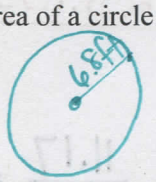
Name Key Date

11.2 Practice WS

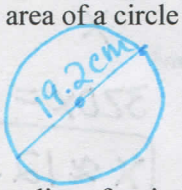
In Exercises 1–4, find the indicated measure. Draw and label an image.

1. area of a circle with a radius of 6.8 feet



$A = \pi r^2$
$= \pi(6.8)^2$
$= 46.24\pi \text{ ft}^2 \approx 145.267 \text{ ft}^2$

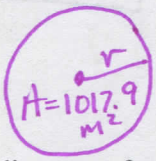
2. area of a circle with a diameter of 19.2 centimeters



$r = \frac{d}{2}$
$r = \frac{19.2}{2} \approx 9.6 \text{ cm}$

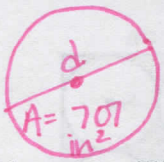
$A = \pi r^2$
$= \pi(9.6)^2$
$= 92.16\pi \text{ cm}^2 \approx 289.529 \text{ cm}^2$

3. radius of a circle with an area of 1017.9 square meters



$A = \pi r^2$
$1017.9 = \pi r^2$
$r = \sqrt{\frac{1017.9}{\pi}} \text{ m} \approx 18 \text{ m}$

4. diameter of a circle with an area of 707 square inches



$A = \pi r^2$
$707 = \pi(r)^2$
$r = \sqrt{\frac{707}{\pi}}$

$d = 2r$
$d = 2\left(\sqrt{\frac{707}{\pi}}\right) \text{ in} \approx 30.003 \text{ in}$

5. About 1.2 million people live in a region with a 6-mile radius. Find the population density in people per square mile.

$PD = \frac{\#}{A} = \frac{1.2}{\pi(6)^2} = \frac{1.2}{36\pi}$

10,610.330

$\approx 10{,}610 \frac{\text{people}}{\text{mi}^2}$

6. A region with a 15-mile diameter has a population density of about 5000 people per square mile. Find the number of people who live in the region.

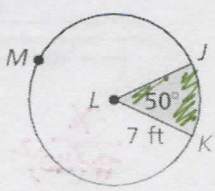
$d = 2r$
$15 = 2r$
$r = \frac{15}{2}$

$PD = \frac{\#}{A}$
$\frac{5000}{1} = \frac{x}{\pi\left(\frac{15}{2}\right)^2}$

$x = 5000\pi\left(\frac{225}{4}\right)$
$= 281250\pi$
≈ 883572.934
$\approx 883{,}573 \text{ people}$

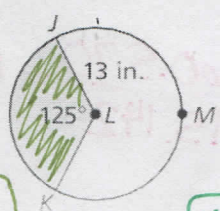
In Exercises 7–10, find the areas of the shaded sectors formed by $\angle JLK$.

7.

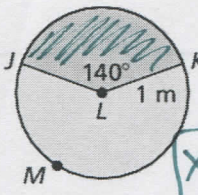


$\frac{x}{\pi(7)^2} = \frac{50}{360}$
$360x = 2450\pi$
$x = \frac{245\pi}{36} \text{ ft}^2$
$\approx 21.380 \text{ ft}^2$

8.



$\frac{x}{\pi(13)^2} = \frac{125}{360}$
$360x = 2112.5\pi$
$x = \frac{4225\pi}{72} \text{ in}^2$
$\approx 184.350 \text{ in}^2$

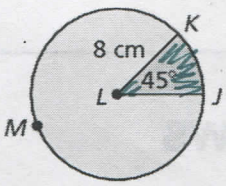
9. 

$\frac{x}{\pi(1)^2} = \frac{140}{360}$

$360x = 140\pi$

$x = \frac{7\pi}{18}\ m^2$

$\approx 1.222 m^2$

10. 

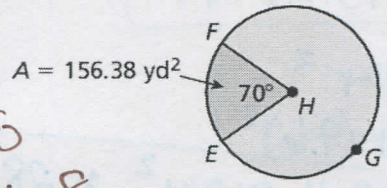
$\frac{x}{\pi(8)^2} = \frac{45}{360}$

$360x = 2880\pi$

$x = 8\pi\ cm^2$

$\approx 25.133\ cm^2$

11. Find the area of $\odot H$.

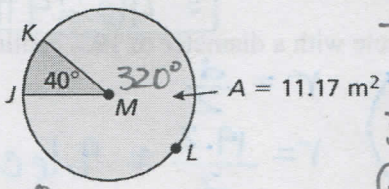


$\frac{156.38}{x} = \frac{70}{360}$

$70x = 56296.8$

$x = 804.24\ yd^2$

12. Find the area of $\odot M$.



$360° - 40° = 320°$

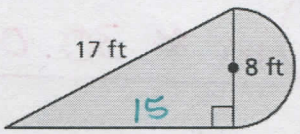
$\frac{11.17}{x} = \frac{320°}{360°}$

$320x = 4021.2$

$x \approx 12.566 m^2$

In Exercises 13–15, find the area of the shaded region.

8, 15, 17 triple

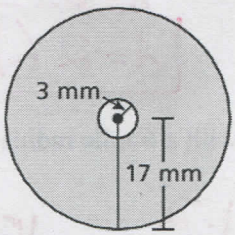
13. 

$\triangle + \frac{1}{2}\odot$

$A = \frac{1}{2}(8)(15) + \frac{1}{2}(\pi(4)^2)$

$A = 60 + 8\pi\ ft^2$

$\approx 85.133 ft^2$

14. 

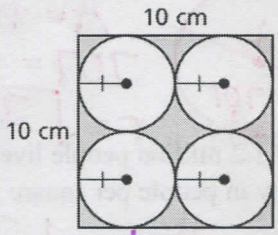
$A = B\odot - S\odot$

$= \pi(17)^2 - \pi(3)^2$

$= 289\pi - 9\pi$

$= 280\pi\ mm^2$

$\approx 879.650 mm^2$

15. 

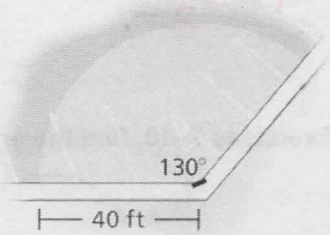
$A = \square - 4\odot$

$= (10)^2 - 4(\pi(2.5)^2)$

$= 100 - 25\pi\ cm^2$

$\approx 21.460\ cm^2$

16. The diagram shows the coverage of a security camera outside a building. A new security camera is installed in the same position that doubles the radius of the coverage area. How does this affect the coverage area? Explain.



doubles w/ area means 2^2 so four times larger.

$\frac{new}{old} = \frac{7260.570}{1815.142} = 4$

$\frac{x}{\pi(80)^2} = \frac{130}{360}$

$360x = 832000\pi$

$x = \frac{20800\pi}{9} \approx 7260.570$

$\frac{x}{\pi(40)^2} = \frac{130}{360}$

$360x = 208000\pi$

$x = \frac{5200\pi}{9} \approx 1815.142$