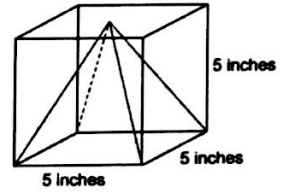


Accelerated Geometry
 Test Review: Volume, Cross Sections,
 Rotations, Constructions

Name Key
 Date _____

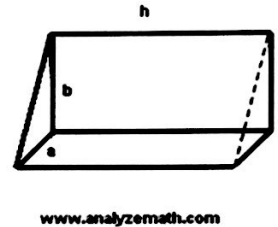
1. A square pyramid is packaged inside a box. The space inside the box around the pyramid is filled with protective foam. How many cubic inches of foam is needed to fill the space around the pyramid?



$$5^3 - \frac{1}{3}(5)^2(5)$$

$$= 125 - \frac{125}{3} = \boxed{83.33 \text{ in}^3}$$

2. The triangular base of a prism is a right triangle of sides a and $b = 2a$. The height h of the prism is equal to 10 mm and its volume is equal to 40 mm^3 , find the lengths of the sides a and b of the triangle.



$$\text{Vol} = \frac{1}{2} a \cdot b \cdot h$$

$$40 = \frac{1}{2} a \cdot (2a) \cdot 10$$

$$40 = 10a^2$$

$$4 = a^2 \quad \boxed{a = 2, b = 4}$$

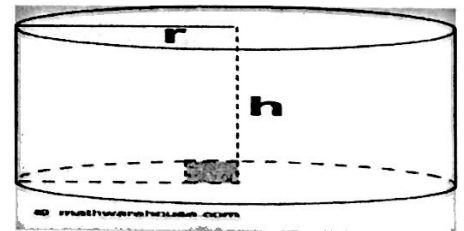
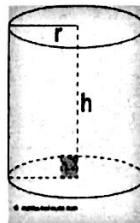
3. You and your friend are going to a movie. You both love popcorn and want to make sure you get the most. Which popcorn container will hold more?

Cyl. A : $V = \pi r^2 h$
 $= \pi (4)^2 (5)$
 $= 80\pi$

Cylinder A: $r = 4 \quad h = 5$

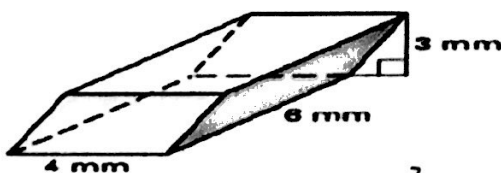
Cylinder B: $r = 5 \quad h$

Cylinder A
 will hold
 more
 popcorn

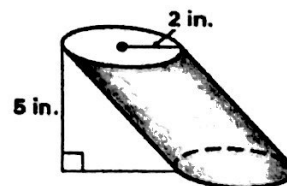


Cyl. B : $V = \pi r^2 h$
 $= \pi (5)^2 (3)$
 $= 75\pi$

5. Find the volume of each oblique figure.



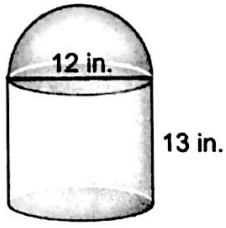
$$V = (4)(3)(6) = 72 \text{ mm}^3$$



$$V = \pi r^2 h = \pi (2)^2 (5)$$

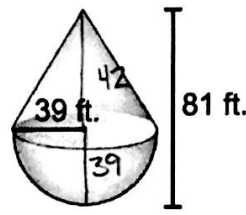
$$= 20\pi \text{ in}^3$$

8. Find the volume.



$$\begin{aligned} V &= \pi r^2 h + \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right) \\ &= \pi (12)^2 (13) + \frac{1}{2} \left(\frac{4}{3} \pi (12)^3 \right) \\ &= 468\pi + 144\pi \\ &= 612\pi \text{ in}^3 \end{aligned}$$

9. Find the volume.

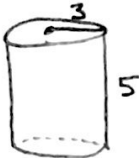


$$\begin{aligned} V &= \frac{1}{3} \pi r^2 h + \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right) \\ &= \frac{1}{3} \pi (39)^2 (42) \\ &\quad + \frac{1}{2} \left(\frac{4}{3} \pi (39)^3 \right) \\ &= 21294\pi + 39546\pi \\ &= 60840\pi \text{ ft}^3 \end{aligned}$$

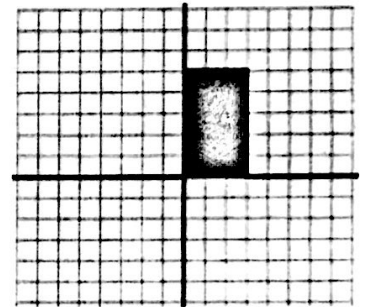
10.

A) Describe and sketch the figure formed by rotating the rectangle about the y-axis. What is the volume of the resulting figure?

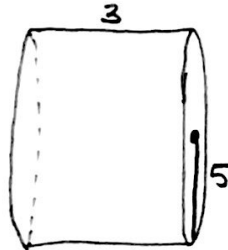
The resulting figure will be a cylinder with dimensions shown



$$V = \pi (3)^2 (5) = 45\pi$$



B) Describe and sketch the figure formed by rotating the rectangle about the x-axis. What is the volume of the resulting figure? The resulting figure will be a cylinder with dimensions shown.



$$\begin{aligned} V &= \pi (5)^2 (3) \\ &= 75\pi \end{aligned}$$

11. Make sure you know the know the steps for the following constructions:

- Circumscribing a triangle
- Inscribing a circle
- Inscribing a quadrilateral
- Constructing a tangent from a point outside a circle
- Constructing a tangent passing through a point on a circle