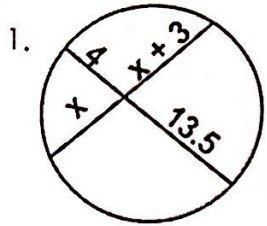


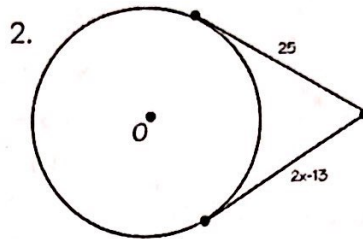
Geometry
Test Review
Special Segments, Arc Length, Area of Sector

Name Key
Date _____

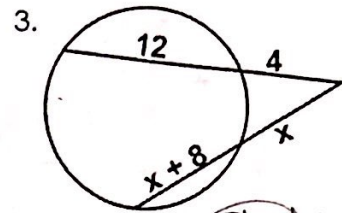
Find the value of x for each situation below. Assume that segments that appear to be tangent are tangent.



$$\begin{aligned} x(x+3) &= 4(13.5) \\ x^2 + 3x &= 54 \\ x^2 + 3x - 54 &= 0 \\ (x+9)(x-6) &= 0 \\ x &= -9, 6 \quad \boxed{x=6} \end{aligned}$$

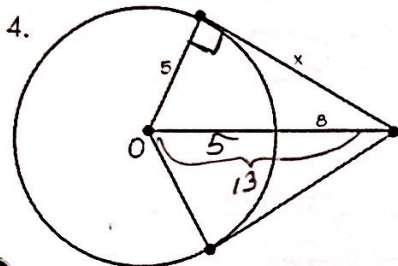


$$\begin{aligned} 2x-13 &= 25 \\ 2x &= 38 \\ \boxed{x=19} \end{aligned}$$

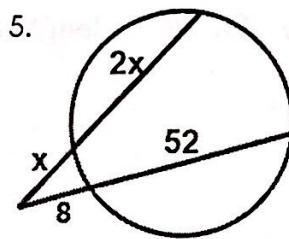


$$\begin{aligned} 4(16) &= x(2x+8) \\ 64 &= 2x^2 + 8x \\ 0 &= 2x^2 + 8x - 64 \\ 0 &= x^2 + 4x - 32 \\ 0 &= (x+8)(x-4) \\ x &= -8, 4 \quad \boxed{x=4} \end{aligned}$$

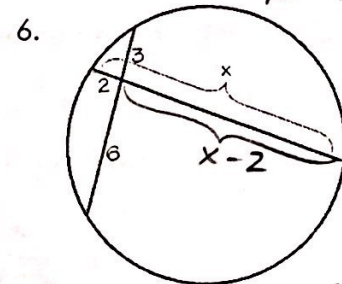
Divide all terms by 2



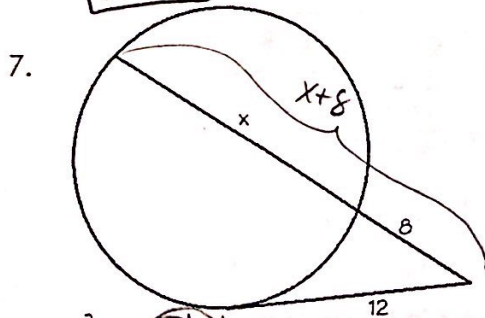
$$\begin{aligned} 5^2 + x^2 &= 13^2 \\ 25 + x^2 &= 169 \\ \sqrt{x^2} &= \sqrt{144} \\ \boxed{x=12} \end{aligned}$$



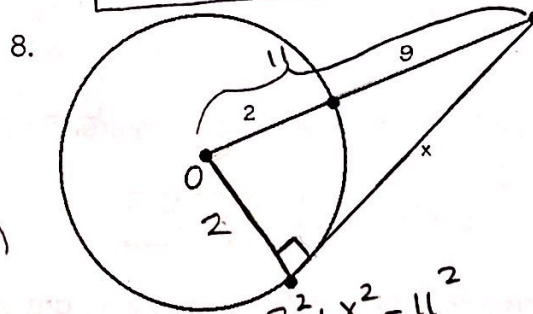
$$\begin{aligned} x(3x) &= 8(60) \\ \frac{3x^2}{3} &= \frac{480}{3} \\ x^2 &= 160 \\ \boxed{x=4\sqrt{10} \approx 12.6} \end{aligned}$$



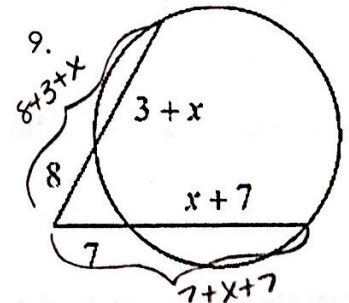
$$\begin{aligned} 3(6) &= 2(x-2) \\ 18 &= 2x-4 \\ 22 &= 2x \\ \boxed{x=11} \end{aligned}$$



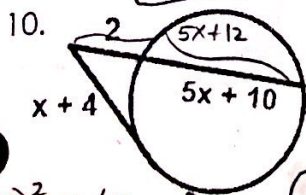
$$\begin{aligned} 12^2 &= 8(x+8) \\ 144 &= 8x+64 \\ 80 &= 8x \\ \boxed{x=10} \end{aligned}$$



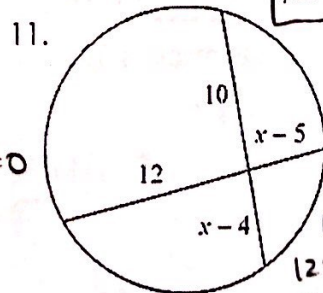
$$\begin{aligned} 2^2 + x^2 &= 11^2 \\ 4 + x^2 &= 121 \\ \sqrt{x^2} &= \sqrt{117} \\ \boxed{x=3\sqrt{13} \approx 10.8} \end{aligned}$$



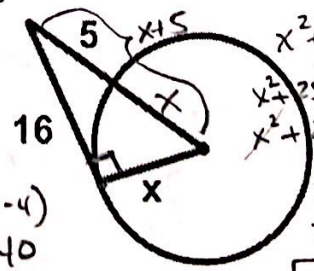
$$\begin{aligned} 8(11+x) &= 7(14+x) \\ 88+8x &= 98+7x \\ \boxed{x=10} \end{aligned}$$



$$\begin{aligned} (x+4)^2 &= 2(5x+12) \\ (x+4)(x+4) &= 10x+24 \\ x^2+4x+4x+16 &= 10x+24 \\ x^2+8x+16 &= 10x+24 \\ x^2-2x-8 &= 0 \\ (x-4)(x+2) &= 0 \\ x &= 4, -2 \\ \boxed{x=4} \end{aligned}$$

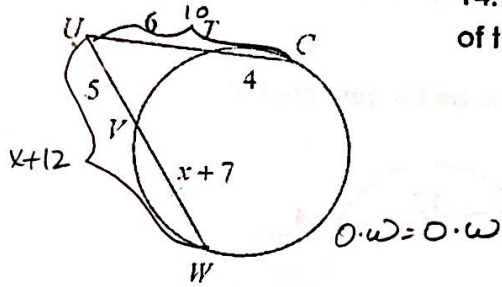


$$\begin{aligned} 12(x-5) &= 10(x-4) \\ 12x-60 &= 10x-40 \\ 2x &= 20 \\ \boxed{x=10} \end{aligned}$$



$$\begin{aligned} x^2 + 16^2 &= (x+5)^2 \\ x^2 + 256 &= (x+5)(x+5) \\ x^2 + 256 &= x^2 + 5x + 5x + 25 \\ 256 &= 10x + 25 \\ 231 &= 10x \\ \boxed{x=23.1} \end{aligned}$$

13. Find WU.



$$5(x+12) = 6(10)$$

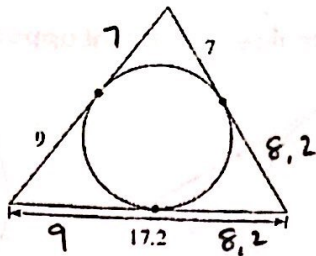
$$5x + 60 = 60$$

$$5x = 0$$

$$x = 0$$

$$WU = 5 + 0 + 7 = \boxed{12}$$

14. Find the perimeter of the triangle.



$$\text{Perimeter} = 48.4$$

15. Determine whether \overline{AB} is tangent to circle $\odot C$. Circle YES or NO, and SHOW ALL WORK!

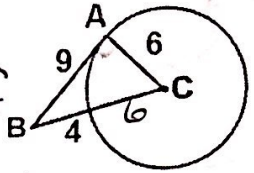
Work:

YES or NO

$$9^2 + 6^2 = 10^2$$

$$81 + 36 \neq 100$$

Pythagorean Thm does not work so \overline{AB} is not tangent to circle C.



16. The radius of circle O is 20 cm. Chord \overline{JK} is located 4 cm from the center of the circle. Chord \overline{RS} is located 10 cm from the center of the circle. What is the length of \overline{RS} ?

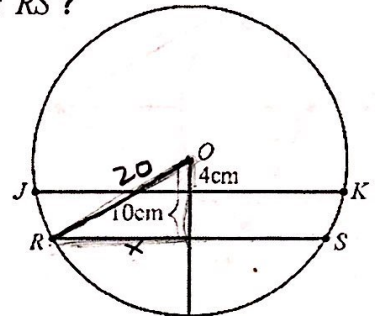
$$10^2 + x^2 = 20^2$$

$$100 + x^2 = 400$$

$$\sqrt{x^2} = \sqrt{300}$$

$$x = 17.3$$

$$\overline{RS} = 17.3(2) = \boxed{34.6 \text{ cm}}$$



#17 - 18: Find the indicated measures of the circles. Round to the nearest tenth. Use $\pi \approx 3.14$.

17. Determine the circumference of a circle whose area is $\frac{25}{36}\pi$ in.

$$A = \pi r^2 \quad \frac{25}{36}\pi = \pi r^2$$

$$\sqrt{r^2} = \sqrt{\frac{25}{36}}$$

$$r = \frac{5}{6}$$

$$C = 2\pi r$$

$$C = 2\pi\left(\frac{5}{6}\right)$$

$$C = 5.2 \text{ in}$$

18. If the diameter of a circle is 24 ft., determine the circumference of the circle.

$$r = 12$$

$$C = \pi d$$

$$C = \pi 24 \approx \boxed{75.4 \text{ ft.}}$$

#19 - 20: Find the indicated measures of the circles. Leave your answers in terms of π .

19. If the area of a circle is 17π ft², determine the radius of the circle.

$$A = \pi r^2 \quad \frac{17\pi}{\pi} = \frac{\pi r^2}{\pi} \quad \sqrt{r^2} = \sqrt{17}$$

$$r \approx 4.1 \text{ feet}$$

20. Determine the area of a circle whose circumference is 7.4π in.

$$C = 2\pi r$$

$$\frac{7.4\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = 3.7$$

$$A = \pi r^2$$

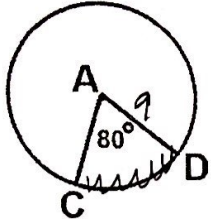
$$A = \pi 3.7^2 = \boxed{13.7\pi}$$

$$A \approx 43 \text{ in.}$$

#21 - 26: Leave your answers in terms of π .

21. If $\odot A$ has a diameter of 18 in., determine

the length of \widehat{CD} .

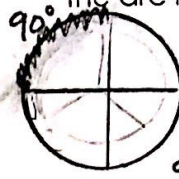


$$AL = \frac{80}{360} \cdot 2\pi \cdot 9$$

$$AL = 4\pi \text{ in}$$

22. You and three friends split a pizza equally. The

pizza has a diameter of 16 inches, determine the arc length of your portion of the pizza.



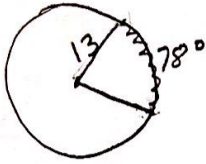
$$r = 8$$

$$\frac{360}{4} = 90^\circ$$

$$\frac{90}{360} \cdot 2\pi \cdot 8$$

$$AL = 4\pi \text{ in}$$

23. Shana is about to perform a relay handoff on a circular track that has a radius of 13 meters and her track partner Sam is standing 78° away from her. How many meters does Shana need to run to pass the baton to Sam?



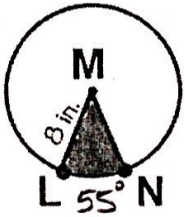
$$r = 13$$

$$AL = \frac{78}{360} \cdot 2\pi \cdot 13$$

$$AL = \frac{169\pi}{30} \text{ m}$$

24. Determine the area of the shaded region

if $m\angle LMN = 55^\circ$.

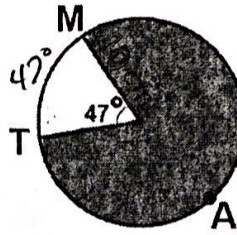


$$A_s = \frac{\pi \cdot 8^2 \cdot 55}{360}$$

$$A_s = \frac{88\pi \text{ in}^2}{9}$$

$$9.8\pi$$

25. Determine the area of the shaded region.



$$\frac{360}{47} \quad r = 10 \text{ cm}$$

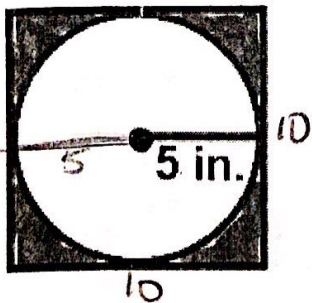
$$A_s = \frac{\pi \cdot 10^2 \cdot 313}{360}$$

$$A_s = \frac{1565\pi \text{ cm}^2}{18}$$

$$\frac{313}{360} \cdot \pi \cdot 10^2$$

$$86.9\pi$$

26. Area of the shaded region = _____



$$A_{\text{shaded reg.}} = A_{\text{square}} - A_{\text{circle}}$$

$$A_s = 10^2 - \pi \cdot 5^2$$

$$A_s = 100 - 25\pi$$

$$A_s \approx 21.46 \text{ in}^2$$