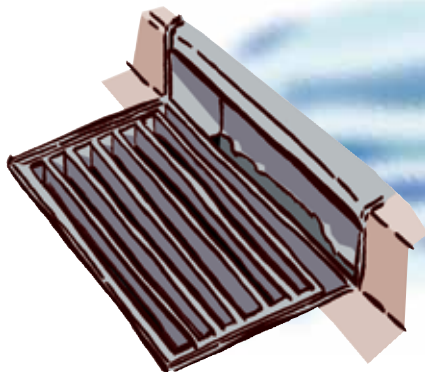# Focusing on Water

You need ☑ a tap with running water ☑ a container or jug ☑ a classmate

Activity

In an average household, water is used like this:

> Showers use up to **20** litres a minute.
>
> Washing a full load of clothes takes **175** litres.
>
> Together, 2 taps running use **14** litres a minute.
>
> A full flush of the toilet takes **11** litres. A half-flush takes **5.5** litres.
>
> A bath with enough water to cover you when you lie down takes **100** litres.
>
> A fast wash on a dishwasher takes **15** litres, a medium wash takes **20** litres, and a heavy wash takes **25** litres.

1. Katie works out how much water is used for 4 full loads of clothes.

   > I think the water used for 4 loads of clothes is
   > (4 x 200) – (4 x 25) = 800 – 100
   > = 700.

   > I wonder if there's another strategy I could use to work that out?

   Discuss with a classmate other strategies that Katie could use.

2. Katie decides to work out how much water her family of 5 has used in 1 day.
   For each activity, show your strategy for working out the answer. Use a variety of strategies.

   a. 2 people had 9 minute showers, 2 people had 7 minute showers, and 1 person had a bath.

   b. Ryan spent a total time of 3 minutes cleaning his teeth during the day. He ran only 1 tap each time.

   c. The toilet was fully flushed 19 times.

   d. The other 4 people cleaned their teeth 3 times each. They each ran 1 tap for $1\frac{1}{2}$ minutes each time.

   e. Steven did 2 heavy washes in the dishwasher.

   f. Hands were washed 15 times. Both taps were run for 30 seconds each time.

   g. Eliot ran both taps for 4 minutes while he washed the vegetables for dinner.

3. What was the total amount of water used?

Using mental strategies to calculate capacity

4. The following day, Katie's family decided to conserve water. For example, Eliot ran just 1 tap for $3\frac{1}{2}$ minutes when he washed the vegetables for dinner. Katie works out how much water he used.

> I have to work out $3\frac{1}{2}$ times half of **14**. Half of **14** is **7**.

> I'll double $3\frac{1}{2}$ to make **7**, which is easier to work with. **7 x 7 = 49**.

> Now I need to halve the answer to find out how much water is used in $3\frac{1}{2}$ minutes. It's **24.5 litres**!

How much water did Katie's family use in each of the activities below? For each problem, show your strategy for finding the answer. Use a variety of strategies.

a. Lisa washed 2 full loads of clothes.

b. Steven did 2 medium washes in the dishwasher.

c. Ryan spent a total time of 2 minutes cleaning his teeth during the day. He ran only 1 tap each time.

d. Everyone else cleaned their teeth 3 times each. They each ran 1 tap for 1 minute each time.

e. There were two 4 minute showers, three 6 minute showers, and no one had a bath.

f. The toilet was half-flushed 15 times and fully flushed 3 times.

g. Hands were washed 15 times. A tap was run for 20 seconds each time.

5. How much water did they use altogether on this day? (Include Eliot's water from washing the vegetables.)

6. How much less water did they use than on the day before?

Investigation

Dripping taps waste more water than you might think. Set a tap dripping and work out how much water would be wasted in:

a. 1 minute   b. 1 hour

c. 1 day   d. 1 year.

Compare your results with a classmate's.