6.4 Converting Units

Focus: metric measure, Imperial measure, proportional reasoning

Warm Up	
1. How many cents are in 1 dollar? _____	**2.** How many minutes are in 1 hour? _____
3. How many years are in 1 decade? _____	**4.** What is **a)** half of 12? _____ **b)** $\frac{1}{4}$ of 12? _____
5. State 3 metric units for measuring length. _____	**6.** State 3 Imperial units for measuring length. _____
7. How many nickels are in $2? _____	**8.** How many months are in $2\frac{1}{2}$ years? _____

What Units Do You Usually Use?

- Sometimes it is necessary to convert a measurement to a different unit.
- For example, you may measure the length of a room in inches but a store sells trim by the foot. You may need to mix litres and millilitres to get the right mix of gas and oil for your grass trimmer.

1. Fill in the blanks to complete the statement, "I tend to measure…" The first one is done for you.

a) the outside temperature in degrees _____Celsius_____

b) the oven temperature in degrees _____

c) my weight in _____

d) my height in _____

e) driving distances in _____

f) lengths in my home in _____

g) liquids in the kitchen in _____

h) weights in the kitchen in _____

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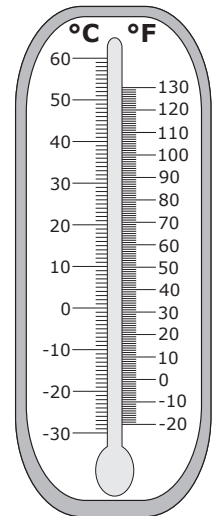
Converting Between Metric Units

2. Write the metric units from shortest to longest.

centimetre   kilometre   metre   millimetre

_____

3. Often, if you know how to convert between 2 units, you are able to use what you know to convert between multiples of those units.

a) 1 m = _____ cm   2 m = _____ cm

b) 1 cm = _____ mm   3.5 cm = _____ mm

c) 1 km = _____ m   0.5 km = _____ m

> For a review of how to convert from 1 metric unit to another, see **Skills Practice 10: Converting Between Metric Measures** on page 210.

d) Show or explain how you can use proportions to make these conversions.

_____

_____

_____

4. Measure the following 3 items. State the measurement in 2 different metric units. Add 2 more items of your choice to the bottom of the chart.

Item	Length in Metric Units
a) the length of this book	_____ _____ or _____ _____
b) the height of the classroom door	_____ _____ or _____ _____
c) the thickness of a loonie	_____ _____ or _____ _____
d) _____	_____ _____ or _____ _____
e) _____	_____ _____ or _____ _____

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5. Write the metric units from lightest to heaviest.

milligram   kilogram   gram

_____

6. Fill in each box.

a) 1 kg = _____ g   2 kg = _____ g

b) 1 g = _____ mg   500 g = _____ mg

> You would usually talk about "weighing" something. Mathematicians and scientists refer to "measuring its mass."
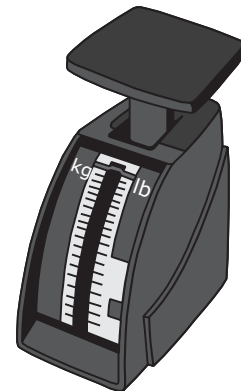
7. Weigh the following 2 items. State the weight in 2 different metric units. Add 2 more items of your choice to the bottom of the chart.

Item	Weight in Metric Units
a) this book	_____ _____ or _____ _____
b) a loonie	_____ _____ or _____ _____
c) _____	_____ _____ or _____ _____
d) _____	_____ _____ or _____ _____

8. a) Which unit do you think is better to use when weighing this book? Explain your answer.

_____

_____

b) Show how you can use proportions to convert grams to kilograms.

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Converting Between Imperial Measures

9. Write the Imperial units from shortest to longest.

foot   inch   mile   yard

_____

10. Fill in the blanks. Use a tape measure or yard stick for reference.

For a review of how to convert from one Imperial unit to another, see **Skills Practice 9: Converting Between Imperial Measures** on page 208.

a) 1 ft = _____ in.   2 ft = _____ in.

b) 1 yd = _____ ft   10 yd = _____ ft

- Imperial lengths are often stated as a combination of feet and inches. Sometimes just inches are used.
- Twenty-two inches might be shown as 22" or 1' 10". People rarely refer to it as 1.833 ft.

11. Convert the units as indicated.

a) 18 inches = _____ ft _____ in.

b) 27 inches = _____ ft _____ in.

c) 48 inches = _____ ft _____ in.

d) 5 ft 4 in. = _____ in.

e) 6 ft = _____ in.

12. Measure the following 3 items. State the measurement in 2 different Imperial units. Add 2 more items of your choice to the bottom of the chart.

Item	Length in Imperial Units
a) my height	5 ft 11 in. or _____ in.
b) the height of the classroom door	_____ _____ or _____ _____
c) the thickness of a loonie	_____ _____ or _____ _____
d) _____	_____ _____ or _____ _____
e) _____	_____ _____ or _____ _____

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13. List the following Imperial weights from lightest to heaviest.

pound   ton   ounce

_____

- There are 16 ounces in 1 pound.
- There are 2000 pounds in 1 ton.
- The abbreviation for ounce or ounces is "oz".
- The abbreviation for pound or pounds is "lb".
- The abbreviation for ton is "T".

14. Fill in the blanks.

a) $\frac{1}{2}$ lb = _____ oz

b) $\frac{1}{4}$ lb = _____ oz

c) $\frac{3}{4}$ lb = _____ oz

d) 20 oz = _____ lb

e) 4000 lb = _____ T

☑ Check Your Understanding

1. The perimeter of your living room is 500 inches. You need to put baseboard around the perimeter of the room. Baseboard is sold by the foot. How many feet do you need to buy?

2. Mohammed has entered a 1500-metre race. How many kilometres will he run?

3. You are on holiday in the United States and buy a roast that weighs $2\frac{1}{2}$ pounds. How many ounces is that?

4. Kevin jokingly says that he is 5 ft 19 in. How tall is he?

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