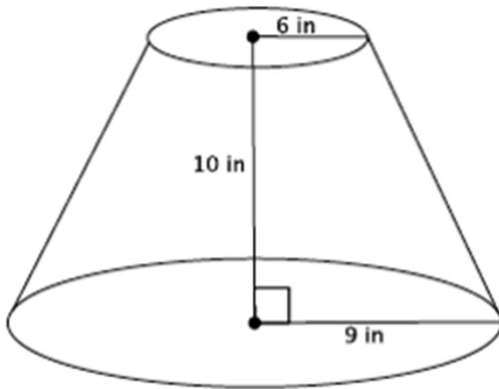


Volume of Truncated Cone

1. Find the volume of the truncated cone.



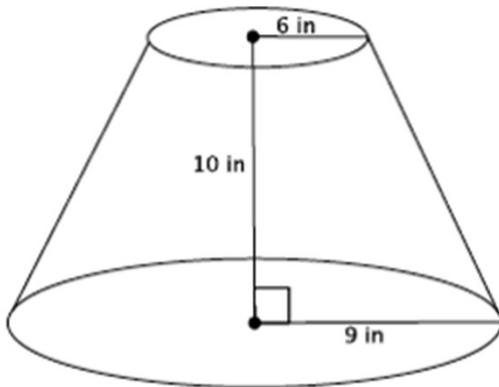
a) Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what all parts of the proportion represent.

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

c) Calculate the volume of the truncated cone.

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a) Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what all parts of the proportion represent.

$$\frac{6}{9} = \frac{x}{x + 10}$$

Let x in. represent the height of the small cone. Then $x + 10$ is the height of the large cone. Then 6 is the base radius of the small cone, and 9 is the base radius of the large cone.

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

$$\begin{aligned}6(x + 10) &= 9x \\6x + 60 &= 9x \\60 &= 3x \\20 &= x\end{aligned}$$

c) Calculate the volume of the truncated cone.

The volume of the small cone is

$$\begin{aligned}V &= \frac{1}{3}\pi(6)^2(20) \\&= \frac{720}{3}\pi.\end{aligned}$$

The volume of the large cone is

$$\begin{aligned}V &= \frac{1}{3}\pi(9)^2(30) \\&= \frac{2,430}{3}\pi.\end{aligned}$$

The volume of the truncated cone is

$$\begin{aligned}\frac{2430}{3}\pi - \frac{720}{3}\pi &= \left(\frac{2430}{3} - \frac{720}{3}\right)\pi \\&= \frac{1710}{3}\pi \\&= 570\pi.\end{aligned}$$

The volume of the truncated cone is 570π in³.

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