Mass in the Système International

NEW SKILLS: WORKING WITH SI UNITS OF MASS

In the Système International (SI), the **kilogram** is the basic unit of mass, but it is commonly used for weight as well.

1000 grams (g) = 1 kilogram (kg)

1000 milligrams (mg) = 1 gram

1 tonne (t) = 1000 kilograms

For more details, see page 154 of *MathWorks 10*.

Example 1

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

SOLUTION

You can either add the weights together and then double the sum, or double the weights and then add them together.

Flour:

Cornmeal:

Sugar:

Add the weights of all the ingredients.

There are ______ of dry ingredients in the doubled recipe.

Note that a tonne (t) is not the same as a ton (tn). A tonne is sometimes referred to as a metric ton.

kilogram: the mass of

one litre of water at 4°C

BUILD YOUR SKILLS

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

2. Irène needs 1.6 kg of tomatoes to make her grandmother's recipe for ratatouille. She has baskets of tomatoes that weigh 256 g, 452 g, 158 g, and 320 g. How many more grams of tomatoes does she need?

- 3. Genoa salami sells for 1.79/100 g at the deli.
 - a) How much will 350 g cost?

b) What is the price per kilogram?

NEW SKILLS: WORKING WITH MASS/ WEIGHT CONVERSION BETWEEN IMPERIAL AND SI

In this section, you will need to work with the relationship between the SI and the imperial units of weight. One kilogram weighs about 2.2 lb. You can also use this information to convert from grams to ounces and tonnes to tons.

For more details, see page 157 of *MathWorks 10*.

Example 2

Lorinda is baking apple pies. According to her recipe, she needs 6 pounds of apples. The bag of apples she bought only shows the weight in kilograms. How many kilograms of apples does she need?

SOLUTION

2.2 lb = 1 kg

She will need approximately _____kg of apples.



4. A recipe calls for 180 g of flour. How much is this in ounces?

5. A baby weighed 7 pounds 12 ounces at birth. How much did it weigh in grams?

To estimate a conversion from pounds to kilograms, you can think of a pound as being about $\frac{1}{2}$ kg. 6. Chen weighs 68 kg. How much does he weigh in pounds?

Example 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?

SOLUTION

Convert the price of bananas at the first store to kilograms.

1 kg costs ______times the cost of 1 lb.

_____ x 0.49 = _____

One kilogram of bananas at the first store costs about ______. The sale at the _______store is a better buy.

BUILD YOUR SKILLS

7. How much does 1 pound of beef cost if the butcher shop sells it for \$9.74/kg?

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

- 9. The dosage of a certain medicine is 0.05 mg/kg of weight. Tom weighs 185 lbs.
 - a) How many milligrams of the medicine should he take?

b) If the medicine costs \$1.95/mg, what will his dosage cost?

PRACTIS YOU NE SKILL

- 1. Convert the following weights.
 - a) 2.5 t =____kg
 - b) 2.8 kg = _____g
 - c) 125 g = ____kg
 - d) 2.4 g =____kg

- e) 1 t =____lb
- f) 3.6 tn =____kg
- 2. How many tons are in 1 tonne?

3. What is the total weight in grams of 3 packages of nuts weighing 1.2 kg, 0.75 kg, and 1.5 kg?

4. Win weighs 78 kg and his dog weighs 18 kg. If his truck weighs 1.9 t and there are 5 boxes of books each weighing 9.8 kg in the truck, what is the total weight of the truck, including Win, his dog, and the books?

5. Karen is making a batch of potato soup. She needs 8 potatoes, and each potato weighs about 375 g. How many pounds of potatoes does she need?

6. If a 10-lb bag of grass seed costs \$75.45, how much does the seed cost per kilogram?

7. How many 1/4 pound hamburgers can you make out of 1.9kg of ground beef?