

Show All work INCLUDING UNITS!

1. A sprinter runs the 100 yard dash in 10 seconds. What is the speed in miles per hour?

$$\frac{100 \text{ yd}}{10 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{1,080,000 \text{ mi}}{52,800 \text{ hr}}$$

$$= \boxed{20.45 \frac{\text{mi}}{\text{hr}}}$$

A food company processes yogurt in 4 ounce cartons.

The machine that fills the cartons runs 12 hours a day, 5 days a week.

It can fill 800 cartons in 1 hour.

2. How many gallons of yogurt are needed to fill 800 cartons?

$$\frac{4 \text{ oz}}{1} \cdot \frac{1 \text{ cup}}{8 \text{ oz}} \cdot \frac{1 \text{ qt}}{4 \text{ cup}} \cdot \frac{1 \text{ gal}}{4 \text{ qt}} = \frac{4 \text{ gallons}}{128} = 0.03125 \text{ gallons}$$

A 1 container

$$\frac{800 \text{ cartons}}{1} \cdot \frac{0.03125 \text{ gal}}{1 \text{ carton}} = \boxed{25 \text{ gallons}}$$

3. How many cartons are filled in 1 week?

$$\frac{800 \text{ cartons}}{1 \text{ hr}} \cdot \frac{12 \text{ hr}}{1 \text{ day}} \cdot \frac{5 \text{ days}}{1 \text{ week}} = \frac{48,000 \text{ cartons}}{1 \text{ week}}$$

$$\boxed{48,000 \text{ cartons/week}}$$

4. The bulletin board in our classroom is 11 feet long and 44 inches high. One piece of decorative border is 3.25 feet long. What unit of measure would you use to determine how many pieces of border would be needed?

inches

5. An island counter in a kitchen is 93 inches long and 54 inches wide. The granite to be installed cost \$35 per square foot.

- a. What unit of measure would you use to calculate the cost of the granite?

\$/ft<sup>2</sup>

- b. How much will the granite cost? Show ALL work.

$$\frac{54 \text{ in}}{1} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 4.5 \text{ ft}$$

$$\frac{93 \text{ in}}{1} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 7.75 \text{ ft}$$

$$\begin{aligned} \text{Area of counter: } & (4.5 \text{ ft})(7.75 \text{ ft}) \\ & = 34.875 \text{ ft}^2 \end{aligned}$$

$$\text{Price: } \frac{34.875 \text{ ft}^2}{1} \cdot \frac{\$35}{1 \text{ ft}^2} = \$1220.63$$