

Volume of Pyramids, Cones, and Spheres — Solutions



Substitute into the correct formula, show your working, and include units.

Name _____

Date _____

Formula first

Write the formula before substituting. Leave answers in terms of π unless a decimal is asked for.

1. Find the volume in terms of π .



Solution

$$V = \frac{1}{3}\pi(4)^2(9)$$
$$V = 48\pi \text{ cm}^3$$

2. Find the volume in terms of π .



Solution

$$V = \frac{4}{3}\pi(6)^3$$
$$V = 288\pi \text{ cm}^3$$

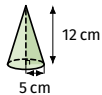
3. Find the volume.



Solution

$$V = \frac{1}{3}(8^2)(6)$$
$$V = 128 \text{ cm}^3$$

4. Find the volume in terms of π .



Solution

$$V = \frac{1}{3}\pi(5)^2(12)$$
$$V = 100\pi \text{ cm}^3$$

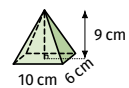
5. Find the volume in terms of π .



Solution

$$V = \frac{4}{3}\pi(6)^3$$
$$V = 144\pi \text{ cm}^3$$

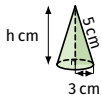
6. Find the volume.



Solution

$$V = \frac{1}{3}(10)(6)(9)$$
$$V = 180 \text{ cm}^3$$

7. Find the perpendicular height, then the volume in terms of π .



Solution

$$h = \sqrt{5^2 - 3^2} = 4 \text{ cm}$$
$$V = \frac{1}{3}\pi(3)^2(4) = 12\pi \text{ cm}^3$$

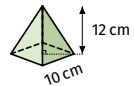
8. Find the volume correct to 1 d.p.



Solution

$$V = \frac{4}{3}\pi(3)^3 = 36\pi$$
$$V \approx 113.1 \text{ cm}^3$$

9. Find the volume.



Solution

$$V = \frac{1}{3}(10^2)(12)$$
$$V = 400 \text{ cm}^3$$

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- 10.** The volume is $100\pi \text{ cm}^3$. Find the height.



Solution

$$100\pi = \frac{1}{3}\pi(5)^2h$$

$$h = 12 \text{ cm}$$

- 11.** The volume is $972\pi \text{ cm}^3$. Find the radius.

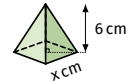


Solution

$$972\pi = \frac{4}{3}\pi r^3, r^3 = 729$$

$$r = 9 \text{ cm}$$

- 12.** The volume is 288 cm^3 . Find the base side length.

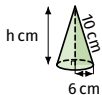


Solution

$$288 = \frac{1}{3}x^2(6), x^2 = 144$$

$$x = 12 \text{ cm}$$

- 13.** Find the perpendicular height, then the volume in terms of π .



Solution

$$h = \sqrt{10^2 - 6^2} = 8; V = 96\pi \text{ cm}^3$$

- 14.** Find the volume correct to 1 d.p.



Solution

$$V = \frac{4}{3}\pi(5)^3 = \frac{250}{3}\pi$$

$$V \approx 261.8 \text{ cm}^3$$

- 15.** The volume is 100 cm^3 . Find the height.

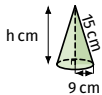


Solution

$$100 = \frac{1}{3}(8)(5)h$$

$$h = 7.5 \text{ cm}$$

- 16.** Find the perpendicular height, then the volume in terms of π .



Solution

$$h = \sqrt{15^2 - 9^2} = 12; V = 324\pi \text{ cm}^3$$

- 17.** Find the volume correct to 1 d.p.

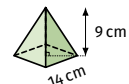


Solution

$$V = \frac{4}{3}\pi(4.5)^3$$

$$V \approx 381.7 \text{ cm}^3$$

- 18.** Find the volume.



Solution

$$V = \frac{1}{3}(14^2)(9)$$

$$V = 588 \text{ cm}^3$$