

Geometry

Chapter 12

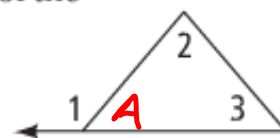
Section 12-4

Recall...

Theorem 3-12 Triangle Exterior Angle Theorem

The measure of each exterior angle of a triangle equals the sum of the measures of its two remote interior angles.

$$m\angle 1 = m\angle 2 + m\angle 3$$



$$\begin{array}{l} 1 + A = 180 \\ 2 + 3 + A = 180 \end{array}$$

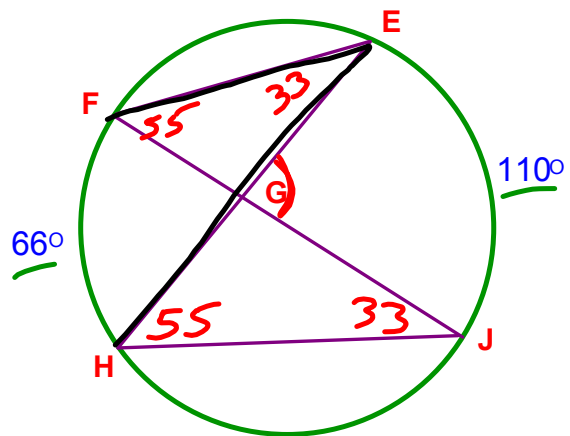
What angles measure 33° ?

$\angle FEH$ & $\angle FJH$

What is the measure of $\angle EGJ$?

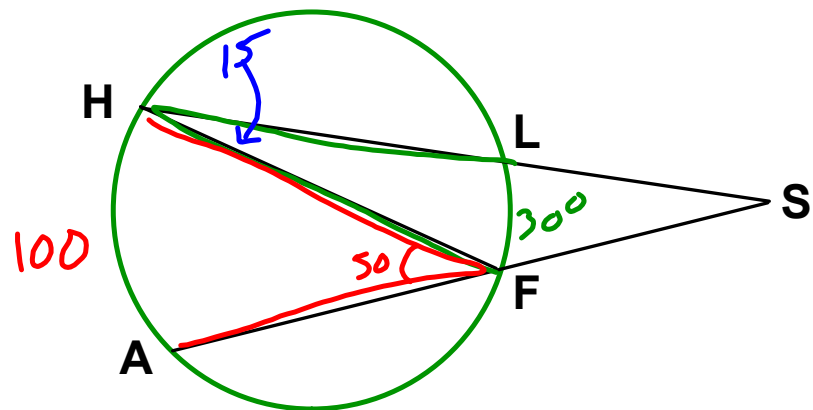
$$m\angle EGJ = 88 = 55 + 33$$

$$\frac{1}{2}(\widehat{FH} + \widehat{EJ})$$



$$m\widehat{HA} = 100$$

$$m\widehat{LF} = 30$$



What is the measure of $\angle S$?

$$50 = 15 + m\angle S$$

$$-15 \quad -15$$

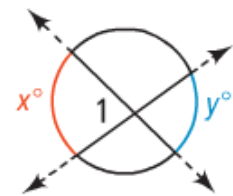
$$35 = m\angle S$$

$$\frac{1}{2} (\widehat{HA} - \widehat{LF})$$

Theorem 12-13

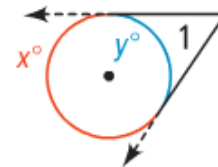
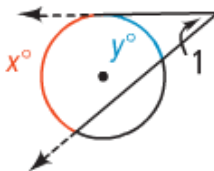
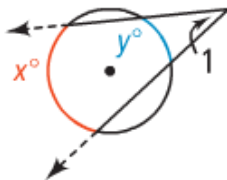
The measure of an angle formed by two lines that intersect inside a circle is half the sum of the measures of the intercepted arcs.

$$m\angle 1 = \frac{1}{2}(x + y)$$



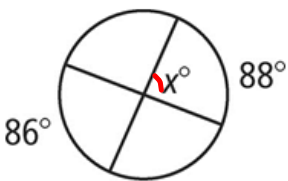
Theorem 12-14

The measure of an angle formed by two lines that intersect outside a circle is half the difference of the measures of the intercepted arcs.



$$m\angle 1 = \frac{1}{2}(x - y)$$

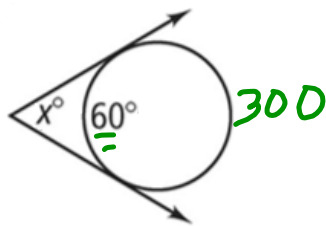
Find the value of x.



$$x = \frac{1}{2}(86 + 88)$$

$$x = \frac{1}{2}(174)$$

$$x = 87$$

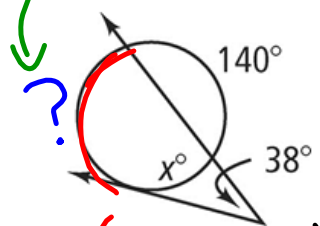


$$x = \frac{1}{2}(300 - 60)$$

$$x = \frac{1}{2}(240)$$

$$x = 120$$

$$360 - 140 - x = 220 - x$$



$$38 = \frac{1}{2}(220 - x - x)$$

$$2 \cdot 38 = \frac{1}{2}(220 - 2x)$$

$$76 = 220 - 2x$$

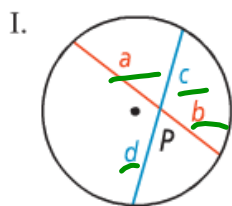
$$\begin{array}{r} -220 \\ \hline -144 = -2x \\ \hline -2 \quad -2 \end{array}$$

$$x = 72$$

take note

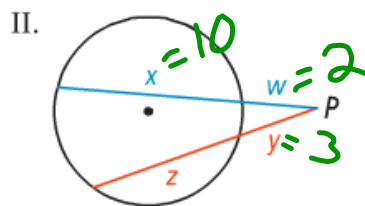
Theorem 12-15

For a given point and circle, the product of the lengths of the two segments from the point to the circle is constant along any line through the point and circle.



$a \cdot b = c \cdot d$

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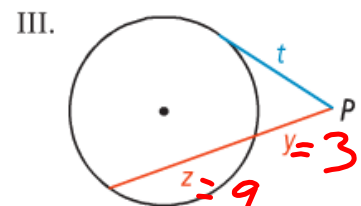


$(w + x)w = (y + z)y$

$\frac{(12)2}{3} = \frac{(z+3)3}{3}$

$8 = z + 3$

$z = 5$



$(y + z)y = t^2$

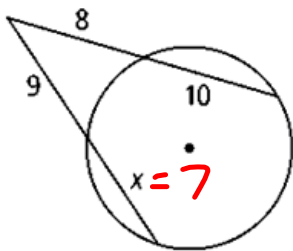
$12 \cdot 3 = t^2$

$36 = t^2$

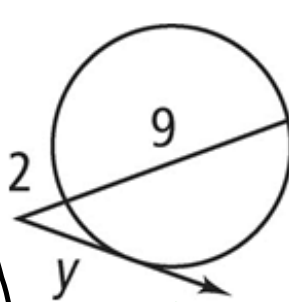
$t = 6$

Find the value of each variable.

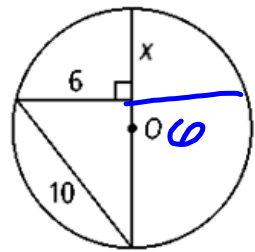
If necessary, round to the nearest hundredth.



$$\begin{aligned}
 (8+10)8 &= (9+x)9 \\
 18 \cdot 8 &= 81 + 9x \\
 144 &= 81 + 9x \\
 -81 & \quad -81 \\
 \hline
 63 &= 9x \\
 \frac{63}{9} &= \frac{9x}{9} \\
 x &= 7
 \end{aligned}$$



$$\begin{aligned}
 (2+9)2 &= y^2 \\
 \sqrt{22} &= \sqrt{y^2} \\
 y &= 4.69
 \end{aligned}$$



Homework

Pages 794 -796

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