

Home Water Audit

TEACHERS: Read "Water Efficiency - Water Smart Peel" on page 79 of The Peel Water Story book.

Objectives:

- students will determine the water use in their home
- students will understand the term *water efficiency* and the importance of conserving natural resources

Introduction:

Every time you turn on the tap, flush the toilet, or water the lawn, you are using water provided by the Region of Peel. Lake Ontario is the source of water for the vast majority of Peel's more than one million residents. In accordance with provincial regulations, this water is treated at Peel's two water treatment plants located on the shores of Lake Ontario. This is a mechanical and chemical process that ensures the quality of our drinking water. This system provides limited quantities of treated water over a given time period. Each day the average Peel resident uses 289L of water, being amongst the world's highest users.

What do people in Peel do with all that water each day? We only drink 1% of all the water we use. The list below shows the ways in which we use all this water at home.

- Flushing the toilet - 28%
- Washing our clothes -23%
- Showering and bathing 19%
- Sinks -15%
- Leaks -10%
- Baths 3%
- Dishwasher 2%

Water Smart Peel (www.watersmartpeel.ca) is the Region of Peel's Water Efficiency program. The goals of Water Smart Peel are:

- To provide information on water use to residents and businesses
- To encourage water efficient practices through incentives (like toilet rebates)
- To reduce by 10% individual daily water consumption, by 2015.

Have students use the worksheets below to record and then chart their families' water consumption at home, first individually then as a class.

Materials:

- Student work sheets (below)
- 2 Litre measuring cup/pitcher
- Watch
- Pencil

The source of the student worksheets that follow is York Region's *Water for Tomorrow* resource.

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"Familiar" Habits

People use a lot of water in their day-to-day activities!

Find out how much your family uses by doing a survey of every member in the household (pets excluded).

To get an idea of the amount of water your family consumes on an average day, start by asking everyone how many times they did something that needed water.

Fill in the chart below.

Then add up the totals for the whole family and write them in the space underneath.

To find out how your family's water USAGE translates into VOLUME, complete the activities on the next page...

Usage	Number of Times	Family Members				
		1	2	3	4	5
Toilet	Flushes					
Showers	Length (Minutes)					
Dishes in Sink	Fill					
Dishes in Dishwasher	Cycles/Day					
Laundry	Cycles/Day					
Exterior Use	Avg. Min./Summer Day					

Total Number of Toilet Flushes _____ Total Dishwasher Cycles _____

Total Length of Showers _____ Total Laundry Cycles _____

Total Number of Sinks Filled _____ Total Minutes of Exterior Use _____

Assessing Volumes

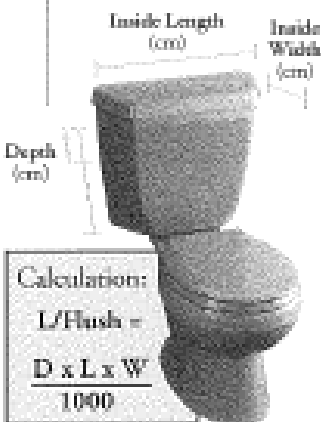
Now that you have recorded your family's water usage patterns, you need to calculate the volume of water for each house fixture...



Toilet

Determine the average water use per flush by measuring the amount of water in your toilet tank. Follow these simple steps:

1. Take off the toilet lid. Make a little mark (with a "permanent" marker) on the inside of the tank at the current water level. Flush the toilet and watch carefully how far the water level drops. Make another mark at that level. Measure the distance between the two marks to get the Depth (cm) needed for the calculation.



2. Using your tape measure, determine the Inside Length and Inside Width of the toilet tank.

3. Following the calculation shown in the illustration, you are now ready to figure out how many Litres per Flush your toilet uses.

Shower

For this exercise, you will need a watch or clock that has a "seconds" indicator and a 2 litre pitcher. Turn the shower on to a full flow. Watching your clock for 15 seconds, hold the pitcher under the shower to measure the amount of water, in litres, that fills the pitcher. Then, multiply your result by 4 to obtain the flow rate in Litres/minute.

Dishes in Sink

To find out how many litres it takes to fill your sink, take the same measurements as described for the toilet. Using the same math exercise (Depth x Inside Length x Inside Width ÷ 1000) will give you the volume, in litres, of the sink.

Dishwasher/Laundry

You'll have to do some research to determine the Litres/cycle for these two appliances. Read any product literature/operating manuals that you may have at home. Or, with your parents' permission, take down the make and model numbers and call an appliance store or the manufacturer to get the information.

Exterior Hose Bib

Repeat the instructions of the "Showers" exercise.

Fixture	Volume
Toilet	L/flush
Showers	L/min
Dishes in Sink	Litres
Dishwasher	L/cycle
Laundry	L/cycle
Exterior Hose Bib	L/min

How You Measure Up

You have now determined how often you use water in your household and the volume of water each fixture uses.

Use those totals to determine your typical daily water consumption!

Usage	No. of Times \times	Litres of Water \oplus	TOTAL LITRES
Toilet	<input type="text"/> flushes/day	<input type="text"/> L/flush	
Showers	<input type="text"/> min/day	<input type="text"/> L/min	
Dishes in Sink	<input type="text"/> sinks/day	<input type="text"/> L/fill	
Dishes in Dishwasher	<input type="text"/> cycles/day	<input type="text"/> L/cycle	
Laundry	<input type="text"/> cycles/day	<input type="text"/> L/cycle	
Exterior Use	<input type="text"/> min/day	<input type="text"/> L/min	

Based on your Total Consumption, calculate the Amount Consumed per Person (per capita consumption).

$$\div$$

TOTAL
CONSUMPTION

PER CAPITA
CONSUMPTION

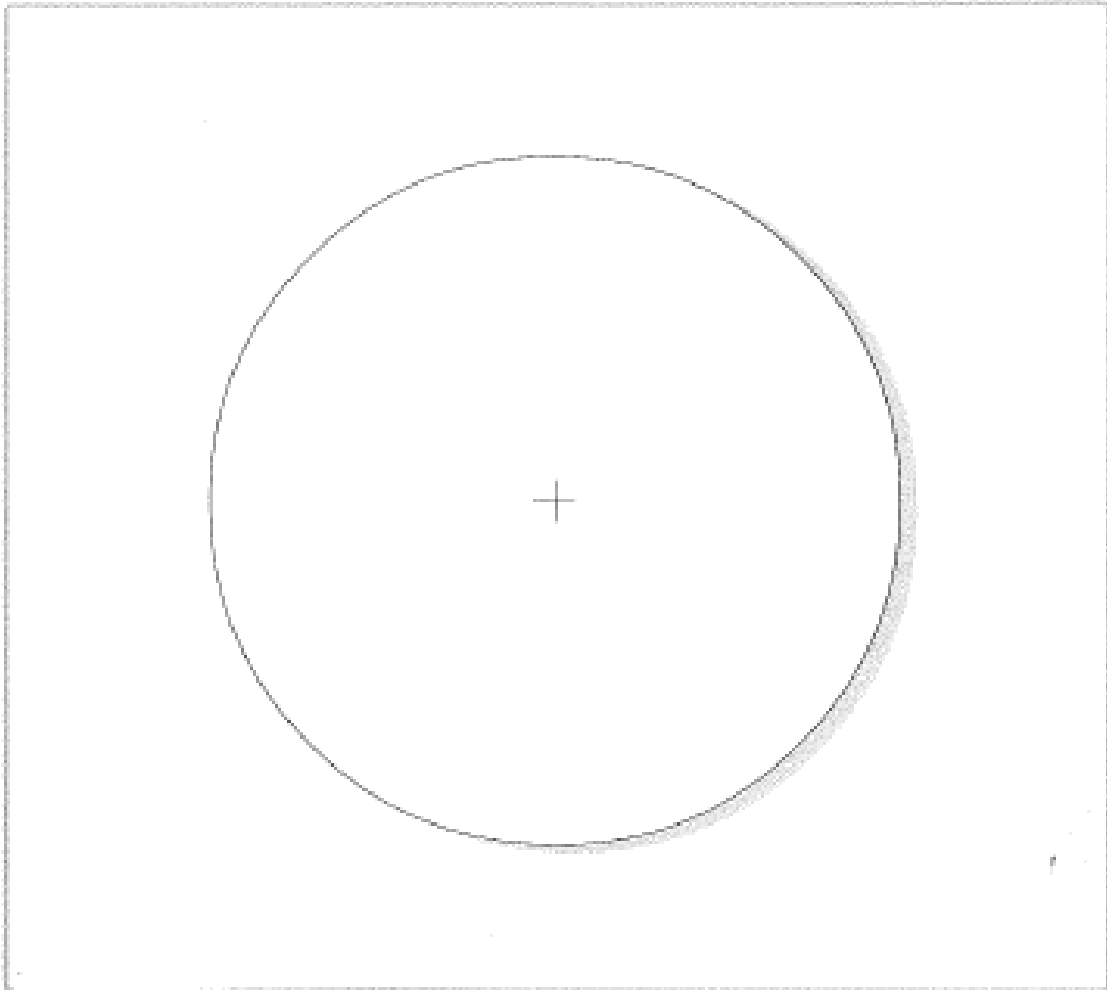


Charting Water Use Data

Based on your family's typical daily water consumption, determine the percentage breakdown for each water usage (see previous page) and plot the numbers in a pie chart.

Use different colours to indicate each water use category.

Create a legend around the pie chart, clearly labelling the categories and their applicable percentages.



Charting Water Use Data

Using the total daily water consumption figures for each family in the class, plot those values on the graph below.

Using a different colour marker, draw a dashed line on the graph indicating the **AVERAGE** consumption of water (Litres per Day).

Total Number of Audits

Total Consumption



AVERAGE CONSUMPTION

