



## Problem of the Week

### Problem B and Solution

#### Go with the Flow

#### Problem

Springtime is when sap runs from maple trees, and can be used to make yummy maple syrup. The sap runs best when the temperature goes below freezing during the night and above freezing during the day. A very good flow rate would be 2 drips per second. Each drip contains  $\frac{1}{4}$  mL of sap.

- At this rate, how many mL of sap would be collected in one minute?
- How many mL would be collected in an hour? How many litres is this?
- If the sap ran consistently for 8 hours, how many L of sap would be collected?
- If you collected sap from 28 trees for 8 hours, and each tree gave the same amount of sap as in part c), how much sap would you get in total?

#### Solution

- Since  $\frac{1}{4}$  mL/drip  $\times$  2 drips/sec =  $\frac{1}{2}$  mL/sec, we see that in one minute  $\frac{1}{2}$  mL/sec  $\times$  60 sec = 30 mL would be collected.
- In 1 hour, 30 mL/min  $\times$  60 min = 1800 mL would be collected, which is equivalent to 1.8 L in one hour.
- In 8 hours, 1.8 L/hour  $\times$  8 hr = 14.4 L would be collected.
- From 28 similar trees, you would get 14.4 L  $\times$  28 trees = 403.2 L of sap.

