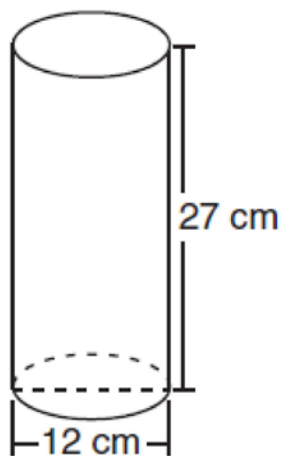


G.G.14: Volume and Lateral Area: Apply the properties of a cylinder, including bases are congruent, the volume formula and the lateral area formula

- 1 Which expression represents the volume, in cubic centimeters, of the cylinder represented in the diagram below?



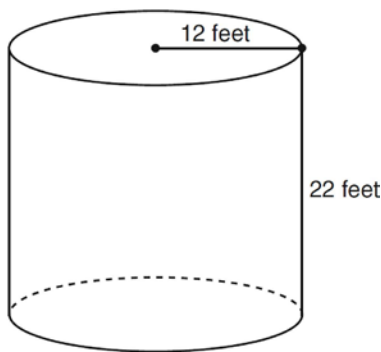
- 1) 162π
2) 324π
3) 972π
4) $3,888\pi$
- 2 What is the volume, in cubic centimeters, of a cylinder that has a height of 15 cm and a diameter of 12 cm?
- 1) 180π
2) 540π
3) 675π
4) $2,160\pi$
- 3 A cylinder has a height of 7 cm and a base with a diameter of 10 cm. Determine the volume, in cubic centimeters, of the cylinder in terms of π .
- 4 A right circular cylinder has a volume of 1,000 cubic inches and a height of 8 inches. What is the radius of the cylinder to the *nearest tenth of an inch*?
- 1) 6.3
2) 11.2
3) 19.8
4) 39.8
- 5 The volume of a cylinder is $12,566.4 \text{ cm}^3$. The height of the cylinder is 8 cm. Find the radius of the cylinder to the *nearest tenth of a centimeter*.
- 6 The diameter of the base of a right circular cylinder is 6 cm and its height is 15 cm. In square centimeters, the lateral area of the cylinder is
- 1) 180π
2) 135π
3) 90π
4) 45π
- 7 A right circular cylinder has an altitude of 11 feet and a radius of 5 feet. What is the lateral area, in square feet, of the cylinder, to the *nearest tenth*?
- 1) 172.7
2) 172.8
3) 345.4
4) 345.6

- 8 As shown in the diagram below, a landscaper uses a cylindrical lawn roller on a lawn. The roller has a radius of 9 inches and a width of 42 inches.



To the *nearest square inch*, the area the roller covers in one complete rotation is

- 1) 2,374
 - 2) 2,375
 - 3) 10,682
 - 4) 10,688
- 9 The cylindrical tank shown in the diagram below is to be painted. The tank is open at the top, and the bottom does *not* need to be painted. Only the outside needs to be painted. Each can of paint covers 600 square feet. How many cans of paint must be purchased to complete the job?



- 10 A right circular cylinder has a height of 7 inches and the base has a diameter of 6 inches. Determine the lateral area, in square inches, of the cylinder in terms of π .
- 11 A right circular cylinder with a height of 5 cm has a base with a diameter of 6 cm. Find the lateral area of the cylinder to the *nearest hundredth of a square centimeter*. Find the volume of the cylinder to the *nearest hundredth of a cubic centimeter*.
- 12 A paint can is in the shape of a right circular cylinder. The volume of the paint can is 600π cubic inches and its altitude is 12 inches. Find the radius, in inches, of the base of the paint can. Express the answer in simplest radical form. Find, to the *nearest tenth of a square inch*, the lateral area of the paint can.

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Answer Section

1 ANS: 3

$$V = \pi r^2 h = \pi \cdot 6^2 \cdot 27 = 972\pi$$

REF: 011027ge TOP: Volume and Lateral Area

2 ANS: 2

$$V = \pi r^2 h = \pi \cdot 6^2 \cdot 15 = 540\pi$$

REF: 011117ge TOP: Volume and Lateral Area

3 ANS:

$$V = \pi r^2 h = \pi(5)^2 \cdot 7 = 175\pi$$

REF: 081231ge TOP: Volume and Lateral Area

4 ANS: 1

$$V = \pi r^2 h$$

$$1000 = \pi r^2 \cdot 8$$

$$r^2 = \frac{1000}{8\pi}$$

$$r \approx 6.3$$

REF: 080926ge TOP: Volume and Lateral Area

5 ANS:

$$22.4. \quad V = \pi r^2 h$$

$$12566.4 = \pi r^2 \cdot 8$$

$$r^2 = \frac{12566.4}{8\pi}$$

$$r \approx 22.4$$

REF: fall0833ge TOP: Volume and Lateral Area

6 ANS: 3

$$L = 2\pi r h = 2\pi \cdot \frac{6}{2} \cdot 15 = 90\pi$$

REF: 061405ge TOP: Volume and Lateral Area

7 ANS: 4

$$L = 2\pi r h = 2\pi \cdot 5 \cdot 11 \approx 345.6$$

REF: 061006ge TOP: Volume and Lateral Area

8 ANS: 2
 $18\pi \cdot 42 \approx 2375$

REF: 011418ge TOP: Volume and Lateral Area

9 ANS:
 $L = 2\pi rh = 2\pi \cdot 12 \cdot 22 \approx 1659$. $\frac{1659}{600} \approx 2.8$. 3 cans are needed.

REF: 061233ge TOP: Volume and Lateral Area

10 ANS:
 $L = 2\pi rh = 2\pi \cdot 3 \cdot 7 = 42\pi$

REF: 061329ge TOP: Volume and Lateral Area

11 ANS:
 $L = 2\pi rh = 2\pi \cdot 3 \cdot 5 \approx 94.25$. $V = \pi r^2 h = \pi(3)^2(5) \approx 141.37$

REF: 011335ge TOP: Volume and Lateral Area

12 ANS:
 $V = \pi r^2 h$. $L = 2\pi rh = 2\pi \cdot 5\sqrt{2} \cdot 12 \approx 533.1$
 $600\pi = \pi r^2 \cdot 12$
 $50 = r^2$
 $\sqrt{25} \sqrt{2} = r$
 $5\sqrt{2} = r$

REF: 011236ge TOP: Volume and Lateral Area