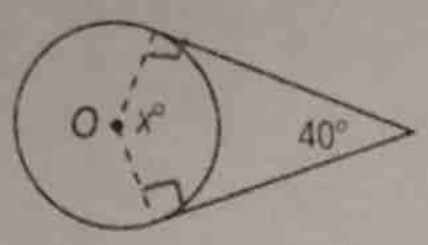
Homework 8.1: Tangents of Circles

Name: Key!

Math 3

Directions: Assume that lines that appear to be tangent are tangent. *O* is the center of each circle. What is the value of *x*?

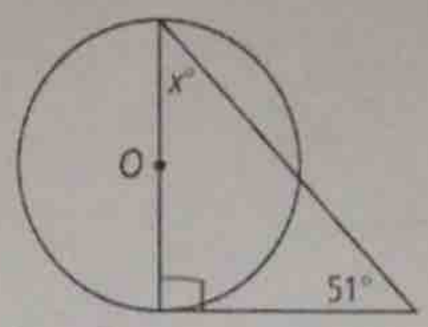
1.



$360 - 90 - 90 - 40 = X$

$X = 140°$

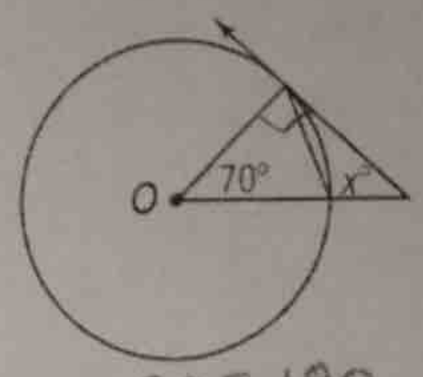
2.



$X + 90 + 51 = 180$

$X = 36$

3.

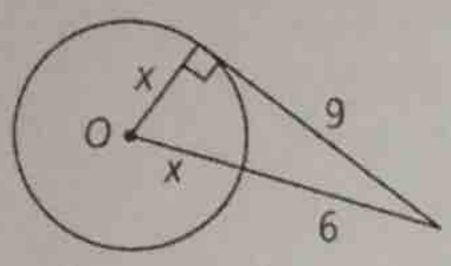


$X + 70 + 90 = 180$

$X = 20$

Directions: In each circle, what is the value of *x* to the nearest tenth?

4.



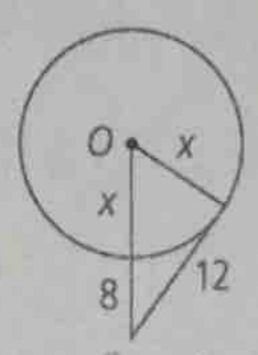
$x^2 + 9^2 = (x+6)^2$

$x^2 + 81 = x^2 + 12x + 36$

$81 = 12x + 36$

$45 = 12x$ $\quad x = 3.75$

5.



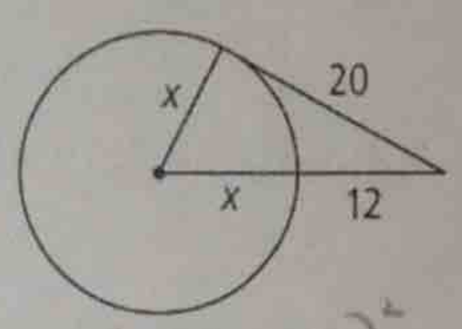
$x^2 + 12^2 = (x+8)^2$

$x^2 + 144 = x^2 + 16x + 64$

$144 = 16x + 64$

$80 = 16x$ $\quad x = 5$

6.



$x^2 + 20^2 = (x+12)^2$

$x^2 + 400 = x^2 + 24x + 144$

$400 = 24x + 144$

$256 = 24x$

$x = 10.7$

7. *TY* and *ZW* are diameters of ⊙*S*. *TU* and *UX* are tangents of ⊙*S*. What is $m\angle SYZ$?

$2z + 2y + 58 = 180$

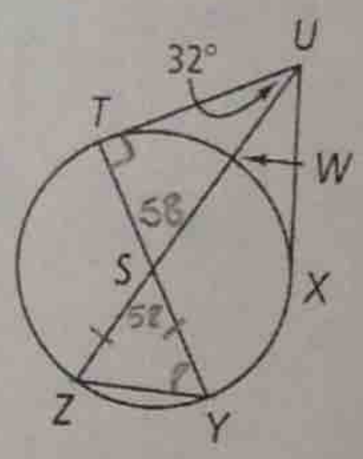
$x + x + 58 = 180$

$2x + 58 = 180$

$2x = 122$

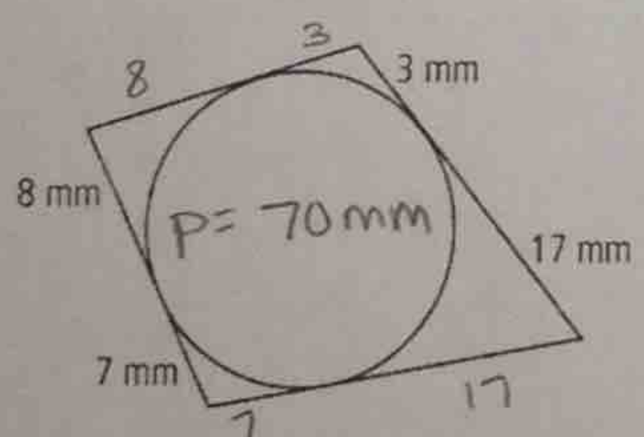
$x = 61$

$\angle SYZ = 61°$



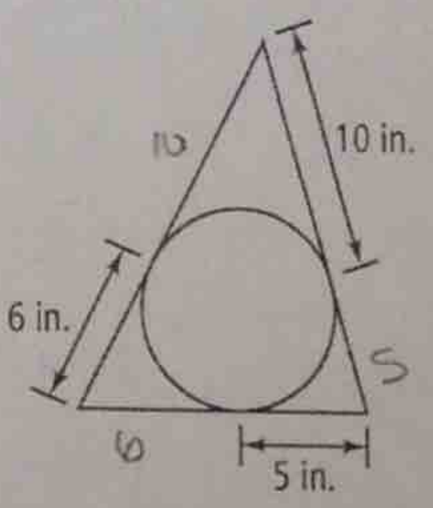
Directions: Each polygon circumscribes a circle. What is the perimeter of each polygon?

8.



$34 + 16 + 14 + 6 = 70$

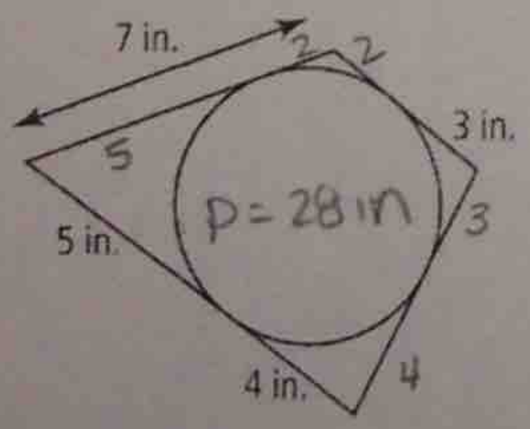
9.



$20 + 10 + 12 = 42$

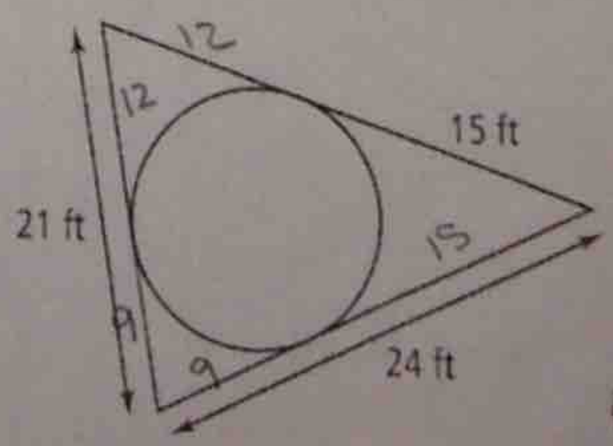
$P = 42$ in

10.



$7 + 5 + 7 + 9 = 28$

11.



$24 + 30 + 18 = 72$

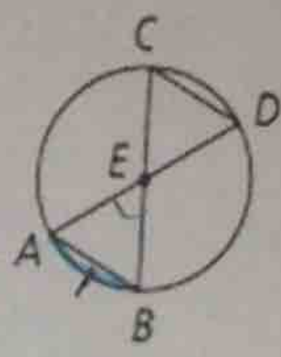
$P = 72$ ft

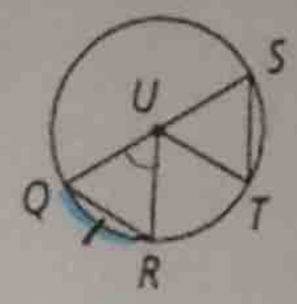
Homework 8.2: Chords & Arcs of Circles

Name: _____

Math 3

1. The circles at the right are congruent. Which conclusion can you draw?

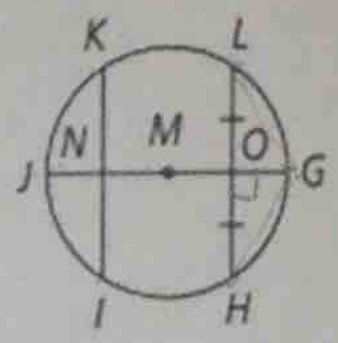




(A) $\overline{CD} \cong \overline{ST}$ (C) $\angle AEB \cong \angle QUR$

(B) $\angle CED \cong \angle SUT$ (D) $\overline{BD} \cong \overline{RT}$

2. JG is the diameter of $\odot M$. Which conclusion *cannot* be drawn from the diagram?

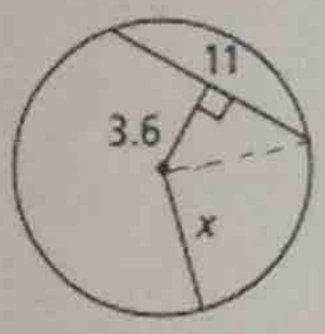


(F) $\overline{KN} \cong \overline{NI}$ (H) $\overline{JG} \perp \overline{HL}$

(G) $\overline{LG} \cong \overline{GH}$ (I) $\overline{GH} \cong \overline{GL}$

For Exercises 3 and 4, what is the value of x to the nearest tenth?

3.

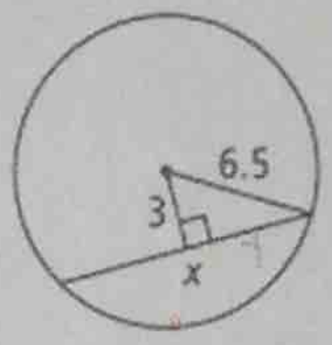


$5.5^2 + 3.6^2 = x^2$

$x^2 = 43.21$

$x = 6.6$

4.



$y^2 + 3^2 = 6.5^2$

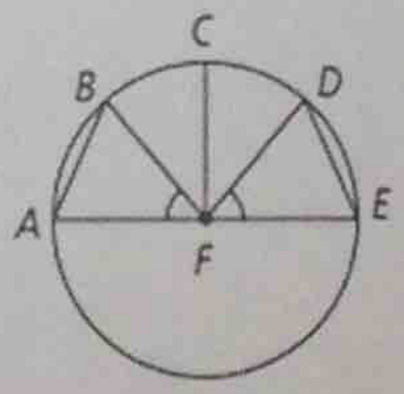
$y^2 = 33.25$

$y = 5.8$

(A) 4.2 (C) 10.4 (F) 3.6 (H) 11.5

(B) 6.6 (D) 11.6 (G) 5.8 (I) 14.3

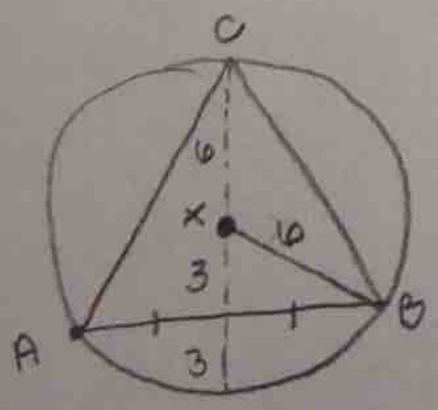
5. If $\angle AFB \cong \angle DFE$, what must be true?



(A) $\overline{AB} \cong \overline{DE}$ (C) $\overline{CF} \perp \overline{AE}$

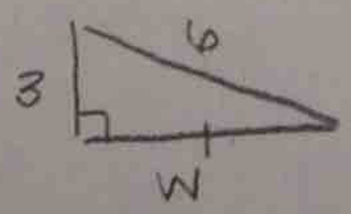
(B) $\overline{BC} \cong \overline{DE}$ (D) $\angle BFC \cong \angle DFC$

6. A student draws $\odot X$ with a diameter of 12 cm. Inside the circle she inscribes equilateral ΔABC so that $\overline{AB}$, $\overline{BC}$, and $\overline{CA}$ are all chords of the circle. The diameter of $\odot X$ bisects $\overline{AB}$. The section of the diameter from the center of the circle to where it bisects $\overline{AB}$ is 3 cm. To the nearest whole number, what is the perimeter of the equilateral triangle inscribed in $\odot X$?



$d = 12$

$r = 6$



$3^2 + w^2 = 6^2$

$9 + w^2 = 36$

$w^2 = 27$

$w = 5.2$

$AB = 10.4$

$AC = 10.4$

$CB = 10.4$

$P = 31\text{ cm}$