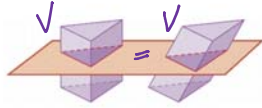


Geo II  
12.4 Volume of prisms and cylinders

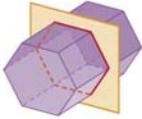
Name:

Cavalieri's principle



Figures on the left compared to right have SAME volume.

Directions: Name each prism. Then describe the shape of each cross section.



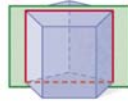
Name: hexagonal prism

Cross Section: hexagon



Name: Triangular prism

Cross Section: Triangle



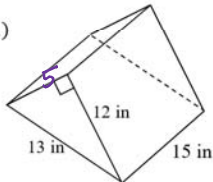
Name: Pentagonal prism

Cross Section: Rectangle

Directions: Find the volume of each 3-D solid below. Assume right solids and regular polygons, unless otherwise stated.

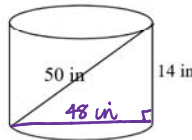
$V = B \cdot h$ ,  $B = \text{area of the base}$

1)



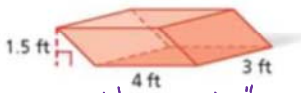
$B = \frac{1}{2} \cdot 5 \cdot 12 = 30 \text{ in}^2$   
 $V = 30 \cdot 15 = 450 \text{ in}^3$

2)



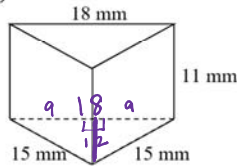
$B = 24^2 \pi = 576 \pi \text{ in}^2$   
 $V = 576 \pi \cdot 14 = 8064 \pi \text{ in}^3$

3)



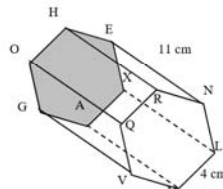
"just straighten"  
 $V = 4 \cdot 3 \cdot 1.5 = 18 \text{ ft}^3$

4)



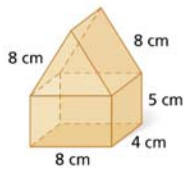
$B = \frac{1}{2} \cdot 9 \cdot 12 = 54 \text{ mm}^2$   
 $V = 54 \cdot 11 = 594 \text{ mm}^3$

5)

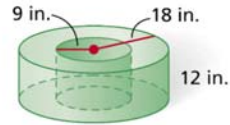


$B = \frac{6 \cdot 6 \cdot \sqrt{3}}{4} = 9\sqrt{3} \text{ cm}^2$   
 $V = 9\sqrt{3} \cdot 11 = 99\sqrt{3} \text{ cm}^3$

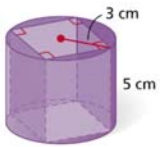
6)



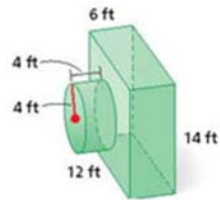
7) The volume between the cylinders.



8) The volume between the cylinder and the rectangular prism.



9)



10) A large cylindrical cooler is 2.5 feet high and has a diameter of 1.5 feet. It is filled  $\frac{3}{4}$  high with water for athletes to use during their soccer game. Estimate the volume of the water in the cooler in gallons, if 1 gallon is approximately 231 in<sup>3</sup>.

11) How many 3-cm cubes can be placed inside a rectangular box with dimensions 18 cm by 6 cm by 9 cm?