

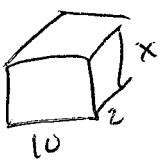
Name: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Class: \_\_\_\_\_

Geometry  
 Unit 9  
 HW 9-4

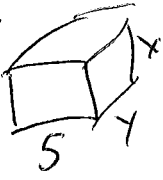
- 1) The base of a pyramid is a rectangle with a width of 6 cm and a length of 8 cm. Find, in centimeters, the height of the pyramid if the volume is  $288 \text{ cm}^3$ .

$$V = \frac{1}{3}Bh \quad \frac{288}{48} = \frac{\frac{1}{3}(6 \cdot 8)h}{48} \quad \frac{1}{3}h = 6 \Rightarrow \boxed{h = 18}$$

- 2) Tim has a rectangular prism with a length of 10 centimeters, a width of 2 centimeters, and an unknown height. He needs to build another rectangular prism with a length of 5 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.



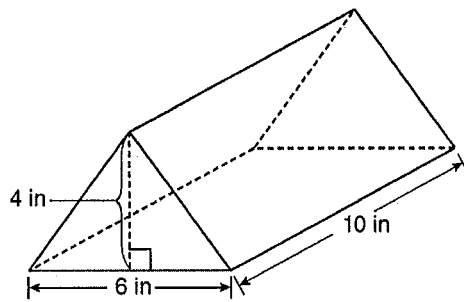
$$V = 2 \cdot 10 \cdot x$$

$$V = 20x$$


$$V \rightarrow 20x$$

$$\frac{20x}{5x} = \frac{5xy}{5x} \quad \boxed{y = 4}$$

- 3) A packing carton in the shape of a triangular prism is shown in the diagram below.



$$V = Bh$$

$$V = \left(\frac{1}{2}(6)(4)\right)(10)$$

$$\boxed{V = 120 \text{ in}^3}$$

What is the volume, in cubic inches, of this carton?

- 4) If the surface area of a sphere is represented by  $144\pi$ , what is the volume in terms of  $\pi$ ?

- 5) If the rectangle below is continuously rotated about side  $w$ , which solid figure is formed?



It will form a cylinder

$$\frac{144\pi}{4\pi} = \frac{4\pi r^2}{4\pi}$$

$$\sqrt{36} = \sqrt{r^2}$$

$$r = 6$$

$$V = \frac{4}{3}\pi(6)^3$$

$$\boxed{V = 288\pi}$$

half sphere

6

$$\frac{1}{2} \left( \frac{4}{3} \pi (5)^3 \right) = 261,799... \times 62.4$$

6) A hemispherical tank is filled with water and has a diameter of 10 feet. If water weighs 62.4 pounds per cubic foot, what is the total weight of the water in a full tank, to the nearest pound?

$$16336.28$$

$$\boxed{16336 \text{ pounds}}$$

7) The Great Pyramid of Giza was constructed as a regular pyramid with a square base. It was built with an approximate volume of 2,592,276 cubic meters and a height of 146.5 meters. What was the length of one side of its base, to the nearest meter?

$$V = \frac{1}{3} B h$$

8) A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the nearest thousandth.

$$2,592,276 = \frac{1}{3} B (146.5)$$

$$146.5 \quad \frac{1}{3} (146.5)$$

State which type of wood the cube is made of, using the density table below.

$$V \rightarrow 6^3 = 216 \text{ cm}^3$$

Type of Wood	Density (g/cm <sup>3</sup> )
Pine	0.373
Hemlock	0.431
Elm	0.554
Birch	0.601
Ash	0.638
Maple	0.676
Oak	0.711

$$\frac{137.8}{216} = 0.6379...$$

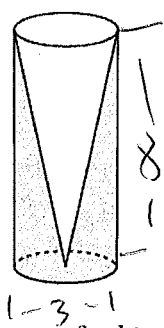
$$\sqrt{53084.15...}$$

$$\sqrt{17694716...} = \sqrt{5^2}$$

$$\boxed{5 \rightarrow 185}$$

$$230$$

9) Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the nearest cubic inch, what will be the total volume of 100 candles?



$$V = \left( \frac{1}{3} (1.5)^2 (8) \pi \right) 100$$

$$V = 600 \text{ in}^3$$

$$\boxed{V = 1885 \text{ in}^3}$$

Walter goes to a hobby store to buy the wax for his candles. The wax costs \$0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

$$1885 \times 0.52 \times 0.10 = \boxed{\$98.02}$$