1. Vocabulary In a circle, the region bounded by a chord and an arc is called a
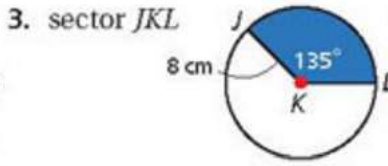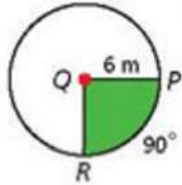___?___ . (sector or ~~segment~~)

Find the area of each sector. Give your answer in terms of π and rounded to the nearest hundredth.

2. sector PQR

$Sector = \dfrac{90}{360} \cdot \pi(6)^2$

$= \dfrac{1}{4} \cdot 36\pi$

$= 9\pi\ m^2$ or $\approx 28.27\ m^2$
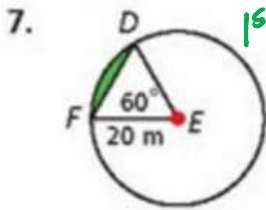
3. sector JKL

$Sector = \dfrac{135}{360} \cdot \pi(8)^2$

$= \dfrac{3}{8} \cdot 64\pi$

$= 24\pi\ cm^2$
or
$\approx 75.40\ cm^2$

Multi-Step Find the area of each segment to the nearest hundredth.

7.

$1^{st}\ S = \dfrac{60}{360} \cdot \pi(20)^2$
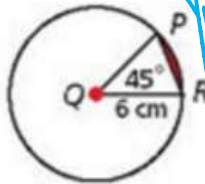
$= \dfrac{1}{6}\pi \cdot 400$

$= \dfrac{200\pi}{3}$

$2^{nd}\ A_\Delta = \dfrac{b \cdot h}{2}$

$= \dfrac{20 \cdot 10\sqrt{3}}{2}$

$= 100\sqrt{3}$

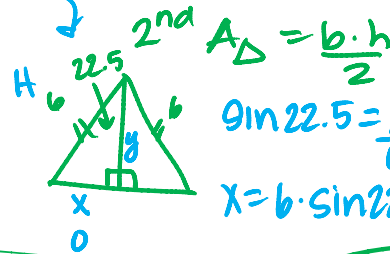$3^{rd}\ \dfrac{200\pi}{3} - 100\sqrt{3}$ or $\approx 36.23\ m^2$

Yuck :)

$1^{st}\ S = \dfrac{45}{360} \cdot \pi(6)^2$
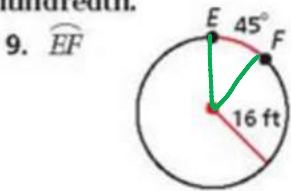
$= \dfrac{1}{8} \cdot 64\pi$

$= 8\pi$

$2^{nd}\ A_\Delta = \dfrac{b \cdot h}{2}$

$\sin 22.5 = \dfrac{x}{6}$ $\cos 22.5 = \dfrac{y}{6}$

$x = 6 \cdot \sin 22.5$ $y = 6 \cdot \cos 22.5$

3rd $1.41\ cm^2$

Find each arc length. Give your answer in terms of π and rounded to the nearest hundredth.
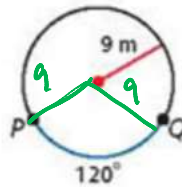
9. $\overset{\frown}{EF}$

$A \cdot L = \dfrac{45}{360} \cdot 2\pi 16$

$= \dfrac{1}{8} \cdot 32\pi$

$= 4\pi\ ft$
or $\approx 12.57\ ft$

10. $\overset{\frown}{PQ}$
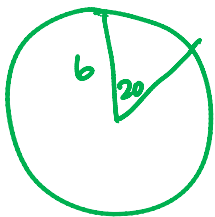
$A\ L = \dfrac{120}{360} \cdot 2\pi(9)$

$= \dfrac{1}{3} \cdot 18\pi$

$= 6\pi\ m$
or $\approx 18.85\ m$

11. an arc with measure 20° in a circle with radius 6 in.

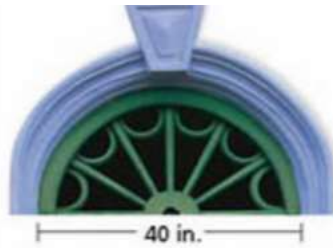$A \cdot L = \dfrac{20}{360} \cdot 2\pi(6)$

$= \dfrac{1}{18} \cdot 12\pi$

$= \dfrac{2\pi}{3}$ in or ≈ 2.09 in

15. Architecture A *lunette* is a semicircular window that is sometimes placed above a doorway or above a rectangular window. To the nearest square inch, what is the area of the lunette?
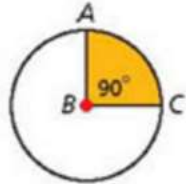

$\vdash$ ———— 40 in. ————— $\dashv$

$$\text{Sector} = \frac{180}{360} \cdot \pi(20)^2$$
$$= \frac{1}{2} \cdot 400\pi \quad = 200\pi \text{ in}^2 \text{ or } \approx 628 \text{ in}^2$$

Find the radius of each circle.

26. area of sector $ABC = 9\pi$

$$9\pi = \frac{90}{360} \cdot \pi r^2$$
$$4 \cdot 9\pi = \frac{1}{4} \pi r^2 \cdot 4 \quad \boxed{radius = 6 \text{ units}}$$
$$36\pi = \pi r^2$$
$$r = \pm 6$$

32. What is the area of sector AOB?

  Ⓐ 4π Ⓑ 16π Ⓒ 32π Ⓓ 64π

33. What is the length of $\overset{\frown}{AB}$?

  Ⓕ 2π Ⓖ 4π Ⓗ 8π Ⓙ 16π

$B(0, 8)$ $A(8, 0)$
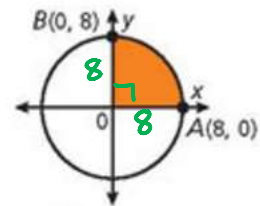
32. $$\text{Sector} = \frac{90}{360} \cdot \pi(8)^2$$
$$= \frac{1}{4} \cdot 64\pi$$
$$= 16\pi$$

33. $$A.L = \frac{1}{4} \cdot 2\pi(8)$$
$$= 4\pi$$