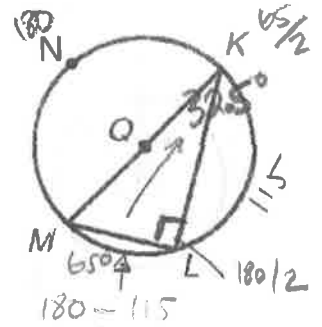


Unit 6 Study Guide

Name key S: _____

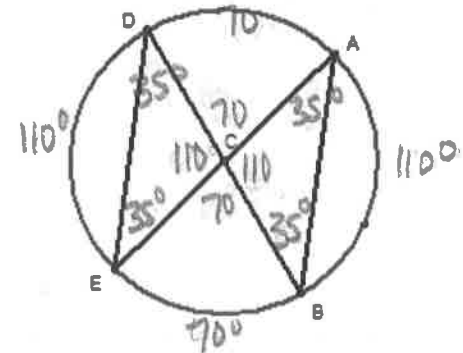
In the circle at right, $\widehat{KL} = 115^\circ$.

1. What is the measure of \widehat{MNK} ? $\underline{180^\circ}$
2. What is the measure of $\angle MLK$? $\underline{90^\circ}$
3. What is the measure of \widehat{ML} ? $\underline{65^\circ}$
4. What is the measure of $\angle MKL$? $\underline{32.5^\circ}$



In the circle C, $m\angle EAB = 35^\circ$, and $m\angle ACB = 110^\circ$. Find the following measures.

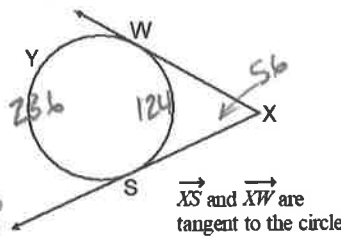
5. $m\widehat{AB} = \underline{120^\circ}$
6. $m\widehat{EB} = \underline{60^\circ}$
7. $m\angle EDB = \underline{35^\circ}$
8. $m\widehat{DA} = \underline{60^\circ}$
9. $m\angle ACD = \underline{60^\circ}$



10. If $m\widehat{WS} = 124^\circ$, find $m\angle WXS$.

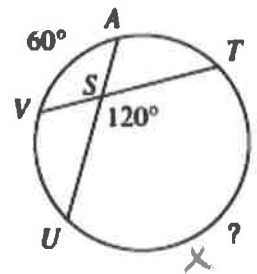
$\text{Wys} = 360 - 124$

$\angle WXS = \frac{236 - 124}{2} = \underline{56^\circ}$

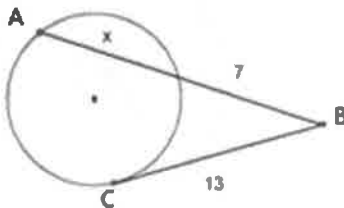


11. Find the missing arc UT.

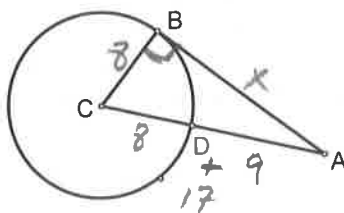
2. $120 = \frac{x + 60}{2}$
 $240 = x + 60$
 -60
 $x = \underline{180^\circ}$



12. What is the length of secant \overline{AB} ?

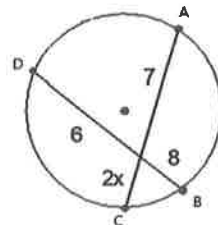


14. AB is tangent to C. If $AD = 9$ and $CB = 8$, find \overline{AB} .

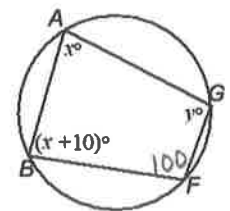


$AB = \sqrt{(17)^2 - (8)^2}$
 $= \underline{15}$

- 13 Find the length of cord \overline{AC} .



15. If $m\angle F = 100$, find $x = \underline{80^\circ}$ and $y = \underline{90^\circ}$



$80 + 10 = 90$
 $y = 180 - 90$

16. Use the bolded portion of the circled defined by the given angle. Leave your answer in terms of π .



Arc Length = _____, Sector Area = _____

Handwritten calculations for problem 16:

$$AL = \frac{2\pi(14)315}{360}$$

$$AOS = \frac{\pi(14)^2 315}{360}$$

$$AL = \frac{49\pi}{2} \text{ in}$$

$$AOS = \frac{343\pi}{2}$$

17. What is the center and diameter of the circle:

$$x^2 + y^2 + 20x - 14y - 20 = 0$$

Handwritten solution for problem 17:

$$\frac{20}{2} = +10 \quad \frac{-14}{2} = -7$$

$$(x+10)^2 + (y-7)^2 = 169$$

Center: $(-10, 7)$ $r = 13$

18. What is the length of the diameter of a circle A with its center at $(-3, 7)$ & point T $(2, 13)$ which lies on the circle.

Handwritten solution for problem 18:

$$r = \sqrt{(5)^2 + (6)^2}$$

$$r = \sqrt{61}$$

diameter = $2\sqrt{61}$

19. Which point lies on a circle with the following properties: Center: $(2, -7)$ and a radius = 5

Handwritten solution for problem 19:

A. $(2, 5)$ $(x-2)^2 + (y+7)^2 = 25$

B. $(5, 10)$ $(5-2)^2 + (-11+7)^2 = 25$

C. $(-5, 11)$ $(-3)^2 + (-4)^2 = 25$

D. $(5, -11)$ $9 + 16 = 25$ ✓

20. What is the standard form of a circle with a center of $(-5, 6)$ and a radius of $5\sqrt{3}$?

Handwritten solution for problem 20:

$$(x+5)^2 + (y-6)^2 = 75$$

$r = 5\sqrt{3}$ so $r^2 = (5\sqrt{3})^2 = 25 \times 3 = 75$

21. What is the general form of a circle with a center of $(4, -7)$ and a diameter of 10?

Handwritten solution for problem 21:

$$(x-4)^2 + (y+7)^2 = 25$$

$$x^2 - 8x + 16 + y^2 + 14y + 49 - 25 = 0$$

$$x^2 + y^2 - 8x + 14y + 40 = 0$$

22. If a central angle measures 145 degrees and creates a sector with an area of 200 cm^2 , what is the radius of the circle?

Handwritten solution for problem 22:

$$AOS = \frac{\pi r^2 \theta}{360}$$

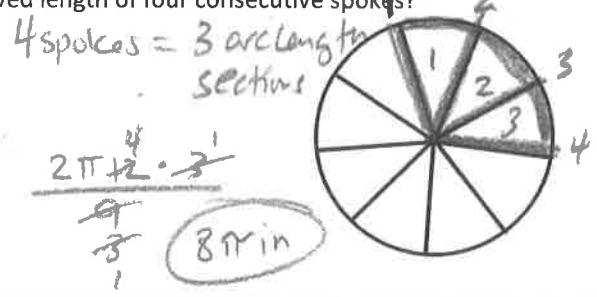
① $200 = \frac{\pi r^2 145}{360}$

② Multiply both sides by $\frac{360}{145}$

③ $\frac{72000}{145} = \pi r^2$

④ $496.55 = \pi r^2$ $r = 12.57 \text{ cm}$

23. The radius of a bike wheel is 12 inches. There are 9 spokes that support the circular wheel. What is the curved length of four consecutive spokes?



24. Two pizzas have the same diameter of 12 in. One pie is cut into 6 slices, while the other is cut into 10 slices. How much more pizza per slice do you get if you order the pizza with 6 slices?

Handwritten solution for problem 24:

$$AOS(6 \text{ pcs}) = \frac{\pi(6)^2}{6} = 6\pi \text{ in}^2$$

$$AOS(10 \text{ pcs}) = \frac{\pi(6)^2}{10} = \frac{18\pi}{5} \text{ in}^2$$

$$\frac{6\pi}{1} - \frac{18\pi}{5} = \frac{30\pi - 18\pi}{5} = \frac{12\pi}{5} \text{ in}^2 \text{ or } 7.54 \text{ in}^2$$

25. CONSTANT OF PROPORTIONALITY: In the circle below, a small and a large circle share a central angle of 60. The large arc length is 12.5 m while its radius is 11.94 m. If the radius of the small circle is 3.98 m, what is the arc length of the intercepted by the shared central angle?

Handwritten solution for problem 25:

$$\frac{12.5}{11.94} = \frac{x}{3.98}$$

$$11.94x = 49.75$$

$$x = 4.17 \text{ m}$$

