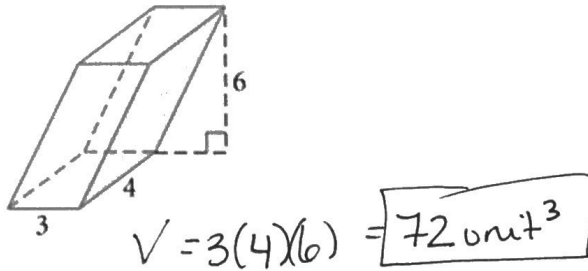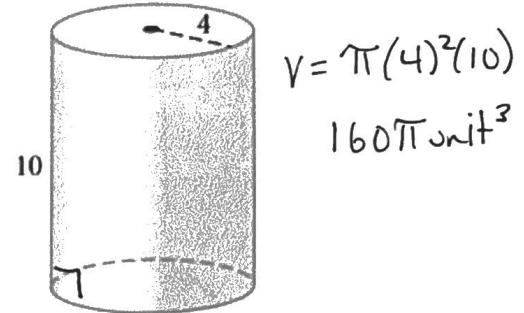# Geometry Volume/Density and Cross sections review.

Find the volume of each solid. All measurements are in inches. Round approximate answers to the nearest hundredths.
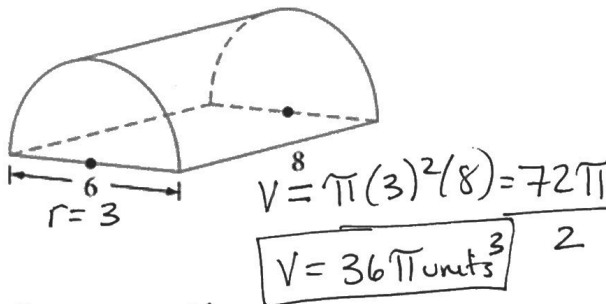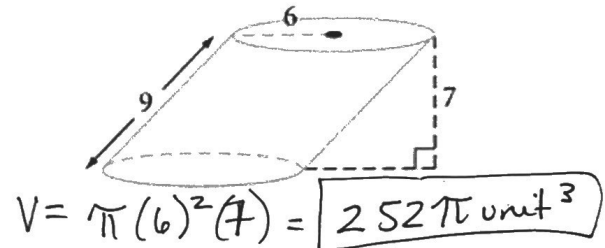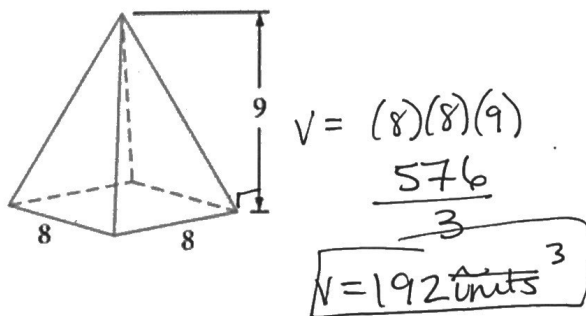
1. Oblique rectangular prism

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

2. Right cylinder

$V = \pi(4)^2(10)$

$160\pi \text{ unit}^3$

3. Right semicircular cylinder (h)

$r = 3$

$V = \dfrac{\pi(3)^2(8) = 72\pi}{2}$

$\boxed{V = 36\pi \text{ units}^3}$

4. oblique cylinder

$V = \pi(6)^2(7) = \boxed{252\pi \text{ unit}^3}$

5. Square pyramid

$V = \dfrac{(8)(8)(9)}{3}$

$\dfrac{576}{3}$

$\boxed{V = 192 \text{ units}^3}$

6. Cone

$V = \dfrac{\pi(6)^2(7)}{3}$

$\dfrac{252\pi}{3} = $

$\boxed{84\pi \text{ units}^3}$

7. Triangular pyramid

skip

$V = \dfrac{\frac{L \cdot w}{2} \cdot h}{3}$

$x^2 + 5^2 = 13^2 \rightarrow$
$x^2 + 25 = 169$
$x^2 = 144$
$x = 12$

$V = \dfrac{\frac{(5)(12)}{2} \cdot 6}{3}$
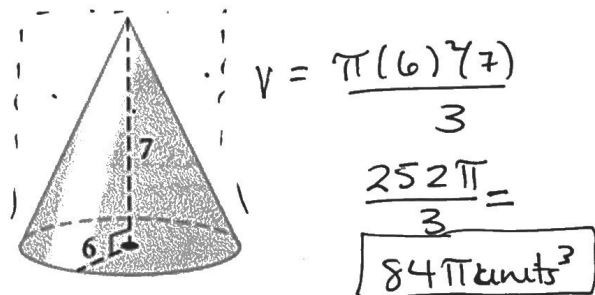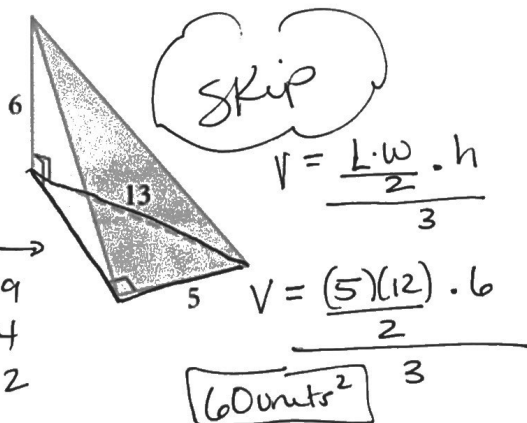
$\boxed{60 \text{ units}^2}$

8. Semicircular cone

$r = 6$

$V = \dfrac{\pi(6)^2(14) = 504\pi}{2}$

$\boxed{252\pi \text{ unit}^3}$
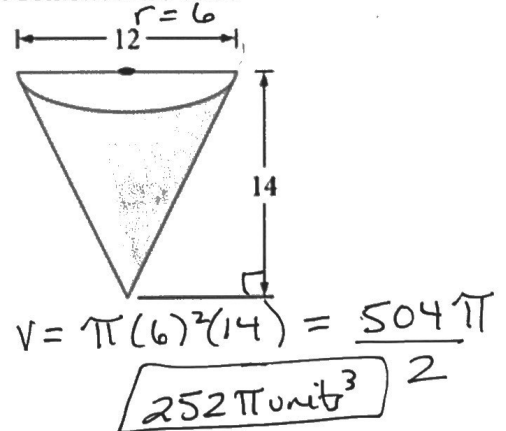
9.
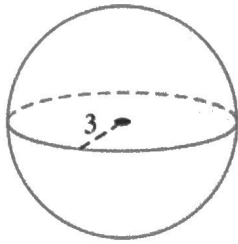
$V = \frac{4}{3}\pi(3)^3$

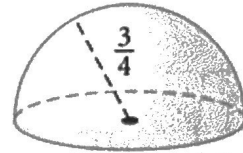$\boxed{36\pi \text{ units}^3}$

10.

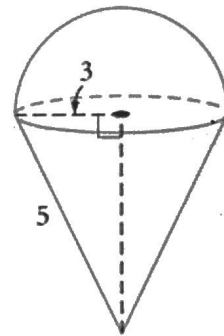$V = \frac{4}{3}\pi\left(\frac{3}{4}\right)^3 \div 2 = \boxed{\frac{9}{32}\pi \text{ unit}^3}$

11.

6
6
12
6
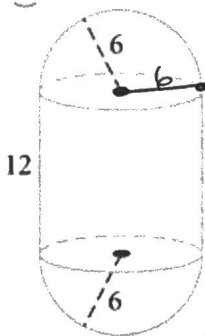
1) Sphere $\left(\frac{4}{3}\right)\pi(6)^3 = 288\pi$
   $\oplus$
   $+$
2) Cylinder $\pi(6)^2(12) = 432\pi$

$\boxed{720\pi \text{ units}^3}$

12.

3
5

1) hemisphere $\frac{\frac{4}{3}\pi(3)^3}{2} = \frac{36\pi}{2}$

$\boxed{18\pi}$
   $+$
2) cone $\frac{1}{3}\pi(3)^2(5) = \boxed{15\pi}$

$\boxed{33\pi \text{ un}^3}$

✓**13.** What is the volume of a **square-based** pyramid with base side lengths of 16 meters and a height of 15 meters?

$V = \frac{(16)(16)(15)}{3} = \frac{3840}{3} = \boxed{1280 \text{ m}^3}$

14. Ty and Jylan built a recycling bin that is 6 feet wide, 12 feet long, and 14 feet high. How much trash can fit inside of the bin?

$V = (6)(12)(14) = \boxed{1008 \text{ ft}^3}$

✓**15.** The cylindrical canister of a fire extinguisher has a volume of 603.19 in³ and a radius of 4 inches. How many high is the cylinder?

$V = \pi r^2 h$

$\frac{603.19}{\pi} = \frac{\pi(4)^2 \boxed{h}}{\pi}$

$\frac{192.}{16} = \frac{16\boxed{h}}{16}$

$\boxed{h = 12 \text{ in}}$

✓ 16. A soup can holds 2671.92 cm³ of soup. If ~~he~~ the can has a height of 10.5 cm, what is the radius of the can?

$$V = \pi r^2 h$$

$$2671.92 = \dfrac{\pi \boxed{r^2}(10.5)}{}$$

$$\dfrac{}{\pi} \qquad \dfrac{}{\pi}$$

$$\dfrac{850.50}{10.5} = \dfrac{10.5 \boxed{r^2}}{10.5}$$

$$80.999$$

$$\sqrt{81} = \sqrt{r^2}$$

$$\boxed{9 = r \; cm}$$

17. A rectangular swimming pool can hold 4500 feet³ of water. If the pool is 25 ft. long and 20 ft. wide, how deep is the pool?

$$V = L \cdot W \cdot H$$

$$\dfrac{4500}{25} = \dfrac{(25)(20)\boxed{H}}{25}$$

$$\dfrac{180}{20} = \dfrac{(20)\boxed{H}}{20}$$
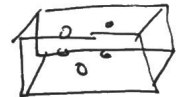
$$\boxed{H = 9 \; ft}$$

✓ 18. Anthony'~~s~~ is building a sand box that can ~~old~~ hold 288 ft³ (in.). If he has space for 6 feet (in.) wide, 3 feet long in his backyard, how high does he have to build the sides?
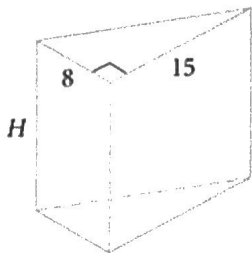
$$V = L \cdot W \cdot H$$

$$288 = (6)(3)\boxed{h}$$

$$\dfrac{288}{18} = \dfrac{18 \boxed{h}}{18}$$

$$\boxed{16 \; ft \; (in) = h}$$

19. The volume of this right triangular prism is 1440 cm³. Find the height of the prism.

8 ∧ 15

H

$$V = \dfrac{l \cdot w \cdot h}{2}$$

$$2 \cdot 1440 = \dfrac{(8)(15)\boxed{H}}{2} \cdot 2$$

$$\dfrac{2880}{120} = \dfrac{120 \boxed{H}}{120}$$

$$\boxed{h = 20 \, cm}$$

20. Renee was curious so she cut open the top of her basketball. She decided to fill it with rice. She learned it will hold 3648.37 in³ of rice. What is the diameter of the basketball?

$$V = \dfrac{4}{3}\pi r^3$$

$$3 \cdot 3648.37 = \dfrac{4}{3}\pi \boxed{r^3} \cdot 3$$

$$\dfrac{10{,}945.11}{4} = \dfrac{4 \pi \boxed{r^3}}{4}$$

$$\dfrac{2736.28}{\pi} = \dfrac{\pi \boxed{r^3}}{\pi}$$

$$\sqrt[3]{870.98} = \sqrt[3]{r^3}$$

$$9.55 = r$$

$$d = 2(9.55)$$

$$\boxed{19.1 \, in}$$