

Geometry CC – Mr. Valentino
 Unit 11 Day 7: Unit Conversions/Density

Name: _____
 Date: _____ Per: _____

Aim: How can we convert units and find density?

Do Now: Using your reference table, convert the following units.

1. 3 miles = 15840 feet
2. 3 tons = 6000 pounds
3. 4 gallons = 15.14 liters $\frac{15.14}{3.785} = 4$

Think, Pair, Share

How can we convert 3 gallons to cubic centimeters?

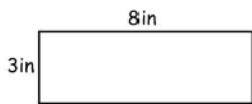
$$\begin{array}{l} 3 \text{ gallons} \\ \times \text{ liters} \\ \hline \end{array} = \frac{1 \text{ gallon}}{3.785 \text{ liters}} \\ x = \underline{11.355 \text{ liters}}$$

CROSS MULTIPLY

$$\begin{array}{l} 11.355 \text{ liters} \\ \times \text{ cubic cm} \\ \hline \end{array} = \frac{1 \text{ liter}}{1000 \text{ cubic cm}} \\ x = 11,355 \text{ cubic cm}$$

Think, Pair, Share

How can you find the area of the shape below and leave your answer in square centimeters?



Area = _____ cm²

$$\begin{aligned} A &= l \cdot w \\ A &= 8 \cdot 3 \\ A &= 24 \text{ in}^2 \end{aligned}$$

$$\begin{array}{l} 24 \text{ in}^2 \\ \times \text{ cm}^2 \\ \hline \end{array} = \frac{1 \text{ in}}{2.54 \text{ cm}} \\ x = 60.96 \text{ cm}^2$$

Convert the following measurements (to the nearest tenth if necessary):



8000 ft = _____ km



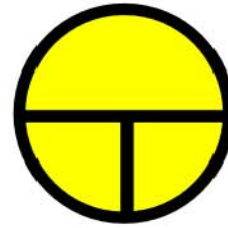
176 oz = _____ kg

$$\begin{array}{l} 8000 \text{ ft} \\ \times \text{ miles} \\ \hline \end{array} = \frac{5280 \text{ ft}}{1 \text{ mi}} \\ \frac{5280 x}{5280} = \frac{8000}{5280} \\ x = 1.51 \text{ mi}$$

What is Density?

The density of a substance is the relationship between the mass of the substance and how much space it takes up (volume).

$$D = \frac{\text{Mass}}{\text{Volume}}$$



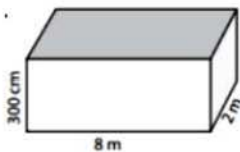
1. A rectangular solid has a volume of 40m^3 . The mass of this solid is 300 grams. Given this information, calculate its density.

$$D = \frac{300\text{g}}{40\text{m}^3} = 7.5\text{g/m}^3$$

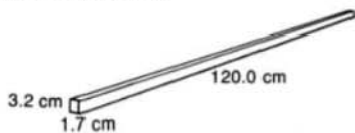
2. A rectangular piece of wood that measures 3.0cm by 6.0cm by 4.0cm has a mass of 80.0 grams. What is the density (grams per cubic centimeter) of the wood? (to the nearest tenth)

Practice Problems

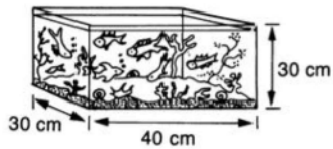
3. Find the volume of the figure below. Your answer should be in m^3 .



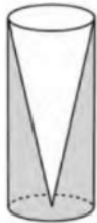
4. If 1cm^3 of iron has a mass of 7.52 g, what is the mass of an iron bar of rectangular cross section with the dimensions shown?



5. If one guppy requires 5 L of water to live happily, what is the maximum number of guppies that should be kept in this aquarium?



- 6a. Walter wants to make 100 candles, each in the shape of a cone for his new candle business. The mold shown below will be used to make each candle. 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?



- b. 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?

7. A contractor needs to purchase 500 bricks. The dimensions of each brick are 5.1 cm by 10.2 cm by 20.3 cm, and the density of each brick is $1920 \text{ kg} / \text{m}^3$. The maximum capacity of the contractor's trailer is 900 kg. Can the trailer hold the weight of 500 bricks? Justify your answer ($100\text{cm} = 1 \text{ m}$)