

## Regents Review: Do Now # 2

### Old Conversion Chart:

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1000 cubic centimeters

### New Conversion Chart:

#### **Conversions**

1 mile = 5280 feet  
1 mile = 1760 yards  
1 pound = 16 ounces  
1 ton = 2000 pounds

#### **Conversions Across Measurement Systems**

1 inch = 2.54 centimeters  
1 meter = 39.37 inches  
1 mile = 1.609 kilometers  
1 kilometer = 0.6214 mile  
1 pound = 0.454 kilogram  
1 kilogram = 2.2 pounds

Common Core Regents Questions

1. A construction worker needs to move  $120 \text{ ft}^3$  of dirt by using a wheelbarrow. One wheelbarrow load holds  $8 \text{ ft}^3$  of dirt and each load takes him 10 minutes to complete. One correct way to figure out the number of hours he would need to complete this job is

(1)  $\frac{120 \text{ ft}^3}{1} \cdot \frac{10 \text{ min}}{1 \text{ load}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{1 \text{ load}}{8 \text{ ft}^3}$

(3)  $\frac{120 \text{ ft}^3}{1} \cdot \frac{1 \text{ load}}{10 \text{ min}} \cdot \frac{8 \text{ ft}^3}{1 \text{ load}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$

(2)  $\frac{120 \text{ ft}^3}{1} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{8 \text{ ft}^3}{10 \text{ min}} \cdot \frac{1}{1 \text{ load}}$

(4)  $\frac{120 \text{ ft}^3}{1} \cdot \frac{1 \text{ load}}{8 \text{ ft}^3} \cdot \frac{10 \text{ min}}{1 \text{ load}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$

2. The following conversion was done correctly:

$$\frac{3 \text{ miles}}{1 \text{ hour}} \cdot \frac{1 \text{ hour}}{60 \text{ minutes}} \cdot \frac{5280 \text{ feet}}{1 \text{ mile}} \cdot \frac{12 \text{ inches}}{1 \text{ foot}}$$

What were the final units for this conversion?

- (1) Minutes per foot                      (3) feet per minute  
(2) Minutes per inch                      (4) inches per minute

3. Peyton is a sprinter who can run the 40-yard dash in 4.5 seconds. He converts his speed into miles per hour, as shown below.

$$\frac{40 \text{ yd}}{4.5 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

Which ratio is *incorrectly* written to convert his speed?

- (1)  $\frac{3 \text{ ft}}{1 \text{ yd}}$                                       (3)  $\frac{60 \text{ sec}}{1 \text{ min}}$   
(2)  $\frac{5280 \text{ ft}}{1 \text{ mi}}$                                 (4)  $\frac{60 \text{ min}}{1 \text{ hr}}$

4. Olivia entered a baking contest. As part of the contest, she needs to demonstrate how to measure a gallon of milk if she only has a teaspoon measure. She converts the measurement using the ratios below:

$$\frac{4 \text{ quarts}}{1 \text{ gallon}} \cdot \frac{2 \text{ pints}}{1 \text{ quart}} \cdot \frac{2 \text{ cups}}{1 \text{ pint}} \cdot \frac{\frac{1}{4} \text{ cup}}{4 \text{ tablespoons}} \cdot \frac{3 \text{ teaspoons}}{1 \text{ tablespoon}}$$

Which ratio is *incorrectly* written in Olivia's conversion?

- (1)  $\frac{4 \text{ quarts}}{1 \text{ gallon}}$                       (3)  $\frac{\frac{1}{4} \text{ cup}}{4 \text{ tablespoons}}$
- (2)  $\frac{2 \text{ pints}}{1 \text{ quart}}$                       (4)  $\frac{3 \text{ teaspoons}}{1 \text{ tablespoon}}$

5. Which expression can be used to change 75 kilometers per hour to meters per minute?

- 1)  $\frac{75 \text{ km}}{1 \text{ hr}} \times \frac{1 \text{ km}}{1,000 \text{ m}} \times \frac{1 \text{ hr}}{60 \text{ min}}$                       3)  $\frac{75 \text{ km}}{1 \text{ hr}} \times \frac{1,000 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ hr}}{60 \text{ min}}$
- 2)  $\frac{75 \text{ km}}{1 \text{ hr}} \times \frac{1 \text{ km}}{1,000 \text{ m}} \times \frac{60 \text{ min}}{1 \text{ hr}}$                       4)  $\frac{75 \text{ km}}{1 \text{ hr}} \times \frac{1,000 \text{ m}}{1 \text{ km}} \times \frac{60 \text{ min}}{1 \text{ hr}}$

6. When the temperature is 59°F, the speed of sound at sea level is 1225 kilometers per hour. Which process could be used to convert this speed into feet per second?

- (1)  $\frac{1225 \text{ km}}{1 \text{ hr}} \cdot \frac{0.62 \text{ mi}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$
- (2)  $\frac{1225 \text{ km}}{1 \text{ hr}} \cdot \frac{0.62 \text{ mi}}{1 \text{ km}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$
- (3)  $\frac{1225 \text{ km}}{1 \text{ hr}} \cdot \frac{1 \text{ km}}{0.62 \text{ mi}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$
- (4)  $\frac{1225 \text{ km}}{1 \text{ hr}} \cdot \frac{0.62 \text{ mi}}{1 \text{ km}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$

7. Joe compared gas prices in England and New York State one day. In England, gas sold for 1.35 euros per liter, and one dollar equaled 0.622 euros. A correct way to figure out this cost, in dollars per gallon, is

- (1)  $\frac{1.35 \text{ euros}}{1 \text{ L}} \cdot \frac{1 \text{ L}}{0.264 \text{ gal}} \cdot \frac{\$1.00}{0.622 \text{ euros}}$
- (2)  $\frac{1.35 \text{ euros}}{1 \text{ L}} \cdot \frac{\$1.00}{0.622 \text{ euros}} \cdot \frac{0.264 \text{ gal}}{1 \text{ L}}$
- (3)  $\frac{1.35 \text{ euros}}{1 \text{ L}} \cdot \frac{1 \text{ L}}{0.264 \text{ gal}} \cdot \frac{0.622 \text{ euros}}{\$1.00}$
- (4)  $\frac{1.35 \text{ euros}}{1 \text{ L}} \cdot \frac{0.622 \text{ euros}}{\$1.00} \cdot \frac{0.264 \text{ gal}}{1 \text{ L}}$

8. A company ships an average of 30,000 items each week. The approximate number of items shipped each minute is calculated using the conversion

$$(1) \frac{30,000 \text{ items}}{1 \text{ week}} \cdot \frac{7 \text{ days}}{1 \text{ week}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}}$$

$$(2) \frac{30,000 \text{ items}}{1 \text{ week}} \cdot \frac{1 \text{ week}}{7 \text{ days}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$$

$$(3) \frac{1 \text{ week}}{30,000 \text{ items}} \cdot \frac{1 \text{ week}}{7 \text{ days}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$$

$$(4) \frac{1 \text{ week}}{30,000 \text{ items}} \cdot \frac{7 \text{ days}}{1 \text{ week}} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

9. The Utica Boilermaker is a 15-kilometer road race. Sara is signed up to run this race and has done the following training runs:

- I. 10 miles
- II. 44,880 feet
- III. 15,560 yards

Which run(s) are at least 15 kilometers?

- (1) I, only
- (2) II, only
- (3) I and III
- (4) II and III

10. A typical marathon is 26.2 miles. Allan averages 12 kilometers per hour when running in marathons. Determine how long it would take Allan to complete a marathon, to the *nearest tenth of an hour*. Justify your answer.