11.6 Volumes of Pyramids

Monday, January 23, 2017 2:59 PM

Cylinders

$V = Bh$

Prism

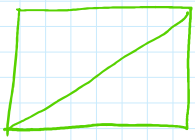
$V = Bh$

$V = lwh$

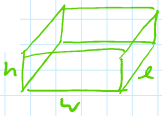
Bh

What You Will Learn

- Find volumes of pyramids.
- Use volumes of pyramids.



$A = \frac{1}{2}bh$

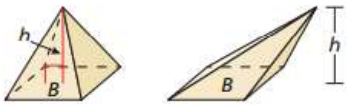


Volume of a Pyramid

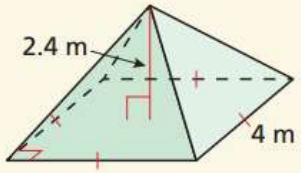
The volume V of a pyramid is

$$V = \frac{1}{3}Bh$$

where B is the area of the base and h is the height.



Find the volume of the pyramid.



$B = (4m)(4m)$

$B = 16m^2$

$V = \frac{1}{3}Bh$

$\frac{1}{3}(16m^2)\,2.4m$

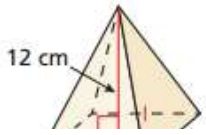
$\frac{1}{3}(38.4m^3)$

$V = 12.8m^3$

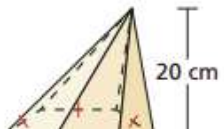
$V = \frac{1}{3}Bh$

Find the volume of the pyramid.

1.



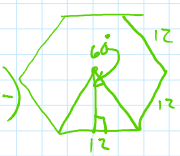
2.



$B = \frac{1}{2}aP$

$\frac{1}{2}(10.4cm)(72cm)$

$\frac{1}{2}(748.8cm^2)$

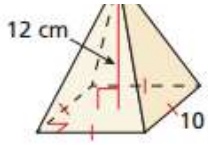


$P = (12cm)6$

$P = 72cm$

$\frac{360°}{6}$

$60°$



$V = \frac{1}{3}Bh$

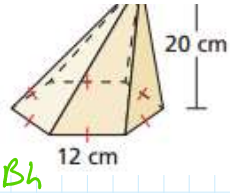
$B = (10\text{cm})(10\text{cm})$

$B = 100\text{cm}^2$

$\frac{1}{3}(100\text{cm}^2)(12\text{cm})$

$\frac{1}{3}(1200\text{cm}^3)$

$V = 400\text{cm}^3$



$V = \frac{1}{3}Bh$

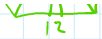
$\frac{1}{3}(374.4\text{cm}^2)(20\text{cm})$

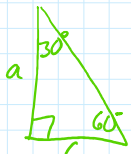
$\frac{1}{3}(7488\text{cm}^3)$

$V = 2496\text{cm}^3$

$\frac{1}{2}(748.8\text{cm}^2)$

$B = 374.4\text{cm}^2$



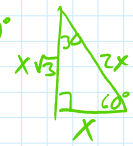


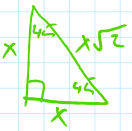
$a = 6\sqrt{3}$

$a \approx 10.4\text{cm}$

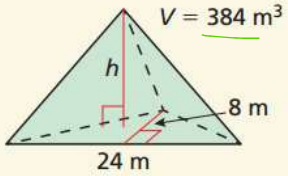
$\frac{360}{6}$

$60°$





Find the height of the triangular pyramid.



$B = \frac{1}{2}lw$

$\frac{1}{2}(24\text{m})(8\text{m})$

$(24\text{m})(4\text{m})$

$B = 96\text{m}^2$

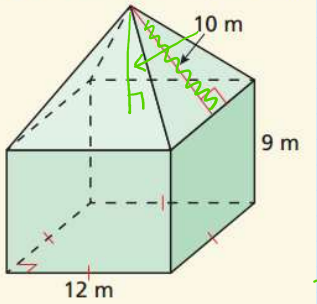
$V = \frac{1}{3}Bh$

$384\text{m}^3 = \frac{1}{3}(96\text{m}^2)h$

$\frac{384\text{m}^3}{32\text{m}^2} = \frac{(32\text{m}^2)h}{32\text{m}^2}$

$12\text{m} = h$

Find the volume of the composite solid.



To find the total volume, break the larger shape into shapes you can find the volume of and add those smaller shapes volumes up.

$V_\square = Bh$

$(144\text{m}^2)(9\text{m})$

$V_\square = 1296\text{m}^3$

$B = lw$

$(12\text{m})(12\text{m})$

$B = 144\text{m}^2$

$V_\triangle = \frac{1}{3}Bh$

$\frac{1}{3}(144\text{m}^2)10\text{m}$

$\frac{1}{3}(1440\text{m}^3)$

$V_\triangle = 480\text{m}^3$

$V_T = V_\triangle + V_\square$

$480\text{m}^3 + 1296\text{m}^3$

$V_T = 1776\text{m}^3$

Practice *sec 11.6* **pg. 639:**
1-3A, 5-13EO, 17, 19, 22, 26-29A