

Dimensional Analysis Worksheet 1

Conversion Factors

$$1 \text{ kg} = 1000 \text{ g}$$

$$1 \text{ g} = 1000 \text{ mg}$$

$$1 \text{ USD} = 1.32 \text{ CAD}$$

$$2.2 \text{ lbs of weight} = 1 \text{ kg of mass}$$

1. Convert 5.70 kilograms to milligrams. Show your work!

$$5.70 \cancel{\text{kg}} \times \frac{1000 \cancel{\text{g}}}{1 \cancel{\text{kg}}} \times \frac{1000 \text{mg}}{1 \cancel{\text{g}}} = 5.70 \times 10^6 \text{ mg}$$

2. a) You find 13,406,190 American pennies. How many Canadian dollars did you actually find?

$$13\,406\,190 \text{ AP} \times \frac{1 \text{ USD}}{100 \text{ AP}} \times \frac{1.32 \text{ CAD}}{1 \text{ USD}} = \$ 176\,962 \text{ CAD}$$

- b) If each penny weighs 4 grams, how much did all that loot weigh in lbs.?

$$13\,406\,190 \text{ AP} \times \frac{4 \text{ g}}{1 \text{ penny}} \times \frac{1 \text{ kg}}{1000 \text{ g}} \times \frac{2.2 \text{ lbs}}{1 \text{ kg}} = 117\,974.472 \text{ lbs}$$

$(1.18 \times 10^5 \text{ lbs})$

- c) Assume a movie ticket costs \$9, how many movie tickets could you buy with the pennies you found?

$$\text{USD } \$ 176\,962 \times \frac{1 \text{ ticket}}{\$9 \text{ USD}} \times \frac{1 \text{ USD}}{1.32 \text{ CAD}} = 14\,896 \text{ tickets}$$

$$\text{CAD } \$ 176\,962 \times \frac{1 \text{ ticket}}{\$9 \text{ CAD}} = 19\,662 \text{ tickets}$$

3. Every three times I clean my bedroom, my mother makes me an apple pie. I cleaned my bedroom 9 times. How many apple pies does she owe me? (What?! Your mother doesn't reward you for cleaning your bedroom? Aren't there child labor laws? To make up for that injustice, you may have this very easy problem.)

$$9 \text{ cleanings} \times \frac{1 \text{ APie}}{3 \text{ cleanings}} = 3 \text{ APie}$$

4. In my chemistry class, 28 students are each given 3 pens. If there are 8 pens in one package, priced at \$1.88 per package, what is the total cost of giving away pens?
want \$

$$\frac{\$1.88}{1 \text{ pkg}} \times \frac{1 \text{ pkg}}{8 \text{ pens}} \times \frac{3 \text{ pens}}{1 \text{ student}} \times 28 \text{ students} = \$19.74$$

5. You're throwing a pizza party for 15 people and figure that each person will eat 4 slices. You call up the pizza place and learn that each pizza will cost you \$14.78 and it will be cut into 12 slices. How much is the pizza going to cost you?
want \$

$$\frac{\$14.78}{1 \text{ pizza}} \times \frac{1 \text{ pizza}}{12 \text{ slices}} \times \frac{4 \text{ slices}}{1 \text{ peep}} \times 15 \text{ peeps} = \$73.90$$