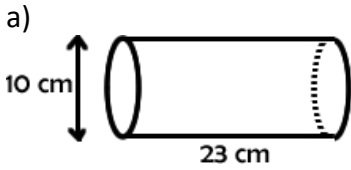
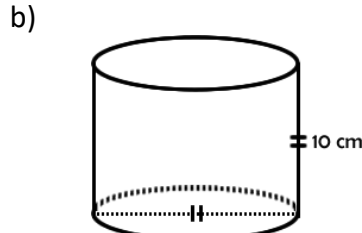


1. Determine the volume of the cylinder.



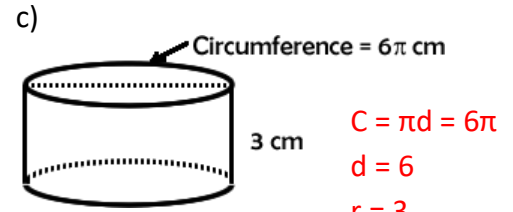
$$V = \pi r^2 h = \pi 5^2 (23)$$

Volume = 575π cm³ (E)



$$V = \pi r^2 h = \pi 5^2 (10)$$

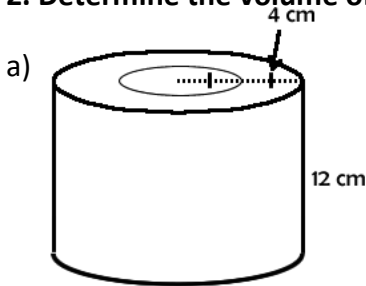
Volume = 250π cm³ (E)



$$V = \pi r^2 h = \pi 3^2 (3)$$

Volume = 27π cm³ (E)

2. Determine the volume of the cylinder with the center removed.

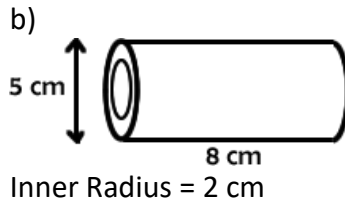


$$V_{\text{large}} = \pi r^2 h = \pi 4^2 (12) = 768\pi$$

$$V_{\text{small}} = \pi r^2 h = \pi 2^2 (12) = 48\pi$$

(difference) 576π

Volume = 576π cm³ (E)

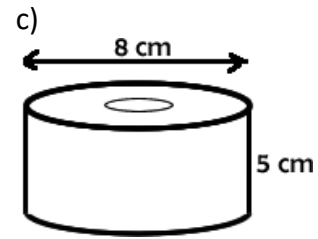


$$V_{\text{large}} = \pi r^2 h = \pi (2.5)^2 (8) = 50\pi$$

$$V_{\text{small}} = \pi r^2 h = \pi 2^2 (8) = 32\pi$$

(difference) 18π

Volume = 18π cm³ (E)



Inner Diameter = 2 cm

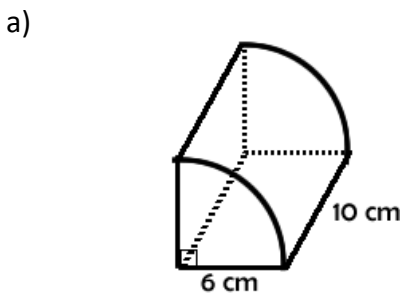
$$V_{\text{large}} = \pi r^2 h = \pi (4)^2 (5) = 80\pi$$

$$V_{\text{small}} = \pi r^2 h = \pi 1^2 (8) = 8\pi$$

(difference) 75π

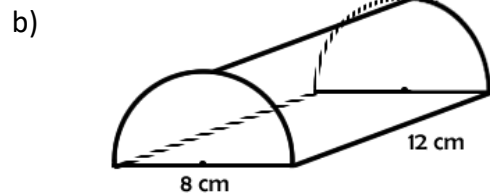
Volume = 75π cm³ (E)

3. Determine the volume of the solid.



$$V = \frac{1}{4} \text{cylinder} = \frac{1}{4} \pi r^2 h = \frac{1}{4} \pi (6)^2 (10) = \frac{1}{4} (360\pi)$$

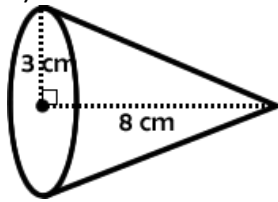
Volume = 90π cm³ (E)



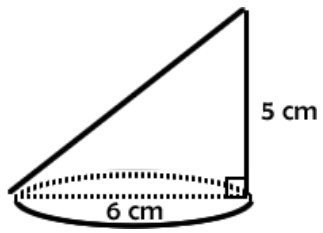
$$V = \frac{1}{2} \text{cylinder} = \frac{1}{2} \pi r^2 h = \frac{1}{2} \pi (4)^2 (12) = 96\pi$$

Volume = 96π cm³ (E)

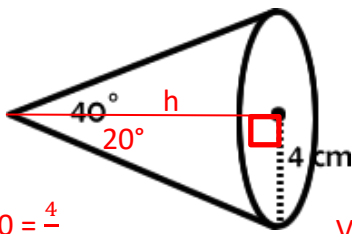
4. Determine the volume of the cones.

a)  $V = \frac{\pi r^2 h}{3} = \frac{\pi(3)^2(8)}{3}$

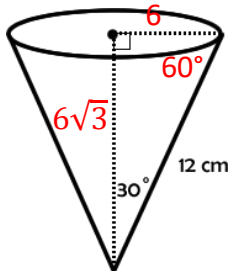
Volume = 24π cm³ (E)

b)  $V = \frac{\pi r^2 h}{3} = \frac{\pi(3)^2(5)}{3}$

Volume = 15π cm³ (E)

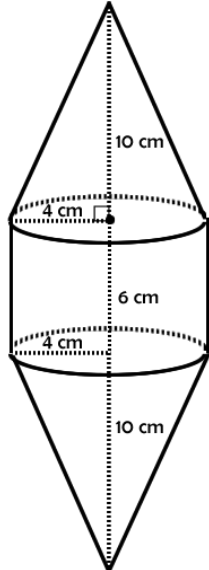
c)  $\tan 20 = \frac{4}{h}$
 $h = \frac{4}{\tan 20} \approx 10.99$
 $V = \frac{\pi r^2 h}{3} = \frac{\pi(4)^2(10.99)}{3}$

Volume = 184.14 cm³

d)  $V = \frac{\pi r^2 h}{3} = \frac{\pi(6)^2(6\sqrt{3})}{3}$

Volume = 72π√3 cm³ (E)

5. Determine the volume of the composite figures.

a) 

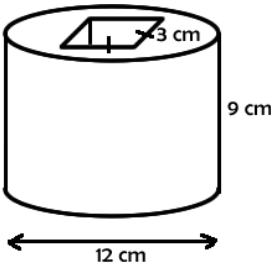
$$V_{\text{top cone}} = \frac{\pi r^2 h}{3} = \frac{\pi(4)^2(10)}{3} = \frac{160\pi}{3}$$

$$V_{\text{cylinder}} = \pi r^2 h = \pi(4)^2(6) = 96\pi$$

$$V_{\text{bottom cone}} = \frac{\pi r^2 h}{3} = \frac{\pi(4)^2(10)}{3} = \frac{160\pi}{3}$$

(sum) $= \frac{608\pi}{3} \text{ cm}^3 \approx 636.7 \text{ cm}^3$

b) Square hole with sides of 3 cm



$$V_{\text{cylinder}} = \pi r^2 h = \pi(6)^2(9) = 324\pi$$

$$V_{\text{prism}} = Bh = 9(9) = 81$$

(difference) $= 324\pi - 81 \text{ cm}^3 \approx 936.88 \text{ cm}^3$