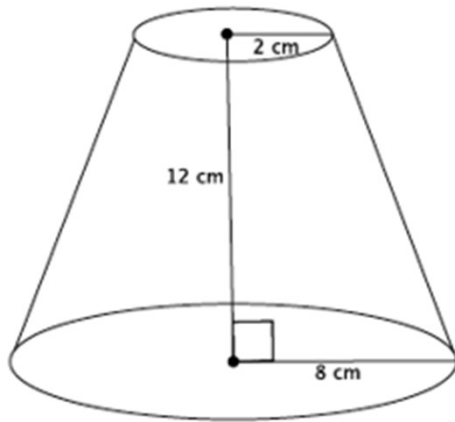# Volume of Truncated Cone

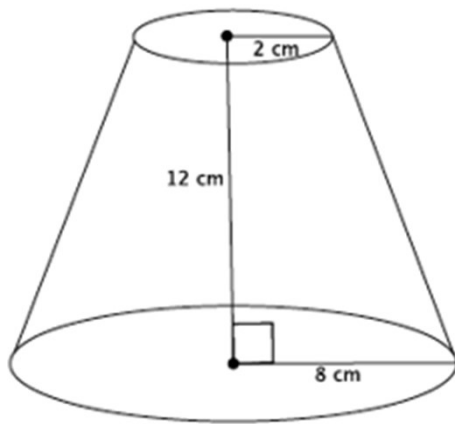1. Find the volume of the truncated cone.

a) Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what each part of the proportion represents.

b) Solve your proportion to determine the height of the cone that has been removed.

c) Calculate the volume of the truncated cone.

Volume of Truncated Cone

1. Find the volume of the truncated cone.

a) Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what each part of the proportion represents.

$$\frac{2}{8} = \frac{x}{x+12}$$

Let x cm represent the height of the small cone. Then $x + 12$ is the height of the large cone. The 2 represents the base radius of the small cone, and the 8 represents the base radius of the large cone.

b) Solve your proportion to determine the height of the cone that has been removed.

$$2(x + 12) = 8x$$
$$2x + 24 = 8x$$
$$24 = 6x$$
$$4 = x$$

c) Calculate the volume of the truncated cone.

The volume of the small cone is

$$V = \frac{1}{3}\pi(2)^2(4)$$
$$= \frac{16}{3}\pi.$$

The volume of the large cone is

$$V = \frac{1}{3}\pi(8)^2(16)$$
$$= \frac{1024}{3}\pi.$$

The volume of the truncated cone is

$$\frac{1024}{3}\pi - \frac{16}{3}\pi$$
$$= \left(\frac{1024}{3} - \frac{16}{3}\right)\pi$$
$$= \frac{1008}{3}\pi = 336\pi.$$

The volume of the truncated cone is 336π cm^3.

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