

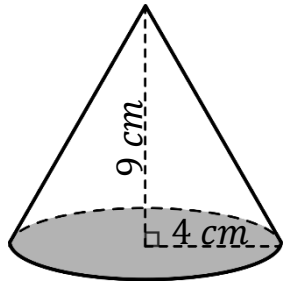


Timester Challenge



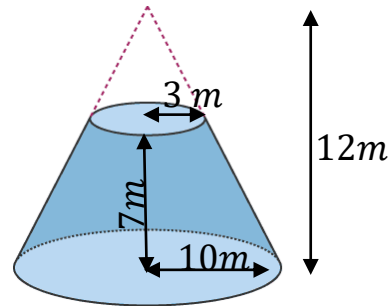
Volume of a Cone and Pyramid

Calculate the volume of the cone.



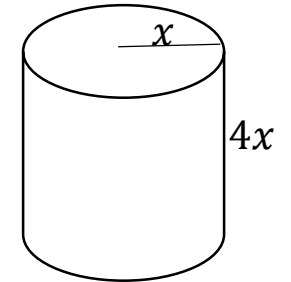
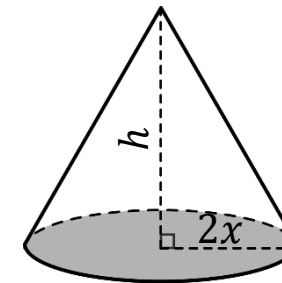
Bronze ★

Calculate the volume of the frustum.

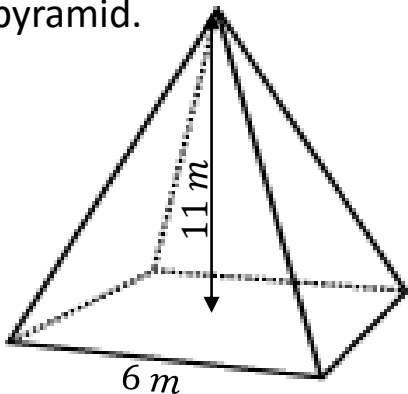


Silver ★

The volumes of the cone and cylinder are equal to each other. Write an expression for the height of the cone in terms of x .

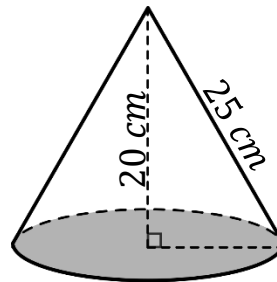


Calculate the volume of the square based pyramid.



Bronze ★

Calculate the volume of the cone.



Silver ★

Gold ★



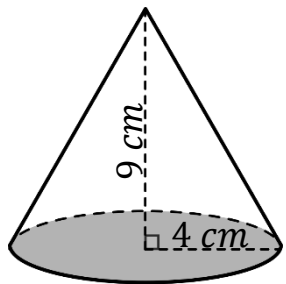
Timester Challenge



Volume of a Cone and Pyramid

Answers

Calculate the volume of the cone.

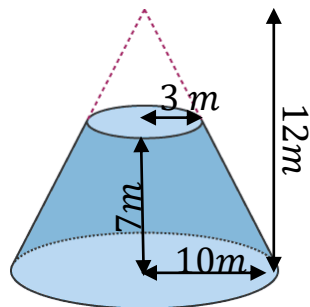


$$V = \frac{\pi \times 4^2 \times 9}{3}$$

$$V = 150.8 \text{ cm}^3 \text{ (1 dp)}$$

Bronze ★

Calculate the volume of the frustum.



$$V_s = \frac{\pi \times 3^2 \times 5}{3} = 15\pi$$

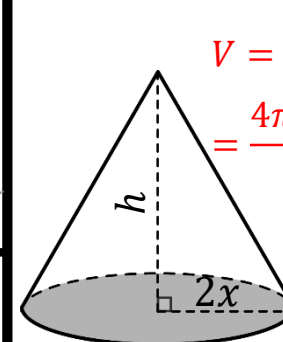
$$V_L = \frac{\pi \times 10^2 \times 12}{3} = 400\pi$$

$$V = V_L - V_s = 400\pi - 15\pi$$

$$= 385\pi = 1209.5 \text{ m}^3 \text{ (1 dp)}$$

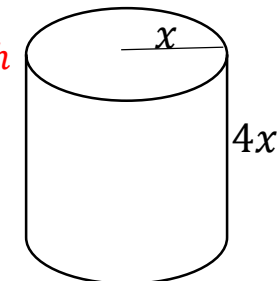
Silver ★

The volumes of the cone and cylinder are equal to each other. Write an expression for the height of the cone in terms of x .



$$V = \frac{1}{3} \pi (2x)^2 h$$

$$= \frac{4\pi x^2 h}{3}$$



$$V = \pi x^2 \times 4x$$

$$= 4x^3 \pi$$

$$\therefore \frac{4\pi x^2 h}{3} = 4x^3 \pi$$

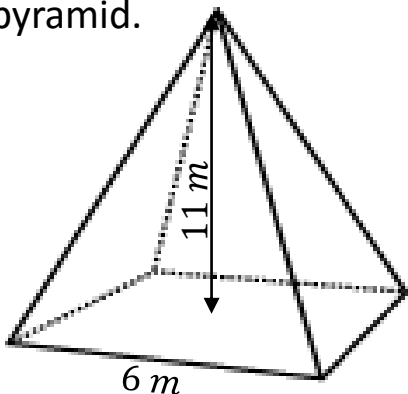
$$4\pi x^2 h = 12x^3 \pi$$

$$h = \frac{12x^3 \pi}{4\pi x^2}$$

$$h = 3x$$

Gold ★

Calculate the volume of the square based pyramid.

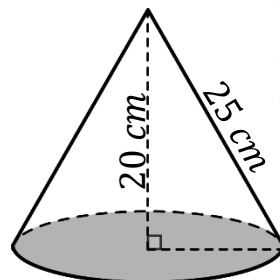


$$V = \frac{6^2 \times 11}{3}$$

$$V = 132 \text{ cm}^3$$

Bronze ★

Calculate the volume of the cone.



$$r = \sqrt{25^2 - 20^2}$$

$$r = \sqrt{225}$$

$$r = 15 \text{ cm}$$

$$V = \frac{\pi \times 15^2 \times 20}{3}$$

$$= 1500\pi$$

$$= 4712.4 \text{ cm}^3 \text{ (1 dp)}$$

Silver ★