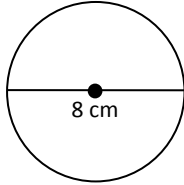


8.3/8.4 Areas of Circles and Sectors Homework
Geometry 3313

Name Key

1. Sara, John, and Mike are calculating the area of a circle. 2 of the solutions are wrong and 1 is correct. Explain who is correct and why the other 2 are wrong.



John's solution

$$A = \pi(8)^2$$

$$A = 64\pi \text{ cm}^2$$

Sara's solution

$$A = \pi(4)^2$$

$$A = 16\pi \text{ cm}^2$$

Mike's solution

$$A = 2\pi(4)$$

$$A = 8\pi \text{ cm}^2$$

Person who is correct: Sara

Why are the other 2 wrong? Explain why each is wrong.

John used the diameter, not the radius
Mike used the circumference formula

2. Find the area of a circle whose radius is 9 inches long.

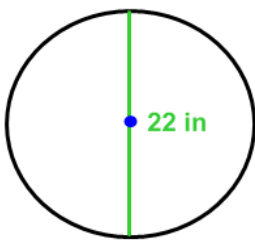
$$A = \pi(9)^2$$

$$A = 81\pi$$

Exact Area (in terms of π) = $81\pi \text{ in}^2$

Approximate Area (rounded to nearest tenth) = 254.5 in^2

3. Find the area of the circle below.



$$A = \pi(11)^2$$

$$A = 121\pi$$

Exact Area (in terms of π) = $121\pi \text{ in}^2$

Approximate Area (rounded to nearest tenth) = 380.1 in^2

4. The area of a circle is $256\pi \text{ cm}^2$. What is the circumference of this circle?

$$A = \pi r^2$$

$$\frac{256\pi}{\pi} = \frac{\pi r^2}{\pi}$$

$$256 = r^2$$

$$16 = r$$

$$C = 2\pi(16)$$

$$C = 32\pi \text{ cm}$$

OR

$$C = 100.5 \text{ cm}$$

5. The circumference of a circle is 256π cm. What is the area of this circle?

$$C = 2\pi r$$

$$\frac{256\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

$$128 = r$$

$$A = \pi(128)^2$$

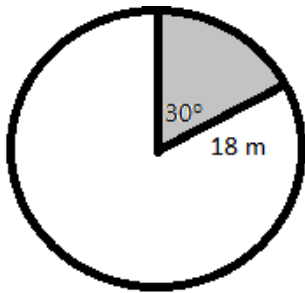
$$A = 16384\pi \text{ cm}^2$$

OR

$$A = 51471.9 \text{ cm}^2$$

6. Find the area of each of the sectors below.

a.

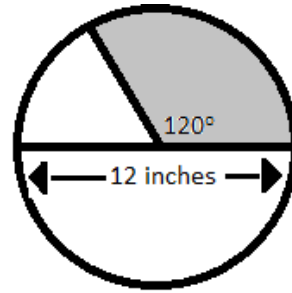


$$\frac{30}{360} \cdot \pi(18)^2$$

$$\frac{1}{12} \pi(324)$$

$$27\pi \text{ m}^2 \text{ OR } 84.8 \text{ m}^2$$

b.



$$\frac{120}{360} \cdot \pi(6)^2$$

$$\frac{1}{3} \pi(36)$$

$$12\pi \text{ in}^2 \text{ OR } 37.7 \text{ in}^2$$

7. A lawn sprinkler moves in a circular direction and rotates 80° before it rotates back to its starting position. If the sprinkler projects water out 20 feet, how many square feet of lawn are being watered by the sprinkler? Round your answer to the nearest square foot.

$$\frac{80}{360} \cdot \pi(20)^2 = 279.3 \text{ ft}^2$$

8. A sector has a radius of 6 yd and an area of 9π yd². Find the central angle of the sector.

$$A = \frac{\text{central angle}}{360} \cdot \pi r^2$$

$$9\pi = \frac{x}{360} \cdot \pi(6)^2$$

$$\frac{9}{36} = \frac{x}{360} \cdot 36$$

$$90 = x$$

$$90^\circ$$