Problem of the Week
Problem B and Solution
What's in a Measure?

Problem

Listed below are measurements for some specific items. However, the unit of measure may not be what you are used to. Convert the measurements to a unit that makes more sense to you.

(a) The time between your 10th and 11th birthdays is 31 536 000 seconds.

(b) The distance between Montreal and Toronto is 54 160 000 centimetres.

(c) The length of my toothbrush is 0.00019 kilometres.

(d) I pour 0.25 litres of milk on my cereal in the morning.

Solution

(a) The time between your 10th and 11th birthdays is more commonly known as 1 year. (Hopefully, students did not need to do any calculations to determine this!) If you want to do the calculations, divide 31 536 000 by 60 to get 525 600 minutes. Then divide 525 600 by 60 to get 8760 hours. Finally, divide 8760 by 24 to get 365 days, which is equal to 1 year.

(b) A more reasonable unit for the distance between Montreal and Toronto is kilometres. So we will first convert the distance to metres and then to kilometres.

That is, 54 160 000 cm is equal to $54\,160\,000 \div 100 = 541\,600$ m, and $541\,600 \div 1000 = 541.6$ km.

Therefore, the distance between Montreal and Toronto is 541.6 km.

(c) A more reasonable unit for the length of my toothbrush would be centimetres. So we will first convert the length to metres and then to centimetres.

That is, 0.00019 km is equal to $0.00019 \times 1000 = 0.19$ m, and $0.19 \times 100 = 19$ cm.

Therefore, the length of the toothbrush is 19 cm.

(d) A more reasonable unit for the amount of milk is millilitres. Therefore, the amount of milk is $0.25\,\text{L} \times 1000 = 250\,\text{mL}$.

NOTE: The units chosen may vary, since different students may find different units reasonable.