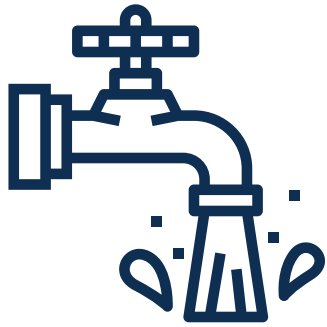


Measure Your Water Consumption

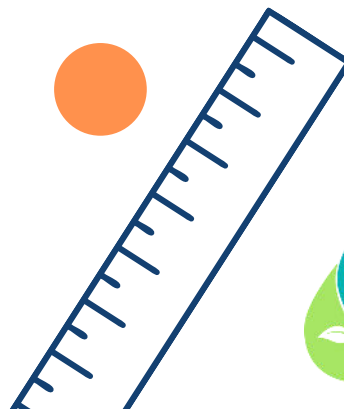


Audience :
10 years &
over

Duration :
15 to 30 min

Measure your weekly water consumption

*Estimate your average weekly water
consumption for daily activities.*



Abrinord
OBV de la rivière du Nord



Objectives

Raise students' awareness on their average weekly water consumption.

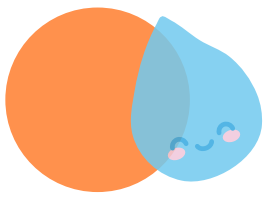
- *Reflect on the issue of overconsumption.*

Required material :

Per student :

- *Average consumption calculation chart*
- *Stopwatch, watch, clock or phone to measure elapsed time*
- *Large container (pot, bowl, boiler)*
- *Measuring cup*





Course of the activity

Introduction (10 min)

Introduce the following basic concepts :

Fresh water on the planet

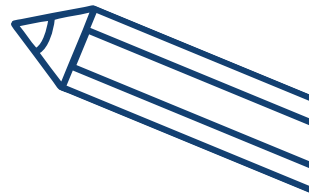
On earth, 97.5 % of water is salt water (oceans) and 2.5 % is fresh water. Among this percentage, nearly 65 % is found in glaciers and snow. This means that only 35 % of fresh water, or 0.83 % of all water on Earth, is in the form of surface water (lakes, rivers and wetlands) or groundwater (water table). It is from this small portion that humans around the world draw their drinking water.

Drinking water in Quebec

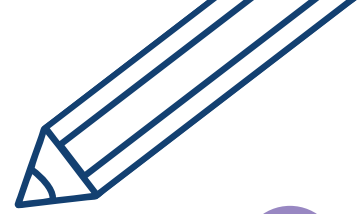
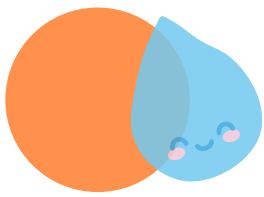
Although water is very abundant in Quebec, drinking water is a resource to be used in moderation. Indeed, the drinking water distributed in most cities must be treated to become drinkable before making its way to the tap. It is very expensive to treat water to make it drinkable and to treat wastewater (toilets, showers, sinks) before releasing it into nature. Therefore, the less drinking water we use, the less we will need to treat it and use chemicals to do so.

In 2019, the average residential consumption per person was :

- Need (estimate to live comfortably): 100 L per day **
- Quebec: 262 L per day (131 large 2 L soda bottles)*
- Canada: 215 L per day*
- Manitoba (lowest consumption in the country): 158 L par jour*



*According to the World Health Organization

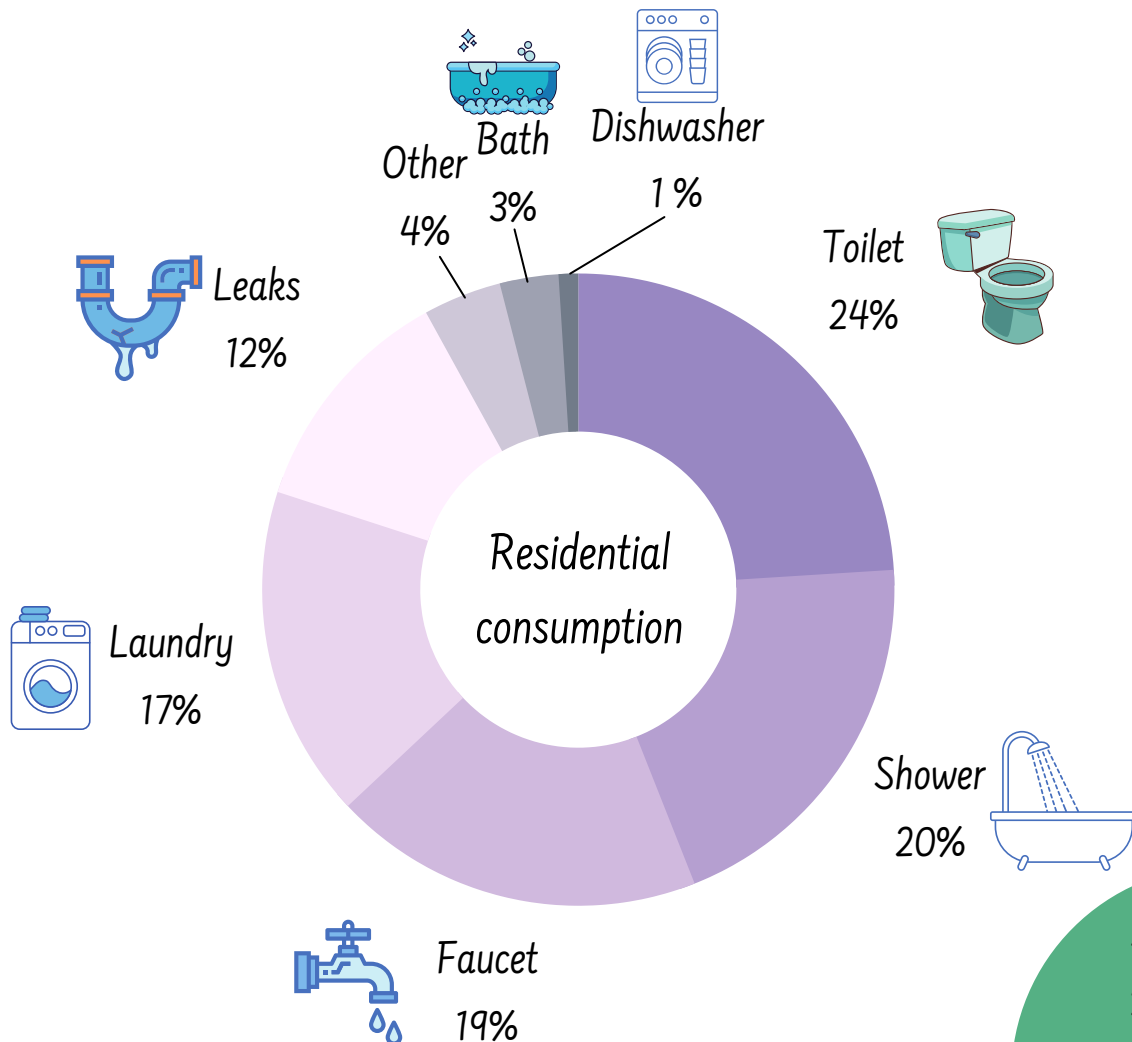


Course of the activity

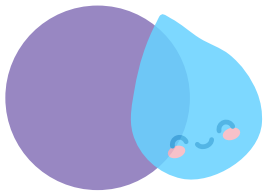
Introduction (10 min)

What do we use water for ?

- Flush the toilet
- Take a bath
- Take a shower
- Brush our teeth
- Shave
- Wash your hands
- Do the laundry
- Clean
- Cook (eat/drink)
- Wash the dishes
- Water the garden/the plants
- Fill the pool/spa
- _____
- _____
- _____



1. _____
2. _____
3. _____

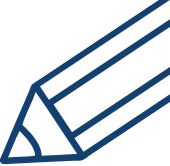


Course of the activity

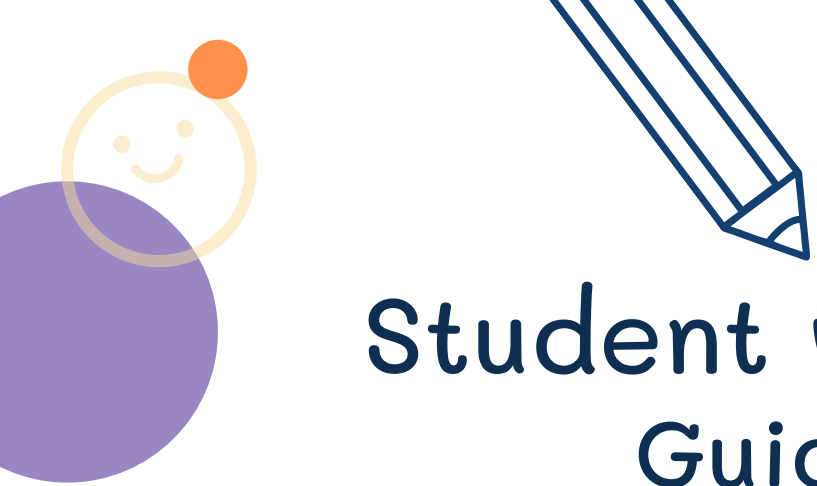
Measure your water consumption (20 min)

1. Distribute the average consumption Calculation chart to each student.
2. Have students measure the flow rate in L/min of their home's faucets following the directions in the Student Workbook. This step can be done before or after step 3.
3. Students should measure the time (in minutes) it takes them to complete the activities in the chart, when they are concerned. To do this, they can time themselves at home when they perform the activities or time themselves in class by miming the activity.
4. Once the activity is timed, record the duration in the appropriate column of the chart.
5. Students will also need to count the number of times per week they complete each activity and write it in the chart.
6. Then multiply the time (min) by the flow rate (L/min) to get the consumption (L). Then multiply the consumption by the number of times per week, to get the average water consumption per week (L/week).
7. Get students to think about their consumption by answering the questions in the Student Workbook.
8. You can repeat the activity after adopting better habits, such as turning off the water when possible or taking less time to do an activity

*This activity can be followed by the Water-Saving Student activity to encourage students to adopt better habits to reduce their water consumption.



- 1.
- 2.
- 3.



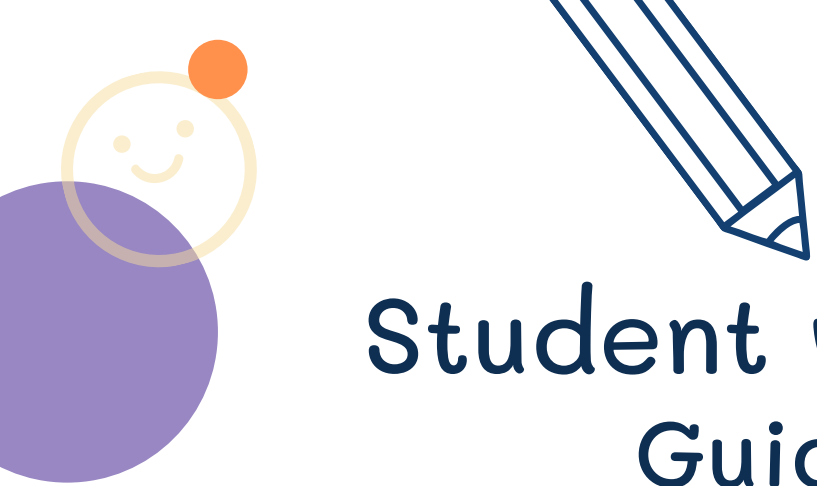
Student workbook - Guidelines

Measure the flow of the faucets and the shower head:

1. Take a large pot or bowl and put it under the faucet or shower head to hold all the water that flows. If you have several faucets of the same type (e.g. bathroom), measure the flow rate of the faucet you use most.
2. Let the water run at full flow for 15 seconds (timed).
3. Using a measuring cup, measure the water that flowed into the container in liters (L) and multiply by four to get the flow rate in liters per minute (L/min).
4. Enter the flow rate at the top of the appropriate column in the calculation chart. Repeat for each column.

Determine the water consumption of the toilet: :

1. For a toilet, find out if the litre per flush (LPF) is written on the toilet (usually above the seat) or ask a parent if they know the usage. This figure should normally be between 3.8 LPF and 15 LPF, but could exceptionally go up to 20 LPF, for older models.
2. If you are unable to find the consumption of your toilet, estimate according to your type of toilet. A dual-flush toilet has a consumption of 4 L and 6 L depending on the flush, a low-flush toilet has a consumption of 4.8 L to 6 L (mandatory for new construction since 2014) and old standard toilets from 10 L to 15 L.
3. Write the consumption under the "Flushing the Toilet" activity at the end of the chart.



Student workbook - Guidelines

Calculate the time of usage :

- 1. Measure the time of water usage for each activity you do. You can time yourself several times and make an average. If the water is turned off during the activity, stop the timer and start it again when you turn on the water.*
- 2. Record this time in the appropriate column, depending on which faucet you used.*

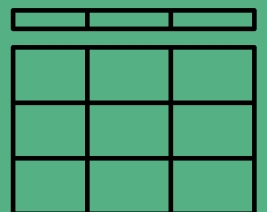
Calculate the average consumption per week :

- 1. Over the course of the week, keep track of how many times you do each activity and enter the total number in the chart. Don't forget to count the number of times you do it elsewhere, such as at school, to get a better estimate of your activities.*
- 2. To calculate the average consumption per week for each activity, multiply the faucet flow rate by the duration of use, then multiply by the number of uses.*
$$\text{flow rate (L/min)} \times \text{duration (min)} \times \text{number of uses} = \text{consumption per week (L/week)}$$
- 3. Enter the result in the last column.*
- 4. Calculate your total weekly consumption by adding up each activity's consumption per week and enter it under the table.*

**You can recalculate your consumption after adopting better habits, such as decreasing the time you use water or turning off the water during activities.*

Student workbook - Calculation chart

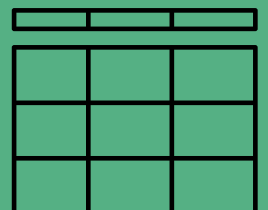
Activity	Shower head ___L/min	Bath faucet ___L/min	Bathroom sink faucet ___L/min	Kitchen faucet ___L/min	Outdoor faucet ___L/min	Usage per week (nb)	Consumption per week (L)
Take a shower	___min					___	___
Fill the bain		___min				___	___
Wash your hands while closing the water			___min	___min		___	___
Wash your hands without closing the water			___min	___min		___	___
Brush your teeth while closing the water			___min	___min		___	___
Brush your teeth without close the water			___min	___min		___	___

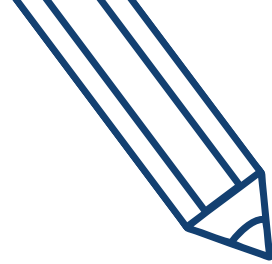
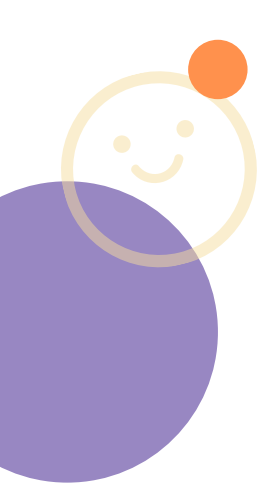


Student workbook - Calculation chart

Activity	Shower head ___L/min	Bath faucet ___L/min	Bathroom sink faucet ___L/min	Kitchen faucet ___L/min	Outdoor faucet ___L/min	Usage per week (nb)	Consumption per week (L)
Shave	___min	___min	___min	___min	___min	___	___
Wash the dishes in the sink				___min		___	___
Water the plants or the garden		___min	___min	___min	___min	___	___
Other	___min	___min	___min	___min	___min	___	___
Flushing the toilet ___L						___	___

Total weekly consumption : _____L





Student workbook - Thoughts

Which of your activities consumes the most water per use ?

Which activity has the highest weekly water consumption ? Why is that so ?

What can you do to reduce your consumption ?

Compare your total weekly consumption to that of your peers. Is it similar, lower or higher ? What do you do differently ?

