4.2 & 4.3 Mass   Name: _key_

___Mass___ is a measure of the ___quantity___ of matter in an object.
→ quantity of ...

___Weight___ is a measure of the force of ___gravity___ on an object.
→ force on ...

- Basic unit in the ___imperial system___ are ___ton (tn), pound (lb), and ounce (oz)___
    o 1 ton (_tn_) = ___2000 pounds (lb)___
    o 1 pound (_lb_) = ___16 ounces (oz)___
- Basic unit in the ___Systeme International___ is ___kilogram___
                          (SI)
    o 1000 ___grams___ (g) = 1 kilogram (_kg_)
    o 1 tonne (_t_) = 1000 ___kilograms___

Calculate the conversions.

a. 2.5 t = _____ kg

$2.5 \cancel{t} \times \dfrac{1000 kg}{1 \cancel{t}} = 2500 kg$

d. 2.8 kg _____ g

b. 54 oz = ___3___ lb ___6___ oz

$54 \cancel{oz} \times \dfrac{1 lb}{16 \cancel{oz}} = 3.375 lb$

$0.375 lb \times \dfrac{16 oz}{1 lb} = 6 oz$

e. 125 g = _____ kg

c. 7890 lb = _____ tn

f. 6 lb 2 oz = _____ oz

g. 4.54 tn = _____ lb

i. 24 oz = _____ lb

h. 3.6 tn = _____ kg

j. 654 oz = _____ lb _____ oz

Ex 1. Manuela needs 1 pound 2 ounces of Gruyere cheese, 12 ounces of cheddar cheese, and 11 ounces of Swiss cheese for a fondue recipe. How many pounds of cheese does she need in all?

$$1 \text{ lb} \quad 2 \text{ oz}$$
$$12 \text{ oz}$$
$$11 \text{ oz}$$
$$\overline{1\text{lb} \quad 25\text{ oz}}$$
$$\downarrow$$
$$1\text{lb} \quad 9\text{ oz}$$
$$\text{Total} : 2 \text{ lb} \quad 9 \text{ oz}$$

$$25 \text{ oz} \times \frac{1 \text{ lb}}{16 \text{ oz}} = 1.5625 \text{ lb}$$

$$0.5625 \text{ lb} \times \frac{16 \text{ oz}}{1 \text{ lb}} = 9 \text{ oz}$$

Try It!

1. A recipe calls for 120 g flour, 170 g of cornmeal, and 50 g of sugar. If you double the recipe, what is the total weight of the dry ingredients?

2. Rochelle gave birth to twin boys weighing 6 lb 5 oz and 5 lb 14 oz. What was their total weight?

3. What is the total weight of a loaded truck if the truck weighs 2.6 tonnes and it is loaded with 15 boxes that weigh 210 kilograms each? Give your answer in tonnes.

Ex 2. The cab of Authur's semi-trailer truck weighs 8.7 tons and the trailer weighs 6.4 tons. If the loaded gross weight of the truck is 21.3 tons, what is the weight of the load?

a. in tons

$$
\begin{array}{r}
8.7 \text{ tons} \\
6.4 \text{ tons} \\
\hline
15.1 \text{ tons}
\end{array}
$$

$$
\begin{array}{r}
21.3 \\
- 15.1 \\
\hline
6.2 \text{ tons}
\end{array}
$$

The weight of the load is 6.2 tons.

b. in pounds

$$
6.2 \text{ tons} \times \frac{2000 \text{ lbs}}{1 \text{ ton}} = 12400 \text{ lbs}
$$

Ex 3. The cost of bananas is $0.49/lb at one store, but you see an advertisement for bananas on sale at another store for $1.05/kg. Which is the better buy?

$$1 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 0.45 \text{ kg}$$

$$\frac{6.45 \text{ kg}}{\$ 0.49} = \frac{1 \text{ kg}}{x} \qquad x = \$1.08$$

$\begin{cases} \text{1 lb cost } \$0.49 \\ 1 \text{ kg} = 2.2 \text{ lb} \\ \therefore 1 \text{ kg costs } 2.2 \text{ times} \\ \quad \text{the cost } 1 \text{ lb} \\ 2.2 \times \$ 0.49 = \$1.08 \end{cases}$

Try it!

4. Chen weighs 68 kg. How much does he weigh in pounds?

5. A 12-ounce can of vegetables cost $1.49. A 1lb 2-oz can of the same vegetables costs $2.19. Which is a better buy? Hint: find the unit rate.

6. Which is the better buy: 200 g of coffee beans at $3.85 or 1 pound at $9.60?