

Advanced Geometry

Geometry · Grade 7

◆ Medium · 10 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

- Find the volume of a triangular prism with a triangular base area of 12 cm^2 and height 8 cm.

Answer: _____

- A cylinder has radius 5 cm and height 10 cm. Find its volume (use $\pi \approx 3.14$).

Answer: _____

3. A triangular prism has a right triangle base with legs 6 cm and 8 cm, and a length of 12 cm. Find its volume.

Answer: _____

4. A cylinder has diameter 8 cm and height 15 cm. Find its volume ($\pi \approx 3.14$).

Answer: _____

5. A cylinder has volume 502.4 cm^3 and height 10 cm. Find its radius ($\pi \approx 3.14$).

Answer: _____

6. A cylinder has the same radius as a cube's side ($r = s = 6$ cm). The cylinder's height equals the cube's height. Which has greater volume? ($\pi \approx 3.14$)

Answer: _____

7. A triangular prism has an equilateral triangle base with side 6 cm (area ≈ 15.59 cm²) and length 10 cm. Approximate the volume.

Answer: _____

8. A cylinder has volume 314 cm³ and radius 5 cm. Find its height. ($\pi \approx 3.14$)

Answer: _____

9. A right triangular prism: legs 3 cm and 4 cm, length 10 cm. Find volume.

Answer: _____

10. Cylinder A has radius 6 cm, height 4 cm. Cylinder B has radius 4 cm, height 6 cm. Which has greater volume?

Answer: _____

Answer Key

Advanced Geometry — Medium

1. **96 cm³**

$$V = \text{Base Area} \times \text{height} = 12 \times 8 = 96 \text{ cm}^3.$$

2. **785 cm³**

$$V = \pi r^2 h = 3.14 \times 25 \times 10 = 785 \text{ cm}^3.$$

3. **288 cm³**

$$\text{Triangle area} = \frac{1}{2} \times 6 \times 8 = 24 \text{ cm}^2. V = 24 \times 12 = 288 \text{ cm}^3.$$

4. **753.6 cm³**

$$r = 4. V = 3.14 \times 16 \times 15 = 3.14 \times 240 = 753.6 \text{ cm}^3.$$

5. **4 cm**

$$V = \pi r^2 h. 502.4 = 3.14 \times r^2 \times 10. r^2 = 502.4 \div 31.4 = 16. r = 4 \text{ cm}.$$

6. **Cylinder: ~678.24 cm³ > Cube: 216 cm³**

$$\text{Cube: } 6^3 = 216. \text{ Cylinder: } 3.14 \times 36 \times 6 = 678.24. \text{ Cylinder is greater.}$$

7. **≈ 155.9 cm³**

$$V = \text{Base Area} \times \text{length} \approx 15.59 \times 10 \approx 155.9 \text{ cm}^3.$$

8. **4 cm**

$$V = \pi r^2 h. 314 = 3.14 \times 25 \times h = 78.5h. h = 4 \text{ cm}.$$

9. **60 cm³**

$$\text{Base area} = \frac{1}{2} \times 3 \times 4 = 6 \text{ cm}^2. V = 6 \times 10 = 60 \text{ cm}^3.$$

10. **A is greater (V_A=144π, V_B=96π)**

$$V_A = \pi \times 36 \times 4 = 144\pi. V_B = \pi \times 16 \times 6 = 96\pi. A \text{ is greater.}$$