Making Conversions

Online today you will review how to convert a unit of volume to a unit of weight.

One More Example...

How many bushels (bu) of flax seed are there in 2.4 tonnes, if the conversion factor is 39.368 bushels/tonne?

$1\,t = 39.368\,bu$

$$2.4\,t \times \frac{39.368\,bu}{1\,t} = 94.4832\,bu \doteq 94.5\,bu$$

Solution:

2.4 t X 39.368 bu/t = 94.5 bu

Try this one!

Laila bought 5 bushels of sunflower seeds. If the conversion is 73.487 bu/t, what is the weight of sunflower seeds:

a) in kilograms?
b) in pounds?

$1\ t = 73.487\ bu$

Remember: 1000 kg = 1 t
1 kg = 2.2 lbs

a) $5\ bu \times \frac{1\ t}{73.487\ bu} \times \frac{1000\ kg}{1\ t} = 68.0\ kg$

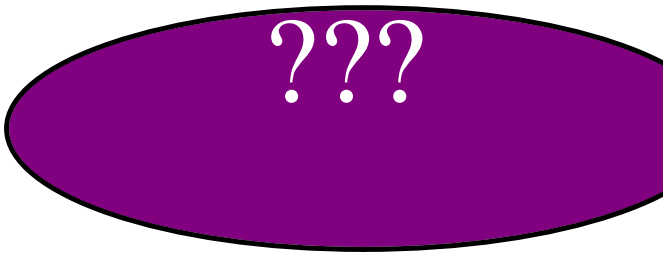
b) $68.0\ kg \times \frac{2.2\ lb}{kg} = 149.6\ lb$

a) 67.9 kg
b) 149 lbs

How many ounces are in a gram...
let's make a conversion factor!

$$1\ \text{oz} \times \frac{1\ \text{lb}}{16\ \text{oz}} \times \frac{1\ \text{Kg}}{2.2\ \text{lb}} \times \frac{1000\ \text{g}}{\text{Kg}}$$

$$\doteq 28.4\ \text{g}$$



1 oz = 28.4 g

EXERCISE: Convert the following...

a) 56 g = _____ oz

b) 120 lbs = _____ kg

c) 34 oz = _____ g

EXERCISE: Convert the following...

a) 56 g = 1.97 oz

$56\text{g} \times \frac{1\text{kg}}{1000\text{g}} \times \frac{2.2\text{lbs}}{1\text{kg}} \times \frac{16\text{oz}}{1\text{lb}}$

b) 120 lbs = 54.55 kg

$120\text{ lbs} \times \frac{1\text{kg}}{2.2\text{lbs}}$

c) 34 oz = 965.6 g

$1\text{oz} = 28.4\text{g}$

$34\text{oz} \times \frac{1\text{lb}}{16\text{oz}} \times \frac{1\text{kg}}{2.2\text{lb}} \times \frac{1000\text{g}}{1\text{kg}}$

What does a conversion factor tell you???

EXAMPLE #1...

The conversion factor for white beans is 36.744 bu/t, and for corn it is 39.368 bu/t. Which weighs more per unit volume?

39.368 bu/t means it takes 39.368 bushels to make a tonne.

36.744 bu/t means it takes 36.744 bu to make a tonne which is fewer than the corn so the beans must weigh more.

White Beans

EXAMPLE #2

Alphonse is making chicken kebabs for 14 people. His recipe suggests about 7 oz of chicken per person. At the grocery store, the weight of the chicken is labelled in kilograms. How much chicken does Alphonse need to buy?

Remember: 1 kg = 2.2 lbs
1 oz = 28.4 g

$14 \times 7 = 98\text{ oz}$

$98\text{ oz} \times \frac{28.4\text{ g}}{1\text{ oz}} \times \frac{1\text{ kg}}{1000\text{ g}} \doteq 2.8\text{ kg}$

2.8 kg

EXAMPLE #3:

A crane can lift a maximum of 5 t. Sandstone weighs about 150 lb per cubic foot, and a container contains 70 cubic feet of sandstone. Can the crane be used to load the container onto a train?

$$\frac{150\,lb}{1\,ft^3} \times 70\,ft^3 = 10500\,lbs$$

$$10\,500\,lbs \times \frac{1\,Kg}{2.2\,lbs} \times \frac{1\,t}{1000\,Kg} = 4.77\,t$$

4.8 t so yes

EXAMPLE #4:

Josephine is sending a gift of a bottle of maple syrup that weighs 3 lb, and 3 packages of smoked salmon that each weigh 100 g. If the package's total weight is less than 2 kg, she can ship it at a cheaper rate. Will she be able to do so?

$$3\text{lbs} \times \frac{1\text{kg}}{2.2\text{lb}} = 1.\overline{36}\ \text{kg}$$

$$300\text{g} \times \frac{1\text{kg}}{1000\text{g}} = 0.30\ \text{kg}$$

$$\doteq 1.66\ \text{kg}$$

1.7 kg so yes

Geo_Mea_Fin 10 - Conversion Tables and Formula Sheet (Chp4_5_6)

p. 219 Practise Your New Skills... #1 - 9

Chapter 5 Mass, Temperature, and Volume, Practice Your New Skills.pdf
(SOLUTIONS)

Page 219

1. The Atlantic provinces are home to a wide variety of climates. Some areas, such as Nova Scotia, can have very hot summers as well as frigid winters. In Nova Scotia, the highest temperature was recorded on August 19, 1935, in Collegeville. It was 101°F. The lowest temperature was –42°F, and was recorded on January 31, 1920, in Upper Stewiacke. What would these temperatures have been in degrees Celsius? What do you notice about the differences in these temperatures?

2. The coldest temperature ever recorded in the province of Newfoundland and Labrador was at Esker Station, Labrador, on February 17, 1973. It was officially recorded at –51.1°C. What is this in degrees Fahrenheit?

3. Your mother has asked you to water some plants and she has given you a 5-US gallon pail of water.

   a) By first converting US gallons to litres, use your knowledge about the weight of 1 litre of water to determine the weight of a 5-US gallon pail of water. Refer to p. 127 for the volume conversion factor.

   b) How much would 1 m^3 of water weigh?

4. Your school has been running a nickel drive to raise money for a sister school in Africa. A nickel weighs approximately 5 g. A roll of nickels is worth $2.00. You have collected a total of $135.65 in nickels.

   a) How much will your nickels weigh?

   b) What is the weight of a roll of nickels?

   c) How many rolls would you need to make 1 kg?

5. A carpenter is installing a floor in an upper room of a house. He is debating whether to install cherrywood, which weighs 35 pounds a cubic foot, or cork, which weighs 15 pounds a cubic foot. If the area of the floor is 180 square feet and the flooring is $\frac{1}{2}$-inch thick, what is the difference between the weight of the cherrywood floor and the weight of the cork floor?

6. A drugstore buys bleach by the skid. Each skid weighs approximately 46.3 lb and holds 48 cases of bleach. Each case contains six 5.38-litre bottles. If one litre of bleach weighs about 847.5 grams, what is the weight of a loaded skid of bleach stated in kilograms? In pounds?

7. Many farmers use anhydrous ammonia to fertilize their crops. Anhydrous ammonia is a chemical composed of hydrogen and ammonia. It contains 82% nitrogen by weight. It is potentially a very hazardous chemical and must be handled appropriately. If the desired rate of application is 100 lb of nitrogen per acre, how many tonnes of anhydrous ammonia must a farmer order to fertilize 860 acres?

8. You are at a worksite and need to determine the weight of the rocks that you will use to finish the front entrance of the house. You do not have a scale, but you have a number of bags of cement that weigh 20 kg each. Explain how you could use them to determine the weight of the rocks.

9. For centuries, Aboriginal people have been fishing the waters of Atlantic Canada. Today the lobster fishery is a crucial industry in Atlantic Canada, and many Aboriginal people fish for lobster for a living. Formed in 2009, the Minigoo Fisheries is owned by the Lennox Island First Nation, in PEI. Its goal is to process lobster for international export.

Minigoo Fisheries is the only lobster processing plant in Canada owned by Aboriginal people. It employs people from the Lennox Island First Nation and neighbouring communities.

a) Minigoo Fisheries can fit, on average, 30 lb of lobster in a 1.48 ft^3 crate. If the company sells 360 lb of lobster to a customer in Massachusetts, how many cubic feet will the crates take up?

b) If Minigoo receives 60 kg of lobster from a fisherwoman, processes it, and then sells the frozen meat to a customer in Ohio, how many pounds of frozen meat will they ship if 2 lb of lobster yields 1 lb of frozen meat?

Attachments

- ~~5.4 - Practice Problems.doc~~
- ~~Geo_Mea_Fin 10 - Chp. 5 Judging Criteria.docx~~
- ~~Chp 5.4 - Extend Your Thinking #8 p. 217 Solutions.docx~~
- ~~Geo_Mea_Fin 10 - Conversion Tables and Formula Sheet (Chp4_5).docx~~
- ~~Chapter 5 Sample Test.pdf~~
- Chapter 5 Mass, Temperature, and Volume, Practice Your New Skills.pdf
- ~~Section 5.3 Mass in the Systeme International.pdf~~
- ~~Worksheet - Converting Weights.docx~~
- ~~Section 5.4 Detailed Solutions.pdf~~
- Geo_Mea_Fin 10 - Conversion Tables and Formula Sheet (Chp4_5_6).pdf