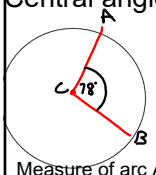
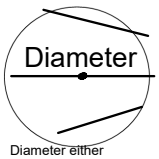
REVIEW

Central angle

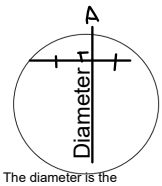


Measure of arc AB is 78 degrees



Diameter either goes through the center

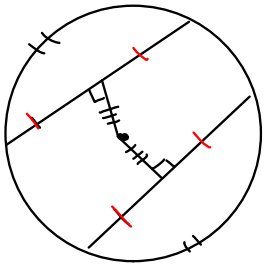
OR



The diameter is the perpendicular bisector of a chord

Dec 6-9:24 AM

10.3

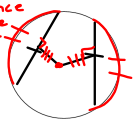


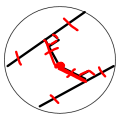
IF THE CHORDS ARE CONGRUENT THEN THEIR DISTANCE TO THE CIRCLE IS CONGRUENT AND THEIR ARCS ARE CONGRUENT TOO!

The segment that marks the distance to the center bisects the chords

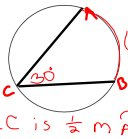
Dec 6-7:51 AM

If Chords are ≅ arcs are ≅ Distance to the center is ≅

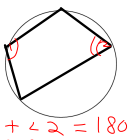




Inscribed Angle

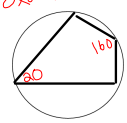


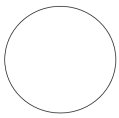
$\angle C$ is $\frac{1}{2}$ m $\overset{\frown}{AB}$



$\angle 1 + \angle 2 = 180°$
Opposite angles are supplementary

Example





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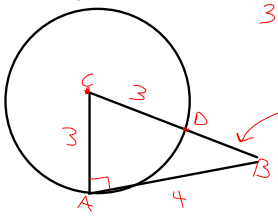
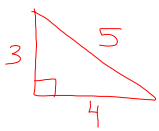
#11 Study Guide

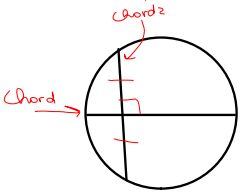




DB = 2

Dec 6-9:43 AM

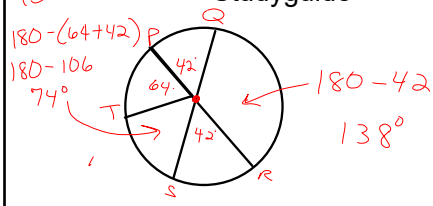
12 Study Guide



Chord 1 is the Diameter only if the Diameter is the ⊥ Bisector of chord 2.

Dec 6-9:46 AM

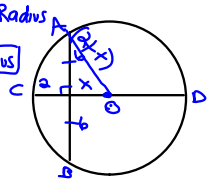
13 Studyguide



Dec 6-9:48 AM

15. In the diagram below, $\overline{CD}$ is a diameter of $\odot O$ and is perpendicular to $\overline{AB}$. If $AB = 12$ and $CE = 2$, what is the radius of $\odot O$?

x+2=Radius
8+2=
$\boxed{10=\text{Radius}}$



$x^2 + 6^2 = (x+2)^2$

$\cancel{x^2} + 36 = \cancel{x^2} + 4x + 4$

$32 = 4x$

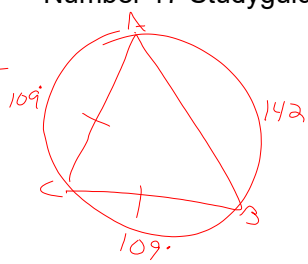
$8 = x$

$\boxed{x = 8}$

Dec 6-7:55 AM

Number 17 Studyguide

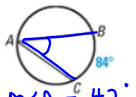
360
- 142
218
109



Dec 6-9:52 AM

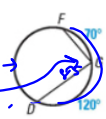
page 666-667

3. $m\angle A$



$m\angle A = \frac{1}{2}(\widehat{BC}) = 42°$

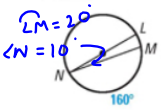
4. $m\angle G$



$360 - 190 = 170°$

190°

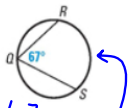
5. $m\angle N$



$\widehat{LM} = 20°$

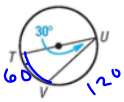
$\angle N = 10°$

6. $m\widehat{RS}$

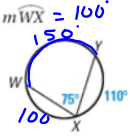


$67 \times 2 = 134°$

7. $m\widehat{VU} = 120°$



8. $m\widehat{WX} = 100°$



$360 - (150 + 110)$

$360 - 260$

$100°$

Dec 7-1:00 PM

CONGRUENT ANGLES Name two pairs of congruent angles.

10.

11.

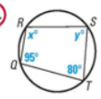
$m\angle A \cong m\angle B$

$m\angle C \cong m\angle D$

12.

ALGEBRA Find the values of the variables.

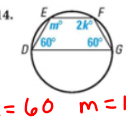
13.



$x = 100$

$y = 85$

14.



$k = 60 \quad m = 120$

$m + 60 = 180$

$-60 \quad -60$

$m = 120$

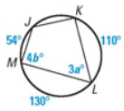
$2k + 60 = 180$

$-60 \quad -60$

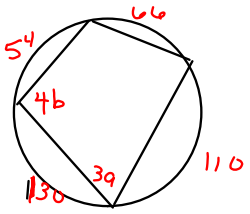
$2k = 120$

$k = 60$

15.



Dec 7-1:00 PM



$4b = \frac{1}{2}(66 + 110)$

$4b = \frac{1}{2}(176)$

$4b = 88$

$b = 22$

$3a = \frac{1}{2}(54 + 66)$

$3a = \frac{1}{2}(120)$

$3a = 60$

$a = 20$

Dec 7-1:58 PM

★ **MULTIPLE CHOICE** In the diagram, $\angle ADC$ is a central angle and $m\angle ADC = 60°$. What is $m\angle ABC$?

Ⓐ 15° Ⓑ 30° Ⓒ 60° Ⓓ 120°

$m\angle ADC = 60$

$\widehat{AC} = 60$

$\angle ABC = 30$

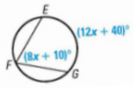
INSCRIBED ANGLES In each star below, all of the inscribed angles are congruent. Find the measure of an inscribed angle for each star. Then find the sum of all the inscribed angles for each star.

a.

b.

c.

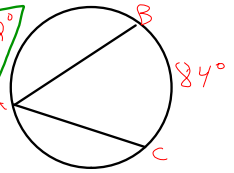
8. ★ **MULTIPLE CHOICE** What is the value of x?



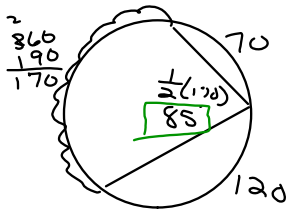
Ⓐ 5 Ⓑ 10 Ⓒ 13 Ⓓ 15

Dec 7-1:01 PM

p666
3)
m∠A = 42°
(½ of $\overset{\frown}{BC}$)



Dec 6-9:54 AM



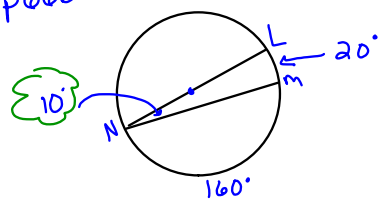
Dec 7-8:21 AM

10.4
p666

#5

m∠N = ½ $\overset{\frown}{LM}$

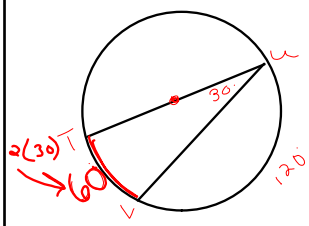
10°



Dec 6-8:11 AM

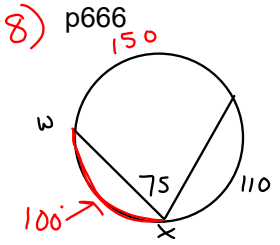
7) p666

m $\overset{\frown}{UV}$ = 120°



Dec 6-9:57 AM

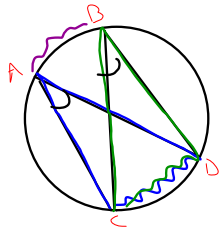
8) p666



$$\begin{array}{r} 150 \\ +\ 110 \\ \hline 260 \end{array}$$

Dec 7-10:14 AM

10)

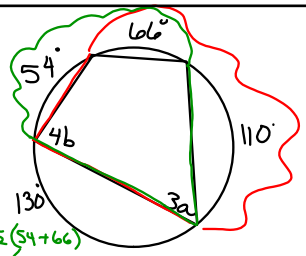


Angles A & b are $\cong$

Angles C & D are $\cong$

Dec 6-9:58 AM

15



$4b = \frac{1}{2}(66+110)$

$4b = \frac{1}{2}(176)$

$\frac{4b}{4} = \frac{88}{4}$

$b = 22$

$3a = \frac{1}{2}(54+66)$

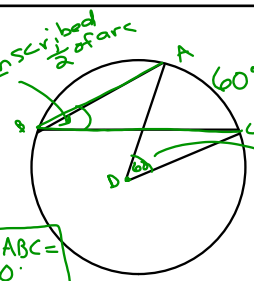
$3a = \frac{1}{2}(120)$

$3a = 60$

$\boxed{a = 20}$

Dec 7-8:26 AM

Inscribed $\frac{1}{2}$ of arc

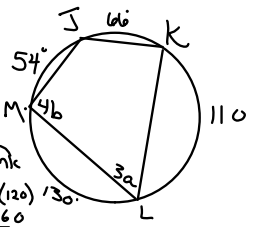


Central Equal arc

$\boxed{m\angle ABC = 30°}$

Dec 7-8:29 AM

15
p666



$360-(54+130+110)=66°$

$m\widehat{JK}=66°$

$4b=\frac{1}{2}\widehat{JKL}$

$4b=\frac{1}{2}(176)$

$\frac{4b}{4}=\frac{88}{4}$

$\boxed{b=22}$

$3a=\frac{1}{2}\widehat{mk}$

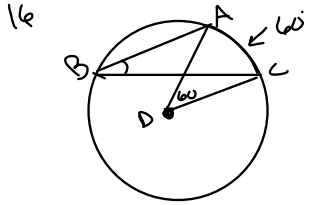
$3a=\frac{1}{2}(120)$

$3a=60$

$\boxed{a=20}$

Dec 6-10:02 AM

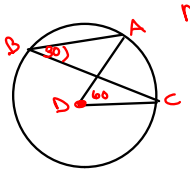
16



$m\angle ABC=\frac{1}{2}\widehat{AC}$

$m\angle ABC=30°$

Dec 6-10:06 AM



$m\widehat{AC}=60$

$\angle ABC$

Dec 7-10:17 AM

17. **INSCRIBED ANGLES** In each star below, all of the inscribed angles are congruent. Find the measure of an inscribed angle for each star. Then find the sum of all the inscribed angles for each star.

a. 

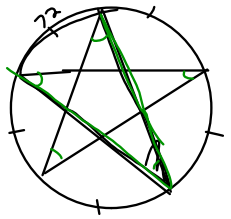
b. 

c. 

If the angles are congruent, then the arcs are congruent. 360 degrees divided by the number of arcs tells the measure of each arc. The INSCRIBED angles are half that.

Dec 7-12:38 PM

17a)



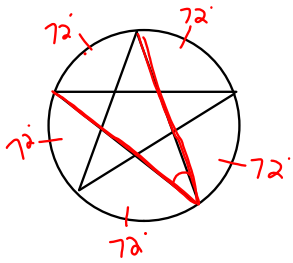
$360 \div 5 = 72°$

each $\angle = 36°$

Sum of Angles

$36 \times 5 = 180°$

Dec 6-10:08 AM



$360 \div 5 = 72°$

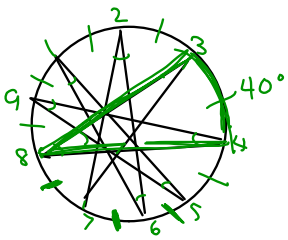
$72 \div 2 = 36°$

36×5 Sum of All $\angle$s

$\boxed{180°}$

Dec 7-10:19 AM

17c



arcs =

$360 \div 9 = 40°$

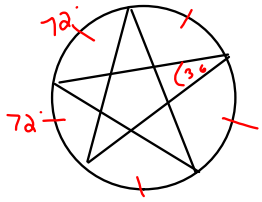
Each $\angle = 20°$

20×9 angles

Sum of angles = $180°$

Dec 7-8:33 AM

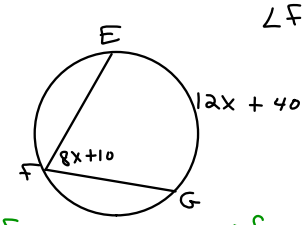
$360 \div 5 = 72$



Dec 7-2:05 PM

8)

$\angle F = \frac{1}{2}\overset{\frown}{EG}$



$\angle F$ is of

$8x + 10 = \frac{1}{2}(12x + 40)$

$8x + 10 = 6x + 20$

$-6x \qquad -6x$

$2x + 10 = 20$

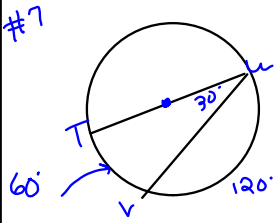
$-10 \qquad -10$

$\frac{2x}{2} = \frac{10}{2}$

$\boxed{x = 5}$

Dec 6-10:10 AM

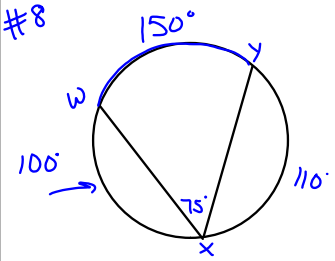
#7



$m\overset{\frown}{VU} = 120°$

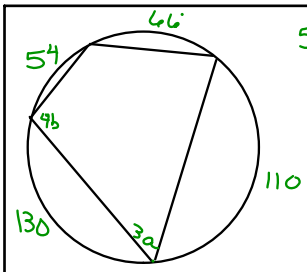
Dec 6-8:13 AM

#8



$m\overset{\frown}{WX}$

Dec 6-8:15 AM



$54 + 130 + 110 + 66 = 360$

$4b = \frac{1}{2}(66 + 110)$

$4b = \frac{1}{2}(176)$

$4b = 88$

$\boxed{b = 22}$

$3a = \frac{1}{2}(54 + 66)$

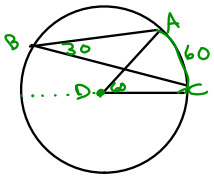
$3a = \frac{1}{2}(120)$

$3a = 60$

$\boxed{a = 20}$

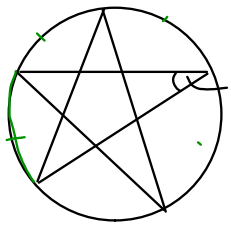
Dec 6-8:19 AM

16)



Dec 6-8:23 AM

17a



$360 \div 72°$

Each arc = 72°

Each angle = 36°

Sum of angles

$$\begin{array}{r} 36 \\ \times 5 \\ \hline \boxed{180°} \end{array}$$

Dec 6-8:25 AM

17c 9 angles

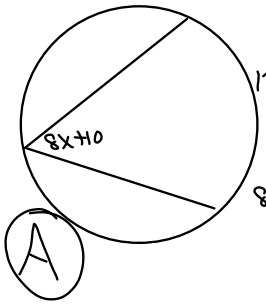
$360 \div 9 = 40$

Each arc = 40°

Each inscribed ∠ = 20°

20 × 9 angles = 180°

Dec 6-8:29 AM



$12x + 40$

$8x + 10 = \frac{1}{2}(12x+40)$

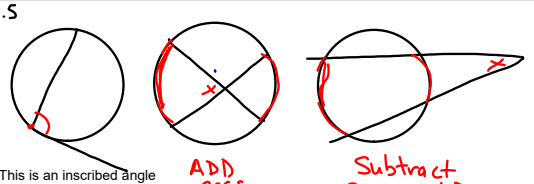
$8x + 10 = 6x + 20$

$2x = 10$

$x = 5$

Dec 6-8:30 AM

10.5



This is an inscribed angle
The angle is half of the arc
it opens up to

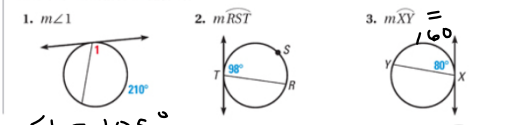
ADD arcs Divide By 2 To get x

Subtract arcs and Divide by 2 To get x

Dec 6-10:13 AM

Find the indicated measure.

1. $m\angle 1$ 2. $m\widehat{RST}$ 3. $m\widehat{XY}$ =



$\angle 1 = 105°$

$m\widehat{RST} = 196°$

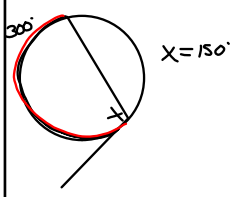
~~360 - 160~~

$m\hat{x} = 160$

Dec 7-12:43 PM

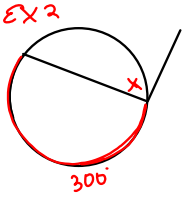
Examples 10.5

Ex 1



$x = 150°$

Ex 2

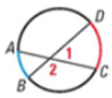


$x = 30°$

Dec 6-10:19 AM

THEOREM 10.12 Angles Inside the Circle Theorem

If two chords intersect *inside* a circle, then the measure of each angle is one half the *sum* of the measures of the arcs intercepted by the angle and its vertical angle.

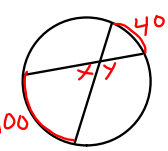


$m\angle 1 = \frac{1}{2}(m\widehat{DC} + m\widehat{AB})$,

$m\angle 2 = \frac{1}{2}(m\widehat{AD} + m\widehat{BC})$

Dec 7-12:57 PM

Example 3



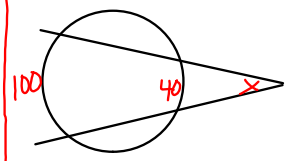
$x = \frac{1}{2}(100 + 40)$

$x = 70°$

$y = 110°$

Linear Pair $= 180°$

Example 4



$x = \frac{1}{2}(100 - 40)$

$x = 30°$

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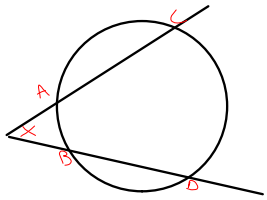


$x = \frac{\overset{\frown}{CD} - \overset{\frown}{AB}}{2}$

Dec 6-8:31 AM

THEOREM 10.12 Angles Inside the Circle Theorem

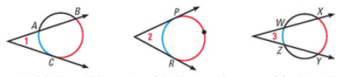
If two chords intersect *inside* a circle, then the measure of each angle is one half the *sum* of the measures of the arcs intercepted by the angle and its vertical angle.

$m\angle 1 = \frac{1}{2}(m\overset{\frown}{DC} + m\overset{\frown}{AB})$

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

THEOREM 10.13 Angles Outside the Circle Theorem

If a tangent and a secant, two tangents, or two secants intersect *outside* a circle, then the measure of the angle formed is one half the *difference* of the measures of the intercepted arcs.

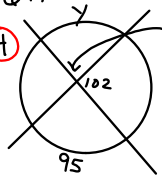


$m\angle 1 = \frac{1}{2}(m\overset{\frown}{BC} - m\overset{\frown}{AC})$ $m\angle 2 = \frac{1}{2}(m\overset{\frown}{PQR} - m\overset{\frown}{PR})$ $m\angle 3 = \frac{1}{2}(m\overset{\frown}{XY} - m\overset{\frown}{WZ})$

Dec 7-12:44 PM

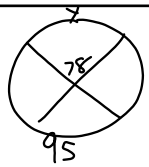
p 674 Guided Practice

4



$180 - 102$

$78°$



$\frac{95 + y}{2} = 78$

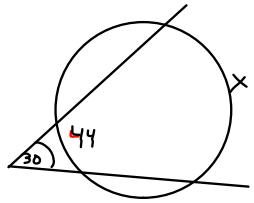
$95 + y = 156$

$-95 \quad -95$

$y = 61°$

Dec 6-8:39 AM

5

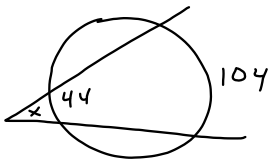


$\frac{x-44}{2} = 30$

$x - 44 = 60$

$+44 \quad +44$

$x = 104°$



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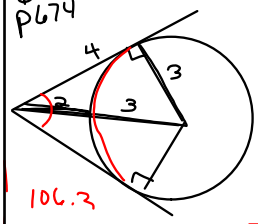
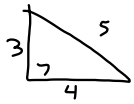
#6 p674





253.7

106.3

$253.7 - 106.3 = 147.4$

73.7

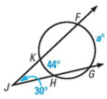
Dec 7-2:19 PM

✓ **GUIDED PRACTICE** for Examples 2, 3, and 4

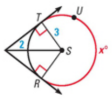
Find the value of the variable.

4.

5.



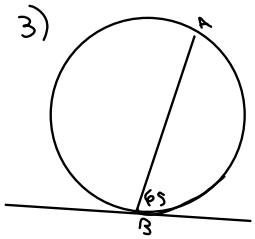
6.



Dec 7-12:45 PM

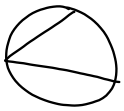
675 numbers 3-13 and 16-18 honors

3)



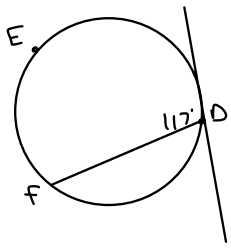
$m\widehat{AB} = 2(65)$

130°



Dec 6-8:47 AM

4

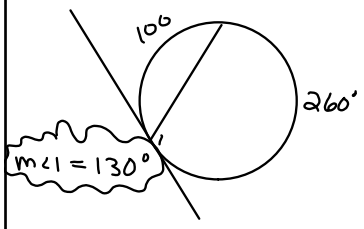


$m\widehat{DEF} = 2(117)$

$234°$

Dec 6-8:58 AM

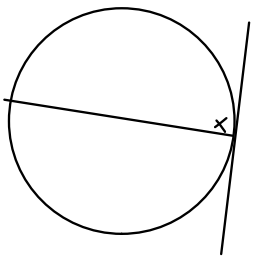
5



$m\angle 1 = 130°$

Dec 6-9:00 AM

6)

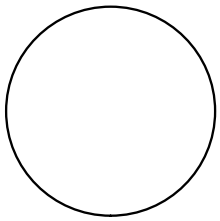


Not the Diameter

$x \neq 90°$

Dec 6-9:01 AM

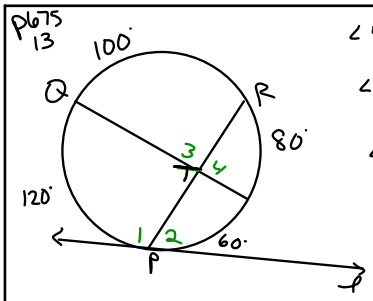
7)



$\frac{85 + 145}{2} = x$

Dec 6-9:03 AM

P675
13



$\angle 4 = \frac{120+80}{2}$

$\angle 3 = \frac{100+60}{2}$

$\angle 1 = \frac{1}{2}(120+100)$

$\angle 2 = \frac{1}{2}(80+60)$

Dec 7-8:53 AM

Dec 7-12:05 PM