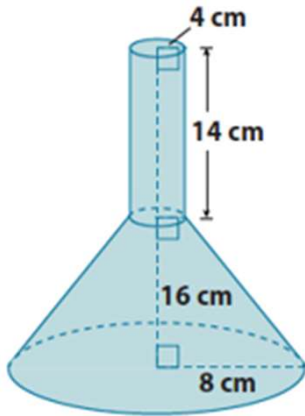


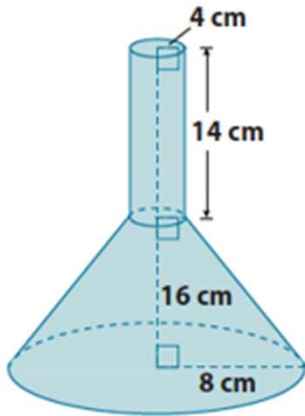
Volume of Composite Solids

1. Determine the exact volume of the funnel.



Volume of Composite Solids

1. Determine the exact volume of the funnel.



The volume of the cylinder is

$$\begin{aligned}V &= \pi(4)^2(14) \\ &= 224\pi.\end{aligned}$$

Let x cm be the height of the cone that has been removed.

$$\frac{4}{8} = \frac{x}{x + 16}$$

$$4(x + 16) = 8x$$

$$4x + 64 = 8x$$

$$64 = 4x$$

$$16 = x$$

The volume of the small cone is

$$\begin{aligned}V &= \frac{1}{3}\pi(4)^2(16) \\ &= \frac{256}{3}\pi.\end{aligned}$$

The volume of the large cone is

$$\begin{aligned}V &= \frac{1}{3}\pi(8)^2(32) \\ &= \frac{2048}{3}\pi.\end{aligned}$$

The volume of the truncated cone is

$$\begin{aligned}\frac{2048}{3}\pi - \frac{256}{3}\pi &= \left(\frac{2048}{3} - \frac{256}{3}\right)\pi \\ &= \frac{1792}{3}\pi.\end{aligned}$$

The volume of the funnel is $224\pi \text{ cm}^3 + \frac{1792}{3}\pi \text{ cm}^3$, which is $821\frac{1}{3}\pi \text{ cm}^3$.

Go to [onlinemathlearning.com](https://www.onlinemathlearning.com) for more free math resources