



## ACTIVITY: The Water Cycle

🕒 2 DAYS / 1 HOUR+

### Overview

Water is found everywhere! A clear, fluid, liquid that is a key component of our environment, and essential to life of all living things. Within the water cycle, water is found in 3 different states, solid, liquid, and gas. Water exists in its liquid state on the earth's surface in our oceans, lakes, wetlands, ponds, rivers, streams, as soil moisture, along with underground sources including aquifers. In our daily lives, examples of water are everywhere including wells, water treatment plants, holding tanks, cisterns, and in our homes through pipes, sprinklers, hoses, and taps. In our atmosphere, water exists in solid (snow/hail), liquid (rain), and gas states (water vapour). This activity explores the different components of the water cycle.

Did you know? 97% of the Earth's water is stored within our Oceans (as saltwater), but only 3% of Earth's water is freshwater (the water we drink)! Nearly 75% of our freshwater is stored in glaciers and ice sheets, with the remaining freshwater (~24%) stored in groundwater as aquifers, and in soil moisture. The rest is found in our rivers, lakes, and in the atmosphere.

#### Files

[Water Cycle Diagram](#)<sup>1</sup>  
[Worksheet](#)<sup>2</sup> / [Answer Key](#)<sup>3</sup>

#### Materials

- Pencils, Markers, Crayons, Pens
- Ice Cubes & Cups

### Objective

Upon completion of this activity, students should have an understanding of the different sources of water within the environment and be able to distinguish between water in its different states (solid, liquid, gas), and identify the different states of water throughout the water cycle.

### Activity

Introduce the concept of water as a clear liquid, that takes the form of whatever container it's in – whether it be a cup to drink, or a riverbed, or a lake. Have students consider that water is more than just a liquid, but can also be a solid, or a gas and draw on some examples from the *Overview*.

<sup>1</sup> Water Cycle Diagram:  
[sknowledge.ca/files/theme/Worksheet\\_SkNOWLEDGECO\\_WaterCycle-Diagram.pdf](https://sknowledge.ca/files/theme/Worksheet_SkNOWLEDGECO_WaterCycle-Diagram.pdf) 

<sup>2</sup> Water Cycle Worksheet:  
[sknowledge.ca/files/theme/Worksheet\\_SkNOWLEDGECO\\_WaterCycle.pdf](https://sknowledge.ca/files/theme/Worksheet_SkNOWLEDGECO_WaterCycle.pdf) 

<sup>3</sup> Water Cycle Answer Key:  
[sknowledge.ca/files/theme/Worksheet\\_SkNOWLEDGECO\\_WaterCycle\\_AnswerKey.pdf](https://sknowledge.ca/files/theme/Worksheet_SkNOWLEDGECO_WaterCycle_AnswerKey.pdf) 

## Part 1

- Place several ice cubes into a cup, the ice cube is water in its solid state. Leave the ice cubes in the cup, then proceed with the rest of the lesson.
- Using a mind map, brainstorm with students all the different ways that they use and interact with water in their daily lives. Consider things such as drinking, plant growth, habitat for fish and other wildlife, hygiene (like brushing their teeth, showering, washroom), recreation (swimming, skating, skiing, snowshoeing), checking the weather (rain, snow), food consumption (irrigation, water in the food they eat), and even water in the human body (saliva, urine, blood, organs). Did you know that on average 60% of the human body is water?
- Based on the idea's generated in the brainstorming activity, have students identify the state of water in each (e.g. swimming uses water in its liquid form, skating uses water in its frozen or solid state, breathing uses water in its gaseous state).
- Have students reflect on how much water they use in a day based on the activities that they described. Did you know that the average Canadian uses 335L of water per day! That's the equivalent of 670 single serve (500ml) water bottles!
- But where does all of this water come from? Introduce the water cycle as a system to the class using the provided vocabulary and a diagram of the Water Cycle (Appendix 1 /2).
- Go back to that ice cube that you placed in a cup at the start of the lesson. Discuss the change of state from the ice cube from frozen (solid state) to liquid state. Leave the melted ice cube in the cup for the next few days, eventually all the water will evaporate, leaving nothing left in the cup. We'll revisit this in Part 2.

## Part 2

Once students are comfortable with the terminology, provide each student a copy of the Water Cycle Worksheet. Using the word bank provided on the worksheet, have students fill in the blanks with the correct terminology, and colour-in the water cycle diagram text boxes using three different colour to identify where they would find water in its solid, liquid, and gaseous state. Revisit the ice cube from Part 1, has all of the water evaporated entirely? Discuss the transformation from liquid to gas. Where did the water go? It's now water vapour – in the air that we're breathing!

## Sample Reflection Questions

Question	Responses
Why does water change its state?	Temperature (energy!) – as particles heat up, they have more energy and expand (e.g. water vapour), and as particles lose heat, they have less energy, slow down, and become cooler (e.g. snow)
Where do you find water in the natural environment?	Lakes, rivers, streams, aquifers, clouds, ice, snow, glaciers, icebergs
Where do you find water in your home?	Taps, toilet, sink, hose, plants, fridge, garden, driveway
Water is essential to all living things, what can we do to conserve, and protect our water resources?	<ul style="list-style-type: none"><li>• Turning off taps when not in-use</li><li>• Efficient fixtures</li><li>• Not putting chemicals into streams, lakes, storm drains</li><li>• Reduce impermeable surfaces</li></ul>

# Curriculum Connections

The Ontario Curriculum, Grades 1-8, Science and Technology

**Grade 2: Understanding Earth and Space Systems / Air and Water in the Environment**

*2. Developing Investigation and Communication Skills:*

2.4 Investigate the states of the water cycle.

2.5 Investigate water in the natural environment

2.6 Use appropriate science and technology vocabulary in oral and written communication

*3. Understanding Basic Concepts*

3.4 Identify sources of water in the natural and built environment

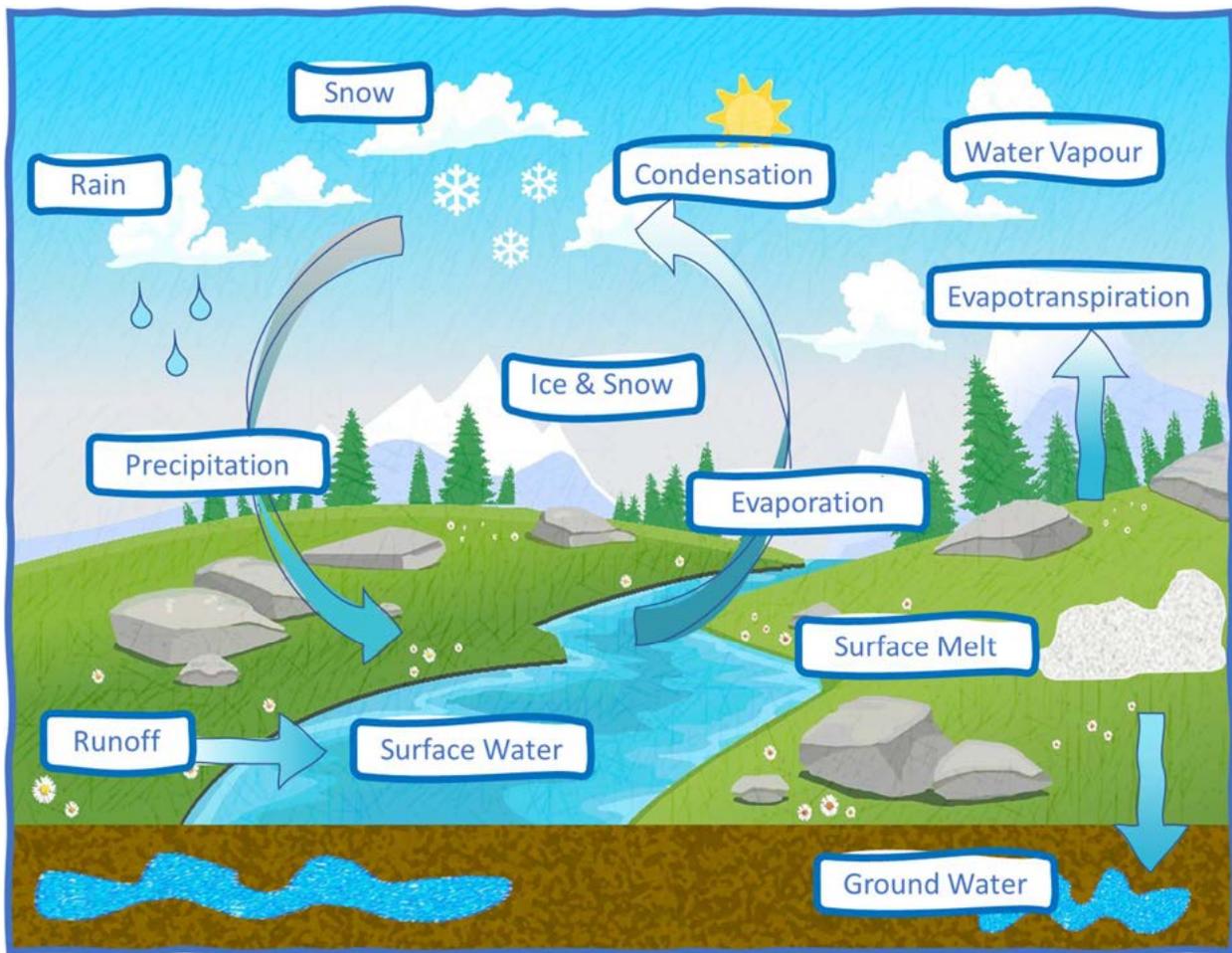
3.5 Identify the three states of water in the environment. Giving examples of each.

**Grade 8: Understanding Earth and Space Systems / Water Systems**

*3. Understanding Basic Concepts*

3.1 Identify the various states of water on the earths surface

# Appendix 1: The Water Cycle Diagram



For a more comprehensive water cycle diagram, visit [USGS Water Cycle for Schools](#)

For an interactive tool of the water cycle, visit [Water Cycle for Schools – Beginner Ages](#)

## Appendix 2: Vocabulary

WORD	DEFINITION
<b>Precipitation</b>	Water vapour that condenses in the atmosphere, then falls to the Earth's surface as rain, snow, or hail.
<b>Snow</b>	Water vapour that condenses directly into ice, skipping the liquid form. Clusters of ice crystals combine and fall from the atmosphere as solid precipitation.
<b>Rain</b>	Water vapour that condenses in the atmosphere to form liquid precipitation.
<b>Hail</b>	Water vapour that condenses in the atmosphere to form small ice pellets.
<b>Evaporation</b>	Transformation of liquid water into water vapour (gas).
<b>Evapotranspiration</b>	Transformation of liquid water into water vapour (gas) from plants and the land surface, such as soils.
<b>Condensation</b>	Transformation of water vapour (gas) to liquid form.
<b>Water Vapour</b>	Water in its gaseous form.
<b>Ice</b>	Water that has transformed into a solid state and is frozen.
<b>Glacier</b>	A mass of ice that originates on land, usually larger than 1/10 <sup>th</sup> of a km <sup>2</sup> that has moved at sometime, either past or presently.
<b>Permafrost</b>	Frozen ground. A layer of soil or rock beneath the Earth's surface that has been below 0°C for several years.
<b>Runoff</b>	Water that flows across the land, and ends up in water reservoirs like rivers, lakes, and oceans.
<b>Surface Melt</b>	Transformation of water from its solid form (e.g. snow, hail, ice) to a liquid form on the landscape.
<b>Groundwater</b>	The accumulation of liquid water below the Earth's surface that has infiltrated the soil and sub-surface rock (e.g. aquifers).
<b>Surface Water</b>	Liquid water that is stored on the earth's surface in reservoirs such as streams, rivers, lakes, and oceans.

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<sup>4</sup> National Snow and Ice Data Center [Cryosphere Glossary](#) 

<sup>5</sup> NASA [Precipitation Education](#) 

<sup>6</sup> USGS School at Home: [Water Cycle](#) 