

## Proportions and Dimensional Analysis Review

Solve each proportion. Be sure to show all work.

1.  $\frac{7}{4} = \frac{x}{10}$

$x = 35/2$  or 17.5

2.  $\frac{18}{15} = \frac{6}{x}$

$x = 5$

3.  $\frac{5}{2} = \frac{2}{x}$

$x = 4/5$

4.  $\frac{21}{27} = \frac{x}{18}$

$x = 14$

5.  $\frac{15}{21} = \frac{20}{y}$

$y = 28$

6.  $\frac{26}{b} = \frac{39}{9}$

$b = 6$

Use dimensional analysis to answer the following problems. Show all work!

7. A baby born in the US weighs 3.295 kg according to the scale in the birthing room. Convert this to pounds and ounces so you can tell the grandparents how much the baby weighed.

About 7lbs and 4.24oz

8. A child requires a 5 ml dose of medicine each day. How many days would a gallon of this medicine last?

757 Days

9. Issaquah is 17 miles from Seattle. How many quarters laid end to end it would take to reach Seattle from Issaquah if a quarter has a diameter of 2.3 cm.

1,185,566 quarters

10. How many years old are you if you have lived 1 billion seconds? Answer in years and months.

31 years and 8.5 months

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Challenge: Answer the following questions using only dimensional analysis

11. *Your car's gas tank holds 18.6 gallons and is one quarter full. Your car gets 16 miles/gal. You see a sign saying, "Next gas 73 miles." Your often-wrong brother, who is driving, is sure you'll make it without running out of gas. You're not so sure and do some quick figuring:*

$$\frac{18.6 \text{ gal}}{1 \text{ tank}} \left| \frac{1 \text{ tank}}{4 \text{ quarter-tank}} \right| \frac{16 \text{ miles}}{1 \text{ gal}} = \frac{74.4 \text{ miles}}{\text{quarter-tank}}$$

12. *You're throwing a pizza party for 15 and figure each person might eat 4 slices. How much is the pizza going to cost you? You call up the pizza place and learn that each pizza will cost you \$14.78 and will be cut into 12 slices. You tell them you'll call back. Do you have enough money? Here's how you figure it out, step by step.*

$$\frac{1 \text{ pizza}}{\$14.78} \quad \frac{\$14.78}{1 \text{ pizza}} \quad \frac{15 \text{ persons}}{1 \text{ party}} \quad \frac{1 \text{ party}}{15 \text{ persons}}$$

$$\frac{12 \text{ slices}}{1 \text{ pizza}} \quad \frac{1 \text{ pizza}}{12 \text{ slices}} \quad \frac{1 \text{ person}}{4 \text{ slices}} \quad \frac{4 \text{ slices}}{1 \text{ person}}$$

$$\frac{\$14.78}{1 \text{ pizza}} \left| \frac{1 \text{ pizza}}{12 \text{ slices}} \right| = \frac{\$1.23}{\text{slice}}$$

$$\frac{\$14.78}{1 \text{ pizza}} \left| \frac{1 \text{ pizza}}{12 \text{ slices}} \right| \left| \frac{4 \text{ slices}}{1 \text{ person}} \right| \left| \frac{15 \text{ persons}}{1 \text{ party}} \right| = \frac{14.78 \times 4 \times 15}{12} = 73.90 = \frac{\$73.90}{\text{party}}$$

13. How many pizzas should you order?

$$\frac{1 \text{ pizza}}{12 \text{ slices}} \left| \frac{4 \text{ slices}}{1 \text{ person}} \right| \left| \frac{15 \text{ persons}}{1 \text{ party}} \right| = \frac{5 \text{ pizzas}}{\text{my party}}$$

14. *At the pizza party you and two friends decide to go to Mexico City from El Paso, TX where y'all live. You volunteer your car if everyone chips in for gas. Someone asks how much the gas will cost per person on a round trip. Your first step is to call your smarter brother to see if he'll figure it out for you. Naturally he's too busy to bother, but he does tell you that it is 2015 km to Mexico City, there's 11 cents to the peso, and gas costs 5.8 pesos per liter in Mexico. You know your car gets 21 miles to the gallon, but we still don't have a clue as to how much the trip is going to cost (in dollars) each person in gas (\$/person).*

Name \_\_\_\_\_ Date \_\_\_\_\_ Per \_\_\_\_\_

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$\frac{1 \text{ round trip}}{3 \text{ persons}}$   $\frac{2015 \text{ km}}{\text{one-way}}$   $\frac{2 \text{ one-way}}{1 \text{ round trip}}$   $\frac{11 \text{ cents}}{1 \text{ peso}}$   $\frac{1 \text{ liter}}{5.8 \text{ pesos}}$   $\frac{21 \text{ miles}}{1 \text{ gallon}}$   $\frac{39.37 \text{ in}}{1 \text{ m}}$   $\frac{1000 \text{ m}}{1 \text{ km}}$

$\frac{1000 \text{ ml}}{1 \text{ liter}}$   $\frac{12 \text{ in}}{1 \text{ ft}}$   $\frac{5280 \text{ ft}}{1 \text{ mile}}$   $\frac{100 \text{ cents}}{1 \text{ dollar}}$   $\frac{4.9 \text{ ml}}{1 \text{ tsp}}$   $\frac{3 \text{ tsp}}{1 \text{ tbs}}$   $\frac{16 \text{ tbs}}{1 \text{ cup}}$   $\frac{2 \text{ cup}}{1 \text{ pint}}$   $\frac{2 \text{ pints}}{1 \text{ qt}}$   $\frac{4 \text{ qt}}{1 \text{ gal}}$

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$\frac{2 \text{ pints}}{1 \text{ qt}}$   $\frac{2 \text{ cup}}{1 \text{ pint}}$   $\frac{16 \text{ tbs}}{1 \text{ cup}}$   $\frac{3 \text{ tsp}}{1 \text{ tbs}}$   $\frac{4.9 \text{ ml}}{1 \text{ tsp}}$   $\frac{1 \text{ liter}}{1000 \text{ ml}}$   $\frac{5.8 \text{ pesos}}{1 \text{ liter}}$   $\frac{11 \text{ cents}}{1 \text{ peso}}$   $\frac{1 \text{ dollar}}{100 \text{ cents}}$  =  $\frac{\$96}{\text{person}}$