# NEW SKILLS: WORKING WITH CONVERSIONS BETWEEN MEASURES OF VOLUME AND WEIGHT

You have converted measures from one unit to another, within the SI or imperial system, or between them.

Here, you will convert from a unit of volume to a unit of weight. For example, grain is often measured in bushels, a volume measure, but its weight may be needed to judge whether it is a safe load for a truck. Each grain has a different weight, so conversions between bushels and weight depend on knowing the conversion factor.

For more details, see page 162 of MathWorks 10.

#### Example 1

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

#### **SOLUTION**

A conversion factor of 39.368 means that there are 39.368 bushels of flax seed per tonne. To find the number of bushels, multiply.

There are approximately \_\_\_\_\_bushels of flax seed.

1 bushel = 2220 in<sup>3</sup> or approximately 8 gallons.

# BUILD YOUR SKILLS

1.	Laila bought 5 bushels of sunflower seeds. If the conversion factor is $73.487$ bu/t, what is the weight of the sunflower seeds:
	a) in kilograms?
	b) in pounds?
2.	The conversion factor for white beans is 36.744, and for corn it is 39.368. Which weighs more per unit volume?
3.	If Jore gets \$195.76 per metric ton for wheat, how much does he earn per bushel (conversion factor $36.744 \text{ bu/t}$ )?

4.	If one bushel of triticale grain is about 2220 cubic inches, how many bushels are in
	a pile that measures approximately 8 feet by 6 feet by 5 feet?

5. How many tonnes of rye are there is 900 bushels if there are 39.368 bushels/tonne?

6. Wheat is 36.744 bushels/tonne and sunflower seeds are 73.487 bushels/tonne. What does this tell you about the relative weights of wheat and sunflower seeds?

### **NEW SKILLS: WORKING WITH CONVERSION BETWEEN** SI AND IMPERIAL UNITS OF WEIGHT

You can use the following equivalencies to convert between SI and imperial units.

 $1 \text{ lb} \approx 0.45 \text{ kg}$ 

 $1 \text{ oz} \approx 28.3 \text{ g}$ 

 $1 \text{ tn} \approx 0.9 \text{ t}$ 

#### **BUILD YOUR SKILLS**

7. 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 chicken is labelled in kilograms. How much chicken does Alphonse need to buy?

8. 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?

9. Josephine is sending a gift of a bottle of maple syrup that weighs 3 lb, and 3 packages of smoked salmon jerky 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?

# SKILL

1. If 1 bushel is approximately 2220 cubic inches, approximately how many bushels of grain are there in a bin that is 8 feet by 8 feet by 4 feet?

2. A truck has a maximum load limit of 5000 kg. Can it safely carry 230 bushels of canola, if the conversion factor is 44.092 bushels/tonne?

3. How many kilograms are in 1 ton?

4. A sign posted in an elevator says "Maximum capacity 1400 lb." If the average weight of an adult is 80 kg, how many average-weight adults can the elevator carry?

5. Recall that 1000 cubic centimetres equal 1 litre. How many millilitres are in a box that is 10 cm by 5 cm by 3 cm?

6. A hectare (ha) is an area measure of 10 000 square metres. How many hectares are there in a field that is 620 m by 380 m?