EXTRA MISSION 07

Fantastik'eau

I love water. I take care of it!

IN HOT WATER

CYCLE 2

C.I.EAU Centre d'interprétation de l'eau

Québec

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STUDENT WORKBOOK
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BACKGROUND

Wasteful Wally steps under the shower and turns on the tap. Woah! The water is much too cold! He moves away and waits for the water to heat up. Conscious Charlie wonders how much water is wasted each time we want hot water. Do you know how to calculate it? Aqua-Mary might have an idea ...

THIS IS A JOB FOR **THE FANTASTIK'EAU CREW!**

DO THIS ACTIVITY WITH JÉRÉMIE

Watch the short video featuring Jérémie, and do the activity with him! All of the Fantastik'eau content and videos are available on the C.I.EAU's website at:

www.cieau.org/fantastikeau

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YOUR MISSION

Let's calculate how much water we waste every time we leave it running until it becomes hot.

WARNING

Hot tap water can cause burns. The risk of burns depends on the water temperature, the settings of the hot water tank, the duration of the exposure, and the skin's resistance to heat.

CRYSTAL CLEARWATER : To calculate the water's temperature from one room to another, use a thermometer. To better compare your data, make sure you reach the same temperature each time.

You can set a limit at 37 °C (98 °F), which is equal to the average temperature of the human body.

Be careful with the heat of the water!

INSTRUCTIONS

Take a large bucket. Put it under a tap in your home, for instance, in the kitchen. Turn on the hot water, and collect all the water that falls into the bucket until the water is hot. You can test this in different rooms of your home or at school.

OBSERVATIONS

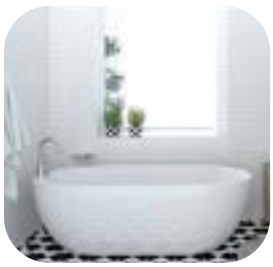
What volume of water did you collect with the different taps you tested?

ROOM	VOLUME OF WATER WASTED

Kitchen

Shower

Bathroom



Bathtub

Half bathroom

Garage

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CONCLUSION

In what room of the house do you waste the most water before it becomes hot? Why is that, in your opinion?

USEFUL TO KNOW

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DIVING DEEPER

We just calculated how much water is lost each time we leave it running until it gets hot. Now, the Fantastik'eau Crew invites you to launch an investigation into your family's general water consumption. Fill out the Water Expert's Report and make recommendations! Can you and your family follow them for an entire year?

DIRECTIONS

Fill out the Water Expert's Report using the "Average Amount of Water Consumed Based on Uses" table, which is found on page 146. You will find a list of the various actions that require the use of drinking water on a daily basis.

Before calculating your family's actual water consumption, form an hypothesis. How many liters of water do you assume your family consumes everyday ?

DAY 1 : Calculate your family's actual daily water consumption.

To do so, find the activity in the "Average Amount of Water Consumed Based on Uses" table.

Determine whether the water use was regular or economical during the activity.

Write down the number of litres per use for this activity in the "average consumption (L)" column of your Water Expert's Report.

In the "frequency" column, indicate how many times the activity takes place during the day.

Afterwards, multiply the "average consumption (L)" required to do the activity by the "frequency." Enter this value in the "Partial Total" column.

Add the partial totals; this global total is your family's actual daily water consumption.

JÉRÉMIE : If you identify an action that is not found in the "Average Amount of Water Consumed Based on Uses" table, you can estimate the amount of water consumed based on other similar actions.

DAY 2 : Recalculate your family's water consumption after behaviours have been changed according to your recommendations.

WATER SAVINGS ACHIEVED : To calculate the water saved, subtract the total water consumption of Day 2 from the total water consumption of Day 1.

CRYSTAL CLEARWATER : Every person only needs two litres of water a day to properly hydrate his or her body. However, we need much more water to meet what we consider to be our daily needs.

WALTER : Our drinking water is so easily accessible that we rarely pay attention to the amount we consume. That's why we waste so much of it! Elsewhere in the world, many people only have a few litres of water a day to meet their needs.

CRYSTAL CLEARWATER : In Québec, the average residential consumption of water is 268 litres per person per day. That's huge! It's even more than the Canadian average, which is estimated at 235 litres per person per day.

AQUA-MARY : Did you know that some Europeans consume a lot less water than here in Québec? And yet, their quality of life is similar to ours. They waste less water because they must pay for their water based on the quantity they consume. Water meters also have their disadvantages, but they do avoid waste!

Cycle 2

EXTRA MISSION 07

WATER EXPERT'S REPORT

My consumption of drinking water — **DAY 1**

Changes made to my consumption — **DAY 2**

WATER SAVED (L)

ACTION		DAY 1 frequency	DAY 1 average consumption (L)	DAY 1 PARTIAL TOTAL (L)	DAY 2 frequency	DAY 2 average consumption (L)	DAY 2 PARTIAL TOTAL (L)	WATER SAVED (L)
BATHROOM								– TOTAL DAY 1 / TOTAL DAY 2 = SAVINGS (1 L)
Washing	Bath							
	15-minute shower							
	5-minute shower							
Brushing teeth	Tap on while brushing							
	Tap off while brushing							
Washing hands	Tap on							
	Tap off while lathering							
Using the toilet	Flushing							
KITCHEN								
Drinking cold water from the tap	Letting water run until it's cold							
	From a pitcher in the fridge							
Preparing meals	Washing vegetables							
Washing dishes	Dishwasher half-full							
	Dishwasher full							
	Handwashing							
ELSEWHERE IN THE HOUSE								
Washing clothes	Half-full load	2x	87 L	174 L				174 - 87 = 87 L
	Very full load				1x	87 L	87 L	
Leak	Toilet leak found							
	Tap leak found							
OUTDOORS								
Washing car	With a hose	2x	375 L	750 L				750 - 48 = 702 L
	With a bucket and sponges				2x	24 L	48 L	
Watering grass	Automatic watering system							
	Hose with gun							
	Watering done by hand							
OTHER INDOOR USES								
OTHER OUTDOOR USES								
			TOTAL			**TOTAL**		

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AVERAGE AMOUNT OF WATER CONSUMED BASED ON USES

		REGULAR USE		ECONOMICAL USE	
ACTION	Means	Description	Number of LITRES (L) per use	Description	Number of LITRES (L) per use
BATHROOM					
Washing	Bath	Tub quite full	150	Tub 1/3 full	50
	15-minute shower	Regular shower head	210	Low-flow shower head	85
	5-minute shower	Regular shower head	70	Low-flow shower head	30
Brushing teeth	Tap on while brushing	Without faucet aerator	17	With faucet aerator	9
	Tap off while brushing	Without faucet aerator	4	With faucet aerator	2
Washing hands	Tap on	Without faucet aerator	8	With faucet aerator	4
	Tap off while lathering	Without faucet aerator	5	With faucet aerator	3
Using the toilet	Flushing	Traditional toilet	13	Recent toilet	6 or 4,8
KITCHEN					
Drinking cold water	From the tap	Letting water run until cold	4	Pitcher in fridge	1
Preparing meals	Washing vegetables	Under running water	5	In a bowl of water	2
Washing dishes	Dishwasher	Regular cycle	38	Eco cycle	16
	Handwashing	Under running water	45	In a bin	30
ELSEWHERE IN THE HOUSE					
Washing clothes	Washer (washing machine)	Traditional washing machine	87	Front load (or water efficient) washer	57
Leak	Toilet leak	Active leak, one day	550	Leak repaired	0
	Tap leak	Active leak, one day	50	Leak repaired	0
OUTDOORS					
Washing car	With a hose	Traditional hose	375	Pressure washer	120
	With a bucket and wash mitts	Rinsing with hose	70	Rinsing with bucket	24
Watering grass	Automatic watering system	For one hour	500	For 15 minutes	125
	Hose with gun	For 30 minutes	250	Only on flowers/fruits/ vegetables	100
	Manually, with watering can	Ten loads (5 L)	50	From a barrel of rainwater	0

Note : *These consumption values are approximate. They will vary greatly based on the hypotheses advanced or the methods used. Some values were also rounded to simplify your calculations.*

EXCERPT FROM:

Fantastik'eau! I love water, I care for it! :
The Fantastik'eau educational package: Complete Guide, 2nd edition

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CREDITS

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The full list of people who contributed to the project (employees, volunteers, contract workers) is displayed on the C.I.EAU's website.

Collaboration—education: Virus 1334, Le Récit
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The following is a list of books, websites, pages, and publications dealing directly with the subjects covered in the Fantastik'eau educational package.

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Fantastik'eau

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