

WATER FOR ME, PLEASE!



Feeling thirsty? Why not have a big glass of cold water? Water costs nothing, contains no calories and is essential to our survival. Like other healthy lifestyle choices, drinking water regularly is a habit that should be encouraged in youngsters. Children should drink water, instead of other beverages that are loaded with added sugar and calories, every day.

Curriculum links

- Health and Physical Education: Healthy Living
- Science and Technology: Life Systems
- Science and Technology: Earth and Space Systems

Learning objectives

- understand that we need water to survive
- discover why our bodies lose water and how to rehydrate
- realize that some drinks contain a lot of added sugar

Learning methods

- estimating the quantity of water on the Earth
- estimating the quantity of water in the human body
- estimating how much water a human being needs
- estimating how much sugar various drinks contain



Materials

- copies of the Water for Me, Please! activity sheet below (1 per student)
- blue crayons or pens (1 per student)
- 4 water estimating stations

Pre-activity: set up water estimating stations

Before beginning the activity, assemble the supplies needed and set up the four water estimating stations on tables or desks. Position the stations around the classroom. Use transparent, disposable plastic glasses (250 ml size)

Station 1

- Globe (Earth)
- 4 glasses
 - 1 empty glass
 - 1 glass of water, one-quarter full and labelled 25%
 - 1 glass of water, one-half full and labelled 50%
 - 1 glass of water, approximately three-quarters full and labelled 70%
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 1: Water on Earth

Question: How much water is there on the Earth?

Station 2

- 4 glasses
 - 1 empty glass
 - 1 glass of water, one-half full and labelled 50%
 - 1 glass of water, two-thirds full and labelled 65%
 - 1 glass of water, three-quarters full and labelled 75%
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 2: Water in my body

Question: How much water is there in my body?

Station 3

- 8 glasses filled with water
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 3: The water I need

Question: How much water should I drink every day?

Station 4

- 1 bottle of water
 - Pour 250 ml of the water into a glass and put the glass in front of the water bottle
- 1 container of juice
 - Pour 250 ml of the juice into a glass and put the glass in front of the juice container
- 1 can of soft drink
 - Pour 250 ml of the soft drink into a glass and put the glass in front of the soft drink can
- 3 sugar bowls
 - 1 empty sugar bowl
 - 1 sugar bowl containing 5 tsp white sugar (write the number of teaspoons of sugar on the bowl)
 - 1 sugar bowl containing 10 tsp white sugar (write the number of teaspoons of sugar on the bowl)
- A piece of cardboard indicating the number of the station, its name and the question for students to consider at this station:

Station 4: Drink well

Question: How much sugar is there in a cup of water, a cup of orange juice and a cup of soft drink?

Instructions

Introduction

1. On the board, write the words Water, Food and Oxygen. Read the words out loud and ask students to identify which of these three elements is the most important for the human body. Carry out a survey. Read each of the words out loud, asking students to vote for each one by raising their hands.
2. Explain that all three of these elements are vital for humans: we need them all to survive. Oxygen is the most important element. We can survive for only a few minutes without oxygen.

Water is the second most important element. We can survive for only a few days without water. Because we lose water every day through normal activities, it is important to keep replacing it. Food is the third most important element. We can survive for only a few weeks without food.

Water estimating stations

1. Explain to students that through this activity they will find out why water is important and how to make sure we get enough water every day. To do this, they will visit four water estimating stations.
2. Give each student a copy of the Water for Me, Please! activity sheet and tell them they are responsible for recording their estimates in the appropriate spaces. Divide the class into four groups.
3. Before beginning the activity, explain what they will be doing at each station.

Station 1: Water on Earth

Question: How much water is there on the Earth?

Using the globe, explain that blue represents the water on the Earth. Each glass represents the Earth. Students must choose the glass they think represents how much of the Earth's surface is covered with water. If they think half the Earth is covered with water, then they should choose the glass half full. Students then record their estimates on the activity sheet and colour in blue the part of the Earth they think is covered with water.



Station 2: Water in my body

Question: How much water is there in my body?

Explain that each glass represents a child's body. Students must choose the glass they think represents the proportion or amount of water in their bodies. For example, a student who thinks that half the human body is made up of water would choose the one-half full glass. They should record their estimates on the activity sheet and colour in blue the part of the human body they think is made up of water.

Station 3: The water I need

Question: How much water should I drink every day?

Explain that each glass contains a cup of water. Students must think about how many glasses of water they need to drink every day to rehydrate their bodies and replace lost water. Students then record their estimates on the activity sheet by colouring in blue the number of glasses of water they think they should drink every day.

Station 4: Drink well

Question: How much sugar is there in a cup of water, a cup of orange juice and a cup of soft drink?

Explain that each sugar bowl contains a different quantity of sugar. Students must guess the quantity or amount of sugar there is in each type of drink. They then record their estimates on the activity sheet by colouring in the number of teaspoons of sugar they think each drink contains.

4. Assign each group to one station. Rotate the teams through all four stations at five-minute intervals.
5. With students back at their desks, discuss the results of their estimates, using the information below if necessary.

Station 1: Water on Earth

Approximately 70% of the Earth's surface is covered with water. Show the appropriate glass.

- 97% — or almost all — of the Earth's water is found in seas and oceans. It is salt water and is not potable, which means it is not drinking water. Pour almost all the water from the glass into a bowl, so that about 3% of the water remains in the glass.
- Only 3% of the water on the Earth is freshwater. This type of water is found in lakes and rivers, in glaciers and underground. Humans, other animals and plants cannot survive without freshwater. It is very precious and we must not waste it.
- Ask students to share their estimates. How many of them guessed correctly?

Station 2: Water in my body

The amount of water in the human body varies depending on a person's age. At birth, our bodies contain a lot of water: 75% of a baby's body is made up of water. Show the glass of water that is three-quarters full. As people get older, their bodies contain less water. Only 50% of an elderly person's body is made up of water. Indicate the glass one-half full of water. Finally, show the glass that is two-thirds full of water. Explain to students that approximately 65% of the body of someone their age is made up of water. This is because a young person's body still contains a lot of water.

- Water is transparent. It has no odour or taste. Water is essential to animal and plant life.
- We need water to survive because our bodies are made up mostly of water.
- Our vital organs — heart, lungs and brain — need water to function.
- Our blood consists mostly of water.
- Ask students to share their estimates. How many of them guessed correctly?

Station 3: The water I need

The amount of water we need to take in every day depends on our age, the temperature, our activity level and our health.

- Children your age should drink between 1 litre and 1.5 litres of water every day. Four cups make up 1 litre, and so they should drink between four and six large glasses of water every day.
- We lose water every day by sweating, breathing and when we go to the washroom. We need to replace this water by eating and drinking.
- We need to drink more water when we are active or hot.
 - Our bodies control their temperature by releasing water in the form of perspiration, or sweat. As the perspiration evaporates, our bodies cool down and our body temperature drops.
 - We need to drink water before, during and after taking part in moderate or vigorous physical activity.
- Feeling thirsty is one way that our bodies tell us we need more water.
- To prevent dehydration, we need to drink between four and six glasses of water every day, even when we are not feeling thirsty.
- The signs of dehydration are:
 - a feeling of thirst
 - tiredness
 - a headache
 - a lack of concentration
- Ask students to share their estimates. How many of them guessed correctly?

Station 4: Drink well

The best way to replace the water that we lose is to drink water. Water contains no calories and it quenches or relieves thirst.

- We can also drink other beverages, such as milk, juices and soft drinks to rehydrate our bodies. Some of these drinks contain nutrients that our bodies need. Here is one example.
 - Milk contains calcium and magnesium. These minerals are essential in the development of teeth and bones. In *Canada's Food Guide*, milk belongs in the milk and alternatives food group.
- Other drinks, such as juice, energy drinks and soft drinks, contain a lot of sugar and calories and they should be consumed in moderation (that is, only sometimes). Here are some examples.
 - Soft drinks contain very few nutrients but a lot of added sugar.

- Fruit and vegetable juices are rich in vitamins and minerals. They also have high levels of sugar and calories. The best choices are 100% fruit or vegetable juices. The recommended daily intake is half a cup (120 ml).
 - Show students the sugar bowls. Water contains no sugar. Show the empty sugar bowl. A cup (250 ml) of 100% orange juice contains the equivalent of 5 teaspoons of sugar. Show the sugar bowl that contains 5 teaspoons of sugar. A cup (250 ml) of soft drink contains twice as much sugar as orange juice: the equivalent of 10 teaspoons of sugar! Show the last sugar bowl.
 - Ask students to share their estimates. How many of them guessed correctly?
6. Take a survey of the group by asking students how many glasses of water they drank yesterday. Was that enough? If not, how can they be sure that they drink enough water? One idea is for each person to carry an individual water bottle or cup that they can refill at the water fountain at school. They can drink water with lunch. They can also drink water before, during and after taking part in sports or playing active games.

H₂O, my beverage challenge

Ask students, as a group, to set themselves an H₂O, my beverage (or water) challenge for the next 4 weeks (or other period of time). Ask them to think about the advantages of drinking water instead of other beverages (water is either free or costs little; it contains no calories and quenches thirst; water bottles or cups can be refilled at the water fountain at school). Here are some sample challenges for this theme:

- For the next X weeks, I will drink only water and milk during the day.
- For the next X weeks, I will drink [xx] glasses of water each day.
- For the next X weeks, I will carry a water bottle or cup all day, and drink as much water as I want.



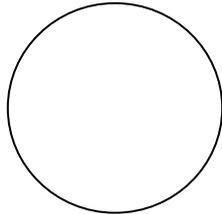
Name: _____

Date: _____

WATER FOR ME, PLEASE!

Station 1: Water on Earth

Question: How much water is there on the Earth?

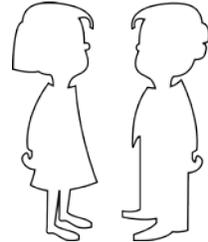


Colour in blue the part of the Earth you think is covered with water.

What percentage is indicated on the glass you chose?

Station 2: Water in my body

Question: How much water is there in my body?

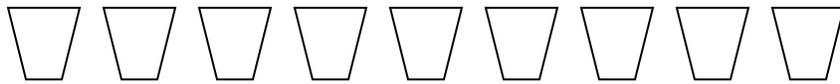


Colour in blue the part of the human body you think is made up of water.

What percentage is indicated on the glass you chose?

Station 3: The water I need

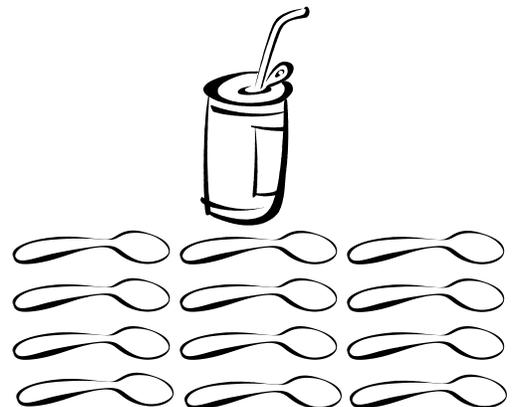
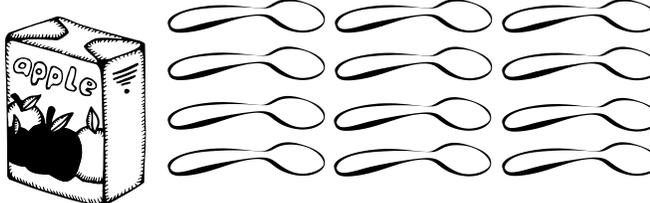
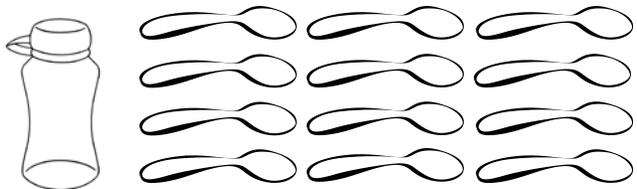
Question: How much water should I drink every day?



Colour in blue the number of glasses of water you think you should drink every day.

Station 4: Drink well

Question: How much sugar is there in a cup of water, a cup of orange juice and a cup of soft drink? Colour the number of teaspoons of sugar you think each drink contains.



DROUGHT OR DROWNING EXPERIMENT

Plants need four elements to survive: light, soil, air and water. In this experiment, students observe the effects of water on plants.

Curriculum link

- Science and Technology: Life Systems

Learning objectives

- learn about the effects of water on plant growth and development
- understand that water is vital to plant life
- realize that plants, just like humans, need water to survive and stay healthy

Learning methods

- performing an experiment to compare the growth and development of three groups of plants receiving different quantities of water
- establishing and verifying hypotheses
- compiling and analysing data



Materials

- 3 plants
- labels and markers
- watering cans
- measuring cups
- copies of the Drought or Drowning activity sheets (1 set for each student)

Pre-activity: set up water estimating stations

1. Take three plants of the same type and age. Bean plants that have been germinated in a pot on the windowsill can be used. Make sure that the plants are approximately the same size.
2. Label the first plant **Plant A**. Students will water this plant every day.
3. Label the second plant **Plant B**. Students will water this plant every Monday and Thursday.
4. Label the third plant **Plant C**. Students will never water this plant.

Instructions

1. Discuss the needs of plants with students. Explain that, just like humans, plants need air and water. They also need sunlight and soil. Why do plants need sunlight? They use sunlight to manufacture food. Ask students to explain how plants manufacture their own food. Depending on the age of students, go over what happens during photosynthesis, as follows.

During photosynthesis, plants use the sun's energy to transform water (absorbed by their roots) and carbon dioxide (absorbed by their leaves) into glucose, which is a form of sugar. As a by-product, plants give off oxygen into the air.

Explain that plants use the sun's energy to manufacture their food, a sugar called glucose. Plants use this food to build parts such as leaves, roots, flowers and tubers. These plant parts then become food for other organisms. If there were no plants to transform the sun's energy into chemical energy in the form of sugar, there would be no food for humans and other organisms.

Plants need soil to anchor their roots. What do they absorb from the soil through their roots? Water and nutrients such as minerals. Plants need water and nutrients to grow and make food.

2. Explain to students that they will be conducting an experiment to study the effects of water on plants. To do this, they must pretend to be scientists. Just like scientists, they will set out hypotheses and make observations. Distribute the Drought or Drowning activity sheets. Ask students to fill out the hypotheses pages by predicting what will happen to the plants.
3. Keep the three plants together, in a sunny spot where they will each receive the same amount of sunlight.
4. At the outset, depending on the size of the plants and the size of the pots, identify a quantity of water to be given to the plants. Put a container under the pots to catch any spillage.

5. Have students record their observations. Which of the plants grows best and fastest? Does anything happen to the structure and appearance of the plants? If you have a digital camera, photograph the three plants from the same position every day, noting the dates in a table or in a notebook. You should see a difference after two weeks.
6. At the end of the two-week period, ask students to compare what they predicted with what actually happened.
7. Discuss the results of the experiment, as follows.

Plant A has drowned.

A plant's roots need air. In slightly moist soil, there are small air pockets that let the roots breathe. In waterlogged soil, the roots can no longer breathe. They get sick and begin to rot. Plant A could no longer absorb nutrients and so it eventually died.

Plant B is healthy.

Plant B received the right amount of water to grow and develop normally.

Plant C has died from drought.

Plants sweat. They lose water every day through transpiration, just as humans lose water through perspiration! Transpiration allows plants to control their temperature and to manufacture food (photosynthesis: energy from the sun + water absorbed from the roots + carbon dioxide from the air = sugar and oxygen). Without water, Plant C became dehydrated and died of thirst and hunger.

Suggestions

For grade 1 students, predict the results of the experiment and set out the hypotheses as a group. Write the hypotheses on the board or on a large sheet of paper that all students can view together. Record students' observations on the board or on the paper. Students can also draw the plants at the beginning and at the end of the experiment and compare the drawings. Use the drawings to compile the data in the Table of Observations.



Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Hypotheses

A hypothesis is an assumption or a prediction made in answer to a question. Without knowing the real answer, we make a guess and predict the answer. We do so using the knowledge we have. We then conduct research or an experiment to determine whether our hypothesis was correct.

Predict the results of the experiment on the plants. Answer the following questions.

Question 1: What will happen to the plant if I never water it?

Hypothesis: I think _____

because _____

_____.

Question 2: What will happen to the plant if I water it twice a week?

Hypothesis: I think _____

because _____

Question 3: What will happen to the plant if I water it every day?

Hypothesis: I think _____

because _____

Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Table of Observations

Record or draw your observations in the chart.

Date	Plant A (never watered) Observations	Plant B (watered twice a week) Observations	Plant C (watered every day) Observations

Name: _____

Date: _____

DROUGHT OR DROWNING EXPERIMENT

Results of the Experiment

Were your hypotheses correct? _____

Why? _____



H₂O, MY BEVERAGE

Canada's Food Guide recommends that we drink water regularly. It's a great way to quench thirst and it is low-cost and calorie-free. Water helps our bodies to break down the food we eat, absorb nutrients effectively and eliminate what our bodies don't need. To avoid dehydration, we need to make sure we replace the water we lose every day.

Children age 6 to 9 should drink between 4 and 8 cups of water daily. It may seem a lot, but it is possible to drink this volume of water if we make a few small lifestyle changes. And don't forget that the food we eat also contains water.

Lunch box tips

Here are some ways to encourage your child to drink more water.

- Replace a juice box with a container of water
- Offer flavoured water (see recipe below)
- If you include a juice box, use 100% juice

Home cooking tips

- Freeze lemon and orange quarters, as well as berries, and add these to a glass of water instead of ice cubes. Your child can help you do this at home.
- Keep a pitcher of water in the refrigerator.
- Serve water or milk with meals, instead of juice or other sugar-heavy drinks.
- For sports practices and games, send along a "juicy" fruit or vegetable, plus a bottle of water with ice cubes, rather than a sports drink.
- Offer fruits and vegetables that have a high water content such as strawberries, watermelon, grapefruit, cantaloupe, apples, cucumbers, celery and tomatoes.

Additional information

Drinks other than water may help hydrate our bodies but can have a high percentage of sugar and calories. For children, limit sports drinks, vitamin water and energy drinks, which may contain caffeine and added sugars. **Instead, make sure your child drinks water before, during and after physical activity, and that he or she has access to a water bottle all day, particularly when the weather is hot.**



FLAVOURED WATER

Fruit juices, whether freshly squeezed or made from concentrate, all contain a considerable amount of sugar, so it is important to remember that these should be consumed in moderation. Homemade flavoured water makes a great replacement. Be creative and try different combinations of fruit, herbs and herbal teas!

Ingredients

water

at least 250 ml (1 cup) fresh or frozen fruit, in pieces

a few leaves of washed fresh herbs (mint, rosemary, basil or thyme)

Equipment

a large pitcher

Instructions

1. Put the solid ingredients in the pitcher.
2. Fill the pitcher with water.
3. Refrigerate the drink and leave it to steep for at least 4 hours.
4. Stir and serve.
5. As the water is used up, refill the pitcher with more water.
6. After three days, compost the solid ingredients, or use the fruit pieces in a smoothie.

Ideas for refreshing combinations

- Lime, orange, peach and blueberry
- Pineapple and strawberry
- Lemon, mint and ginger
- Melon, lime and mint
- Strawberry and kiwi
- Melon and cucumber
- Apple and a cinnamon stick
- Canned pineapple or mandarin oranges

