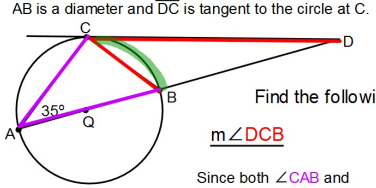
Given $m\overset{\frown}{ABC}$ is 250°
find the following: $m\angle ACD$

$\angle ACD$ intercepts $\overset{\frown}{AC}$.

$m\angle ACD = \frac{1}{2} \bullet m\overset{\frown}{AC} = \frac{1}{2} \bullet 110° = 55°$

$m\overset{\frown}{AC} = 360° - m\overset{\frown}{ABC} = 360° - 250° = 110°$

$\overline{AB}$ is a diameter and $\overline{DC}$ is tangent to the circle at C.



Find the following:

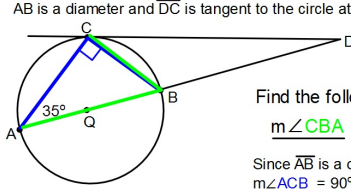
$m\angle DCB$ $\quad$ $m\angle CBA$

Since both $\angle CAB$ and $\angle DCB$ intercept the same arc ($\overset{\frown}{BC}$) they must be congruent:

$m\angle DCB = 35°$

See the next page

$\overline{AB}$ is a diameter and $\overline{DC}$ is tangent to the circle at C.



Find the following:

$m\angle CBA$

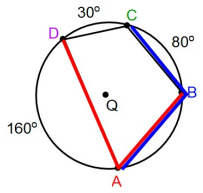
Since $\overline{AB}$ is a diameter, $m\angle ACB = 90°$, it's inscribed in a semicircle.

Now using ΔABC:
$m\angle CBA = 180 - 35 - 90$

$m\angle CBA = 55°$

Quadrilateral ABCD is inscribed in the circle.

Find the following: $m\angle A$, $m\angle B$, $m\angle C$, and $m\angle D$



$m\angle A$ $\quad$ $\angle A$ intercepts $\overset{\frown}{DB}$ which = 30 + 80 = 110°
$m\angle A = \frac{1}{2} \bullet 110° = \boxed{55°}$

$m\angle B$ $\quad$ $\angle B$ intercepts $\overset{\frown}{CDA}$ which = 30 + 160 = 190°
$m\angle B = \frac{1}{2} \bullet 190° = \boxed{95°}$

$m\angle C$ $\quad$ $\angle C = 180 - \angle A = 180 - 55° = \boxed{125°}$

$m\angle D$ $\quad$ $\angle D = 180 - \angle B = 180 - 95° = \boxed{85°}$

You can now finish the first part of Practice #23.

We'll finish the rest of the material for this practice and it will be due on Thursday, May 7 by 10:00pm