



## WATER LESSON

# Saving Water Relay: What a Difference it Makes!

---

### Background and Concepts

---

This relay is designed to increase student awareness of the impact of water conservation by comparing efficient and wasteful water use habits.

- Water conservation actions
- Measuring and charting

---

### Time

20-30 minutes

---

### Materials

---

- 6 large pails
- 2 – 500mL measuring cups
- Water cards (attached)
- Water comparison chart (1 for each team, attached)
- Container or basket (for water cards)
- Water
- Meter stick
- Outdoor space or lunchroom (floor may get wet)

---

### Procedure

---

1. Tell students that they will be participating in a relay race that will show both efficient and non-efficient uses of water.
2. Prepare the pails:
  - Label two of the pails with "**Colossal Water Consumers**", and two pails "**Smart Water Savers**".
  - Fill each pail with 6 L of water and place them at one end of the field or room. (This is a good relay to do outside to avoid spilled water on the floor). Each team should have one of each pail.
  - Place the container of water cards between the teams' pails.
  - Place the last two pails at the other end of the field or relay area, and label them "**Spent Water**". This is where teams will run to during the relay.
3. Divide the group of students into two teams and give each team a measuring cup and water chart.



4. Relay Instructions:

- One team member from each team runs to the water card basket and takes a card. A smiley face on the card will represent a **Smart Water Savers** action; a frowning face represents a **Colossal Water Consumers** action.
  - They will go to either the Colossal Water Consumers, or the Smart Water Savers pails and use their measuring cup to withdraw the amount of water indicated on their ticket.
  - They run with the water to pour it into their teams' "Spent Water" pail.
  - They run back to pass on the measuring cup to the next member of their team, who takes a card, measures out the correct amount of water and runs to put it in the "Spent Water" bucket.
  - Continue the relay until all students have had a turn to run or have used up all the tickets.
  - Once students have completed their turn, they write down the amount of water they used on the water chart.
5. Compare the remaining water in the Smart Water Savers and Colossal Water Consumers pails by having students either measure water height (using the meter stick), or water volume (using the measuring cups), or by making a visual comparison.
6. Using the information on the water charts or from the water cards, students can "do the math" and create graphs that compare water use between the Smart Water Savers and the Colossal Water Consumers actions.

---

## Discussion

- What do students observe when they look at the water Savers and Consumers pails?
- Look at some of the specific water card examples. Discuss different behaviours and how these either conserve or consume water?
- What are some ways students conserve water at home and at school?
- Why is conserving water important?

---

## Going Further

- Look at the actions on the water charts. Ask students to analyze their own daily water use – which of these actions do they do?
- Have students record their water use at home for 1 day, estimating their water use for bathing, drinking, washing or water used in the toilet. Or, use these resources to audit and take action to reduce water at home.
  - [Read the Meter, Make a Change \(Water Meter\)](#)
  - [Home Water Audit](#)



## Additional Resources

Water Footprint Calculators:

- <http://environment.nationalgeographic.com/environment/freshwater/water-footprint-calculator/>
- <http://www.waterfootprint.org/?page=cal/WaterFootprintCalculator>

[SES water conservation tips](#)

## Curriculum Connections

**Grade 2 Mathematics [SS2.2](#)** Demonstrate understanding of non-standard units for measurement of mass by: describing the choice and appropriate use of non-standard units, estimating, measuring, comparing and analyzing measurements. **[SP2.1](#)** Demonstrate understanding of concrete graphs and pictographs.

**Science [AW2.1](#)** Investigate properties of air and water (in all three states of matter) within their environment. **[AW2.2](#)** Assess the importance of air and water for the health and survival of living things, including self, and the environment.

**Grade 3 Mathematics [N3.1](#)** Demonstrate understanding of whole numbers to 1000 (concretely, pictorially, physically, orally, in writing, and symbolically) including: representing (including place value), describing, estimating with referents, comparing two numbers, ordering three or more numbers.

**[N3.2](#)** Demonstrate understanding of addition of whole numbers with answers to 1000 and their corresponding subtractions (limited to 1, 2, and 3-digit numerals) including: representing strategies for adding and subtracting concretely, pictorially, and symbolically, solving situational questions involving addition and subtraction, estimating using personal strategies for adding and subtracting.

**[P3.1](#)** Demonstrate understanding of increasing and decreasing patterns including: observing and describing, extending, comparing, creating patterns using manipulatives, pictures, sounds, and actions.

**[SS3.3](#)** Demonstrate understanding of linear measurement (cm and m) including: selecting and justifying referents, generalizing the relationship between cm and m, estimating length and perimeter using referents, measuring and recording length, width, height, and perimeter. **[SP3.1](#)** Demonstrate understanding of first-hand data using tally marks, charts, lists, bar graphs, and line plots (abstract pictographs), through: collecting, organizing, and representing, solving situational questions.

**Grade 4 Mathematics [N4.1](#)** Demonstrate an understanding of whole numbers to 10 000 (pictorially, physically, orally, in writing, and symbolically) by: representing, describing, comparing two numbers, ordering three or more numbers. **[N4.2](#)** Demonstrate an understanding of addition of whole numbers with answers to 10 000 and their corresponding subtractions (limited to 3 and 4-digit numerals) by: using personal strategies for adding and subtracting, estimating sums and differences, solving problems involving addition and subtraction. **[P4.1](#)** Demonstrate an understanding of patterns and relations by: identifying and describing patterns and relations in a chart, table or diagram,



reproducing patterns and relations in a chart, table, or diagram using manipulatives, creating charts, tables, or diagrams to represent patterns and relations, solving problems involving patterns and relations

**Grade 5 Mathematics N5.4** Develop and apply personal strategies for estimation and computation including: front-end rounding, compensation, compatible numbers. **SS5.2** Demonstrate understanding of measuring length (mm) by: selecting and justifying referents for the unit mm, modelling and describing the relationship between mm, cm, and m units. **SS5.4** Demonstrate understanding of capacity by: describing the relationship between mL and L, selecting and justifying referents for mL or L units, estimating capacity by using referents for mL or L, measuring and recording capacity (mL or L).

**SP5.1** Differentiate between first-hand and second-hand data. **SP5.2** Construct and interpret double bar graphs to draw conclusions. **SP5.3** Describe, compare, predict, and test the likelihood of outcomes in probability situations.

**Social Studies RW5.1** Explain the importance of sustainable management of the environment to Canada's future.

**Grade 6 Mathematics P6.1** Extend understanding of patterns and relationships in tables of values and graphs. **SP6.1** Extend understanding of data analysis to include: line graphs, graphs of discrete data, data collection through questionnaires, experiments, databases, and electronic media, interpolation and extrapolation.

**Grade 7 Mathematics P7.1** Demonstrate an understanding of the relationships between oral and written patterns, graphs and linear relations.

**Social Studies RW7.3** Assess the ecological stewardship of economies of Canada and the circumpolar and Pacific Rim countries.

**Grade 8 Health Education USC8.6** Examine and assess the concept of sustainability from many perspectives, and develop an understanding of its implications for the well-being of self, others, and the environment. **AP8.10** Design, implement, and evaluate three seven-day action plans that establish multiple supports for responsible health action related to family roles and responsibilities, non-curable infections/diseases, violence and abuse, body image, sustainability, and sexual health.

**Mathematics SP8.1** Analyze the modes of displaying data and the reasonableness of conclusions.

**Science: WS8.1** Analyze the impact of natural and human-induced changes to the characteristics and distribution of water in local, regional, and national ecosystems.

**Social Studies: RW8.1** Analyze the social and environmental consequences of living in the Canadian mixed market economy based on consumerism. **RW8.2** Assess the implications of personal consumer choices. **RW8.3** Critique the approaches of Canada and Canadians to environmental stewardship and sustainability.



**Water Cards (print one set and cut)**

<b>Colossal Water Consumers</b>	<b>mL</b>	<b>Smart Water Savers</b>	<b>mL</b>
☹ We wash hands while letting the tap run.	<b>250mL</b>	☺ We wash our hands in a sink half full of water, and do not let the tap run.	<b>125 mL</b>
☹ We wash even small amounts of dishes using the dishwasher.	<b>500mL</b>	☺ We only use the dishwasher when there is a full load of dishes to wash, and we have a water-saving dishwasher.	<b>250mL</b>
☹ We wash our car using a hose and liquid soap.	<b>500mL</b>	☺ We wash the car with water recycled from the laundry sink and washing machine.	<b>0mL</b>
☹ We have showerheads and tub faucets that leak.	<b>500mL</b>	☺ We use low flow showerheads that save water when showering.	<b>125mL</b>
☹ We let the faucet run when washing our dishes.	<b>325mL</b>	☺ We fill the sink when washing our dishes.	<b>250mL</b>
☹ We run the water while we are rinsing vegetables instead of putting some water in the sink.	<b>325mL</b>	☺ We have drought tolerant plants that require little water and use water from the rain barrel to water our plants.	<b>100mL</b>
☹ Sometimes we stay in the shower for over 20 minutes.	<b>500mL</b>	☺ We installed a low flow shower head.	<b>250mL</b>
☹ We use a high-pressure hose to clean the driveway, instead of sweeping the dirt away.	<b>500mL</b>	☺ We water our lawn in the coolest part of the day – morning is best.	<b>100mL</b>
☹ We flush every time we use the bathroom, and often flush items down the toilet such as bugs or clean toilet paper.	<b>250mL</b>	☺ We flush only when necessary, and never flush extra items down the toilet. We also have installed a low flush toilet.	<b>125mL</b>
☹ We take long hot showers and let the water run before showering.	<b>500mL</b>	☺ We take quick showers.	<b>125mL</b>



☹ Sometimes we stay in the shower for over 20 minutes.	<b>500mL</b>	☺ We installed a low flow shower head.	<b>250mL</b>
☹ We drink cold water from the tap and let the water run while doing so.	<b>250mL</b>	☺ We keep cold water available in the fridge to drink and avoid running the tap constantly.	<b>125mL</b>
☹ We fill the tub up to the top when we bath.	<b>350mL</b>	☺ We usually take short showers, and do not fill the tub if we need to take a bath.	<b>125mL</b>
☹ We have showerheads and tub faucets that leak.	<b>500mL</b>	☺ We use low flow showerheads that save water when showering.	<b>125mL</b>
☹ We ignore dripping faucets because it seems like such a small amount of water.	<b>500mL</b>	☺ We close dripping faucets properly and fix leaking ones immediately.	<b>0mL</b>
☹ We let the water run while brushing our teeth.	<b>250mL</b>	☺ Our grass does not need watering every day in the summer, and we use a sprinkler on a timer.	<b>100mL</b>
☹ We wash even small loads in the washing machine, and do not adjust the water levels.	<b>500mL</b>	☺ We use the washing machine mainly for full loads and/or adjust the water levels.	<b>250mL</b>
☹ We water our grass every day in the summer, and often leave the hose running.	<b>300mL</b>	☺ We shut the tap off while brushing our teeth and use a glass of water for rinsing.	<b>125mL</b>



### Water Chart

<b>Colossal Water Consumers</b>	<b>mL</b>	<b>Smart Water Savers</b>	<b>mL</b>
☹ We wash hands while letting the tap run.	<b>250mL</b>	☺ We wash our hands in a sink half full of water, and do not let the tap run.	<b>125 mL</b>
☹ We wash even small amounts of dishes using the dishwasher.	<b>500mL</b>	☺ We only use the dishwasher when there is a full load of dishes to wash, and we have a water-saving dishwasher.	<b>250mL</b>
☹ We wash our car using a hose and liquid soap.	<b>500mL</b>	☺ We wash the car with water recycled from the laundry sink and washing machine.	<b>0mL</b>
☹ We have showerheads and tub faucets that leak.	<b>500mL</b>	☺ We use low flow showerheads that save water when showering.	<b>125mL</b>
☹ We let the faucet run when washing our dishes.	<b>325mL</b>	☺ We fill the sink when washing our dishes.	<b>250mL</b>
☹ We run the water while we are rinsing vegetables instead of putting some water in the sink.	<b>325mL</b>	☺ We have drought tolerant plants that require little water and use water from the rain barrel to water our plants.	<b>100mL</b>
☹ Sometimes we stay in the shower for over 20 minutes.	<b>500mL</b>	☺ We installed a low flow shower head.	<b>250mL</b>
☹ We use a high-pressure hose to clean the driveway, instead of sweeping the dirt away.	<b>500mL</b>	☺ We water our lawn in the coolest part of the day – morning is best.	<b>100mL</b>
☹ We flush every time we use the bathroom, and often flush items down the toilet such as bugs or clean toilet paper.	<b>250mL</b>	☺ We flush only when necessary, and never flush extra items down the toilet. We also have installed a low flush toilet.	<b>125mL</b>
☹ We take long hot showers and let the water run before showering.	<b>500mL</b>	☺ We take quick showers.	<b>125mL</b>



☹ Sometimes we stay in the shower for over 20 minutes.	<b>500mL</b>	☺ We installed a low flow shower head.	<b>250mL</b>
☹ We drink cold water from the tap and let the water run while doing so.	<b>250mL</b>	☺ We keep cold water available in the fridge to drink and avoid running the tap constantly.	<b>125mL</b>
☹ We fill the tub up to the top when we bath.	<b>350mL</b>	☺ We usually take short showers, and do not fill the tub if we need to take a bath.	<b>125mL</b>
☹ We have showerheads and tub faucets that leak.	<b>500mL</b>	☺ We use low flow showerheads that save water when showering.	<b>125mL</b>
☹ We ignore dripping faucets because it seems like such a small amount of water.	<b>500mL</b>	☺ We close dripping faucets properly and fix leaking ones immediately.	<b>0mL</b>
☹ We let the water run while brushing our teeth.	<b>250mL</b>	☺ Our grass does not need watering every day in the summer, and we use a sprinkler on a timer.	<b>100mL</b>
☹ We wash even small loads in the washing machine, and do not adjust the water levels.	<b>500mL</b>	☺ We use the washing machine mainly for full loads and/or adjust the water levels.	<b>250mL</b>
☹ We water our grass every day in the summer, and often leave the hose running.	<b>300mL</b>	☺ We shut the tap off while brushing our teeth and use a glass of water for rinsing.	<b>125mL</b>
<b>Colossal Water Consumers Total</b>		<b>Smart Water Savers Total</b>	