

Practice for a Circle:

A circle has a diameter of 18 inches. Find the exact ^{area} using π and approximate area rounded to the nearest hundredth.

$$A = \pi r^2$$

$$r = 9$$

$$= \pi (9)^2$$

$$= 81\pi$$

$$= 254.47$$

Dale is spreading grass seed over the putting green on a golf course. The circular green has a radius of 30 feet. If each bag of grass seed covers an area of 315 ft². How many bags of grass seed does Dale need?

$$\pi (30)^2 \approx 2827.4334$$

$$\frac{2827.4334}{315} \approx 8.975$$

$$\textcircled{9}$$

Most road and racing bicycles today use 3,038.58 square centimeter rims, though 2,560.52 square centimeter rims are popular with smaller riders and triathletes. What is the difference between the diameters of the rims?

$$A = \pi r^2$$

$$\frac{3,038.58}{\pi} = \frac{\pi r^2}{\pi}$$

$$\sqrt{967.2101} = \sqrt{r^2}$$
$$31.1 = r$$

$$\begin{array}{r} \times 2 \\ \hline 62.2 = d \end{array}$$

$$\frac{2,560.52}{\pi} = \frac{\pi r^2}{\pi}$$

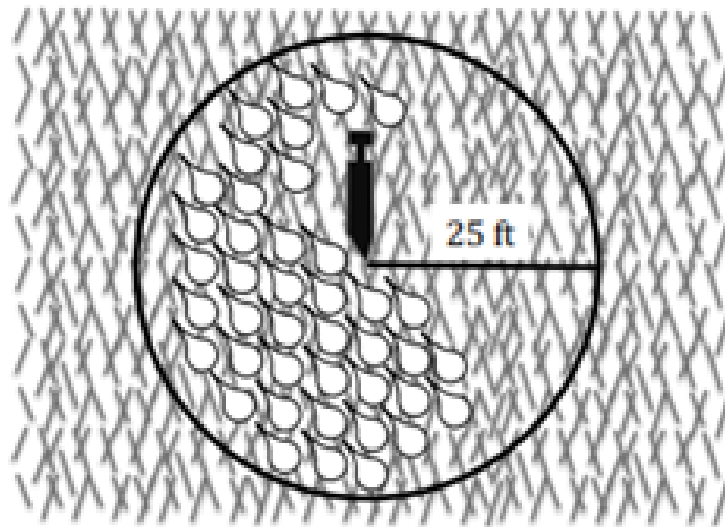
$$\sqrt{815.03883} = \sqrt{r^2}$$
$$28.5489 = r$$

$$\begin{array}{r} \times 2 \\ \hline 57.0978 = d \end{array}$$

$$62.2 - 57.0978 = 5.1$$

Informal Assessment:

A sprinkler rotates in a circular pattern and sprays water over a distance of 25 feet.

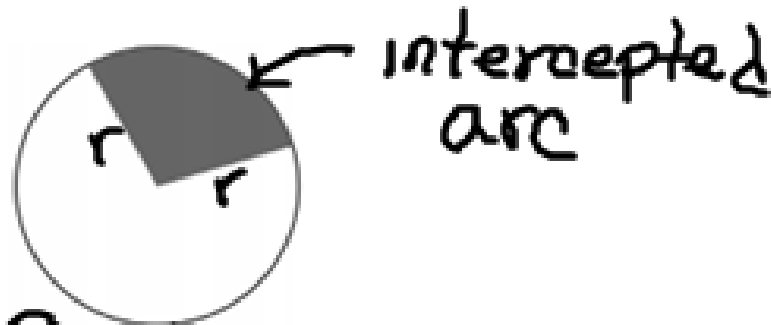


$$A = \pi (25)^2$$
$$A = \pi (625)$$
$$A = 1963.5$$

What is the approximate area of the circular region covered by the sprinkler?

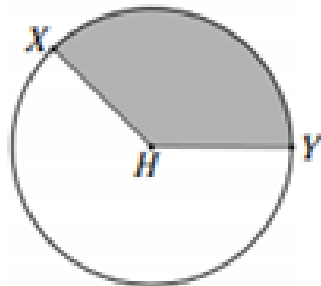
- A 490.9 square feet
- B 1,963.5 square feet
- C 4,417.9 square feet
- D 7,853.9 square feet

Let us consider the Shaded region in the figure below.



A Sector is the region bounded by two radii of a circle and their intercepted arc

The ratio of the area, A , of a sector to the area of the circle is equal to the ratio of the measure of the intercepted arc to 360° .



$$\frac{\text{Sector}}{\pi r^2} = \frac{\text{degree}}{360}$$

Practice:

A circle has a 6 centimeter radius and a shaded sector with a central angle of 60°. Determine the area of the shaded sector.

$$\frac{X}{\pi(6)^2} = \frac{60}{360}$$

$$\frac{X}{36\pi} = \frac{1}{6}$$
$$\frac{6X}{6} = \frac{36\pi}{6}$$

$$X = 6\pi \approx 18.9$$

The area of a sector with radius of 8 inches is 74.84 square inches. Calculate the approximate angle of the sector.

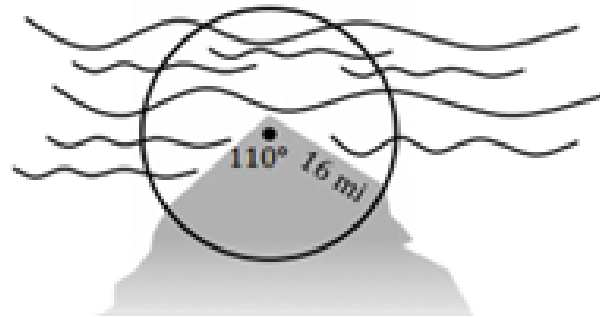
$$\frac{74.84}{\pi(8)^2} = \frac{X}{360}$$

$$\frac{26942.4}{201.0619} = \frac{201.0619X}{201.0619}$$

$$134^\circ$$

Your turn:

A lighthouse is situated on the northern tip of an island. Determine the area of water that the light of the lighthouse can cover.



$$\frac{x}{360} = \frac{110}{360}$$

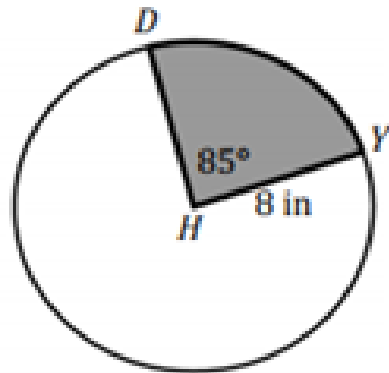
$$360x = 28160\pi$$

$$\frac{360x}{360} = \frac{28160\pi}{360}$$

$$x = 245.7$$

Informal Assessment:

In Sarah's family, the birthday person always gets to cut the first piece of cake. Sarah is celebrating her birthday with both of her parents, her two brothers, and her best friend. She cuts her piece of birthday cake as shown by the sector below.



If the rest of the party equally shares the remaining portion of the cake, what is approximate area each one receives?

$$\begin{array}{r} 201.0619 \\ -47.5 \\ \hline 153.5619 \\ \div 5 \\ \hline \end{array}$$

- A 30.718 in²
- B 47.473 in²
- C 153.589 in²
- D 201.062 in²

$$\begin{aligned} \frac{x}{\pi(8)^2} &= \frac{85}{360} \\ 360x &= 5440\pi \\ \frac{360x}{360} &= \frac{17090.2640}{360} \\ x &= 47.5 \end{aligned}$$