

ED5621 - Social Studies Toolkit
Change and the Physical Environment,
Consumption and Sustainability

Travis Allen
Jaime Mayer
Natalie Chappelle
Jean MacDonald
Stephanie Watson

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Toolkit Theme

This toolkit has been designed for two central purposes. The first is to better understand the interaction of the environment as it pertains to water and air, as well as the interaction of liquids and solids in the environment. The second purpose is to help students understand the importance of conservation and protection of the environment. We feel that due to rapidly advancing climate change it is imperative that students are provided with the opportunity to properly understand the natural resources (particularly water) that comprise the environment, their importance, and strategies which can be used to conserve them.

The only way for students to adequately understand these challenges is for teachers to have strong lessons and resources to utilize. A selection of resources has been provided throughout this toolkit to supply teachers with a variety of options ranging from art to literacy to online sources in order to teach well-rounded lessons that appease various learning styles. The final unit lesson culminates in a lesson which provides students with viable insight into water usage and strategies that they can utilize in order to help conserve water moving forward.

Curriculum Objective

This toolkit has been designed based on the New Brunswick provincial Social Studies “You and Your World” curriculum from Kindergarten to Grade 2. A link to the document can be found at:

<https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/Health-PhysicalEducation/YouandYourWorldK-2.pdf>

For this particular toolkit, the specific curricular outcomes pertain to the Grade 2 Unit 5 - Change and the Physical Environment. In particular, we have focused on:

2.5.1 describe how air and water interact in the environment and how these elements impact on people and places;

2.5.2 compare properties of familiar liquids and solids and investigate how they interact;

2.5.3 describe how people’s interactions with the environment have changed over time;

2.5.4 demonstrate an understanding of sustainable development and its importance to the future.

The Water Cycle

Art-Based Learning

Lesson Title: The Water Cycle (50 Minute Block)

Grade Level: Grade 2 Unit 5 (You and Your World)

Objective:

In this lesson, students will learn about the four stages of the water cycle with an interactive art-based activity. This learning activity addresses the Grade 2 Social Studies Curriculum Outcome 2.5.1 describe how air and water interact in the environment and how these elements impact on people and places. (New Brunswick Department of Education, 2005, p. 144)

Materials:

“The Water Cycle” activity sheet templates (see Appendix A)

White printer paper

Blue Cardstock

Yarn

Crayons & Markers

Glue sticks’

Single hole punch

Procedures:

Begin by speaking to the students about the four stages of the water cycle. (Evaporation, condensation, precipitation and accumulation (also referred to as collection)).

1. Evaporation: Energy from the sun heats up the surface of the Earth, causing the temperature of the water in our rivers, lakes and oceans to rise. When this happens, some of the water “evaporates” into the air, turning into a gas called “vapour”. Plants and trees also lose water to the atmosphere through their leaves.

2. Condensation: As water vapour rises up high into the sky, it cools and turns back into a liquid, forming clouds. This process is called “condensation”. Currents high up in the air move these clouds around the globe.

3. Precipitation: When too much water has condensed, the water droplets in the clouds become too big and heavy for the air to hold them. And so they fall back down to Earth as rain, snow, hail or sleet.

4. Accumulation (Collection): The fallen precipitation is then “collected” in bodies of water – such as rivers, lakes and oceans – from where it will eventually evaporate back into the air, beginning the cycle all over again. How it is collected, depends on where it lands. Some will fall directly into lakes, rivers or the sea, from where it will evaporate and begin the cycle all over again. If the water falls on vegetation, it may evaporate from leaves back into the air, or

trickle down to the ground. Some of this water may then be taken up by the plant roots in the earth. In cold climates, the precipitation may build up on land as snow, ice or glaciers. If temperatures rise, the ice will melt to liquid water and then soak into the ground, or flow into rivers or the ocean. Water that reaches land directly may flow across the ground and collect in the oceans, rivers or lakes. This water is called "surface run-off". Some of the precipitation will instead soak (or "infiltrate") into the soil, from where it will slowly move through the ground until eventually reaching a river or the ocean. And there you have it, gang – the ongoing water cycle! (Information on the four stages of the water cycle was retrieved from: <https://www.natgeokids.com/uk/discover/science/nature/water-cycle/>)

Bring out the Water Cycle Activity and explain to the children that they will be making their own water cycle mobiles to hang in their homes!

1. Students are to first color their 4 stages of the cycle and then cut them out. 2 sheets per student (sheet one has condensation and precipitation, sheet two has evaporation and accumulation).

2. Have students glue each of the stages onto their blue clouds (each student will receive four clouds) and have them fold each of their clouds in half and wait for the next instruction.

3. Once students have glued and folded the four stages of the water cycle, have them demonstrate their learning by sharing what order they will be gluing their clouds together in. (Show them an example of your already made mobile so they can visualize what theirs will look like when they are finished).

4. Once students have finished gluing their mobiles together, hand each student an arm length of yarn and hole punch one hole at the top of each mobile.

5. Have students thread their yarn through the hole and tie in a knot so they can hang them at home.

When students have finished, praise them on their good work and listening skills and ask them to share their mobiles and learning of the water cycle with their friends and family.

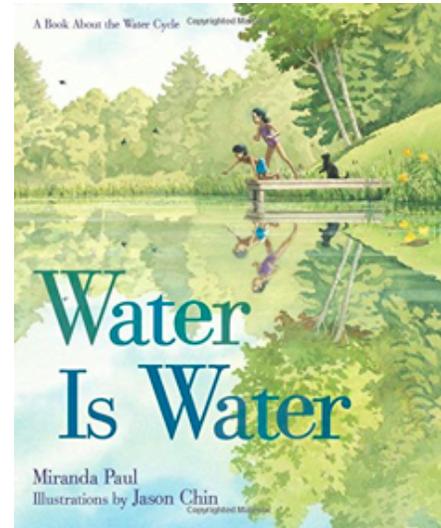
If some students finish early: Have them fill in and color the water cycle sheet (see Appendix B).

Water Cycle Storybooks

Water is Water: A Book About the Water Cycle

By: *Miranda Paul, illustrated by Jason Chin*

This story is about two siblings from a mixed-race family that engage in water-related activities throughout the year. It is written in a form of poetic exploration which explains the different shapes water takes. First seen exploring a pond behind their idyllic home, the boy and girl are driven indoors by a rainstorm and warm up with steaming mugs of cocoa on their front porch: "Drip. Sip./ Pour me a cup./ Water is water unless.../ it heats up./ Whirl. Swirl./ Watch it curl by./ Steam is steam unless.../ it cools high." From there, the book moves through the descriptions of the seasons as clouds become fog, which transitions to rain that gathers in puddles. In winter, the children and their friends skate on the frozen pond, and spring's return brings the story full circle. A closing section shares additional information about the water cycle, rounding out a story as enchanting as it is informative.



The following curriculum outcomes can be tied together with this story:

2.5.1 Students will be expected to describe how air and water interact in the environment and how these elements impact on people and places.

2.5.2 Students will be expected to compare properties of familiar liquids and solids and investigate how they interact.

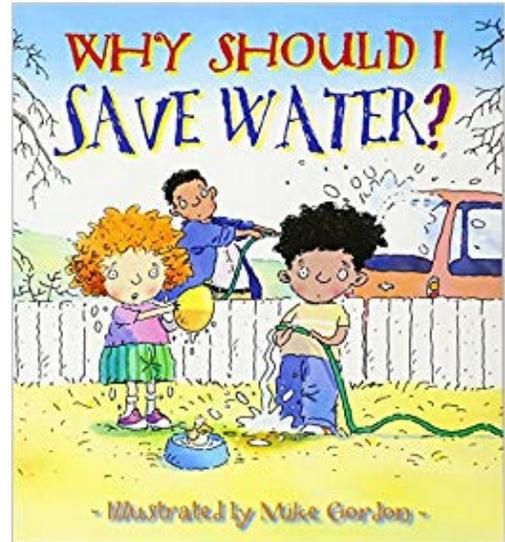
Why Should I Save Water?

By: Jen Green, illustrated by Mike Gordon

In this book children learn that clean water is one of our most precious natural resources. Throughout the story, boys and girls are told about dozens of ways in which they and their families can avoid wasting water. It is a transparent and to the point text offering the opportunity to open a dialogue with children about climate change and what small things we can do now to help the environment in the future.

This story can be used to reinforce the following curriculum outcomes:

2.5.4 Students will be expected to demonstrate an understanding of sustainable development and its importance to our future.

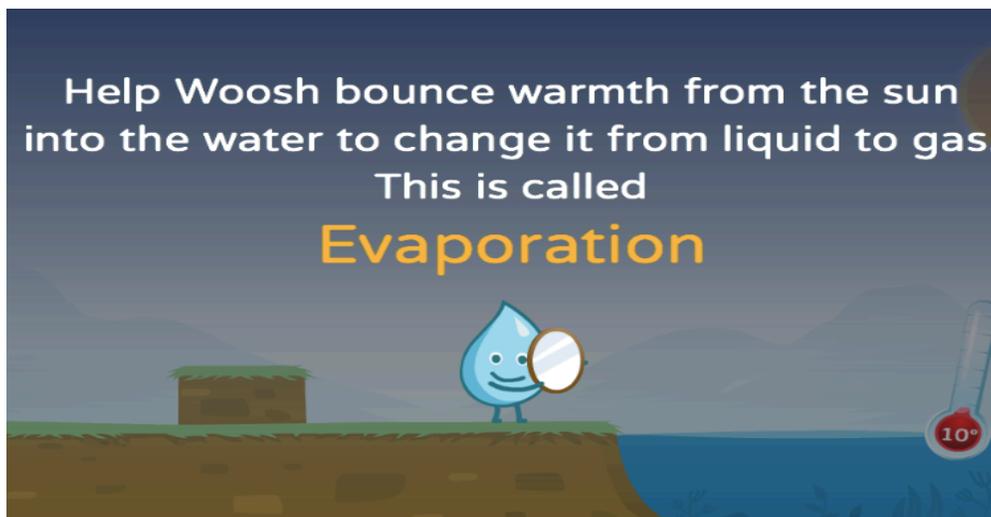


Online Resources

A Water Cycle Game about Where Water Comes From

Retrieved from <https://www.educationsoutheastwater.com.au/resources/natural-water-cycle-game>

Water cycle game that could be used as a resource to get children to understand the natural water cycle. This could be used as a game in class on the laptop or at home for a fun continuation game to continue learning. This water cycle game educates students on how evaporation, condensation and precipitation are made. It also gives interesting facts as well as talks about water runoff and how water returns to the ocean.



Sustainable Environment for Kids

Retrieved from: <https://www.youtube.com/watch?v=5ACfPVA-EE8>

This video was made by Grade 3 students and talks about how the children in the class are working with Eco Man to defeat Dump- It- Man to make the world a better place. This then teaches children about sustainable development or how you can "Go Green" in our lives through them within in the video. It shows the negative effects that not living with a sustainable mindset can have and how Eco Man can help us to work together to try to make the world a greener place. At the end of the video it also shows pictures that they children who created the video drew and where the ideas for the film came from. This is a great resource to help children see the negative effects that this can have on our lives if we do not try to help the environment and make it a better place for everyone to live in.



This video can be used to reinforce the following curriculum outcomes:

2.5.4 Demonstrate an understanding of sustainable development and its importance to the future

Note: The following two Peppa Pig videos can be used together to talk about recycling and composting in connection with how to live a sustainable life.

Composting for Kids With Peppa Pig

Retrieved from: <https://www.youtube.com/watch?v=8PEIbErayZg>

Within this video, Peppa Pig and her family learn about composting from her Grandfather. They bring their peelings and food scraps to his compost pile and then see how the worms help to turn these scraps into compost or soil for the garden which then helps to grow more fruits, vegetables, and flowers. They then go out looking for more things to add to the compost when they discover even apple cores can go into the compost pile as well. This can be a fun and simple way to explain how children can compost. From here the children can then talk about what they could compost. This could also lead into children starting to compost at home or even outside the classroom with scraps left over from their lunches everyday.



Peppa Pig and Recycling

Retrieved from: https://www.youtube.com/watch?v=Il1RX6_h9Xc

Within this video, Peppa Pig and her family learn about recycling when Peppa tries to throw out a glass bottle. They learn how certain things can be reused and only those things that we cannot reuse go into the garbage. Peppa then learns how to sort these from bottles, cans, and paper and then where to take them when they have their bins full of their recyclables. This can be used within the classroom in recycling cans, bottles, and paper. Once the children learn about this then can even bring things from home that can be recycled. If students were to bring in bottles and cans, these could then be returned for money at a depository. This could then tie into learning about those and with the children setting a goal and then the money they get from the bottles could go towards something in the classroom.



This video can be used to reinforce the following curriculum outcomes:

2.5.4 Demonstrate an understanding of sustainable development and its importance to the future

eSchool Today Online Resource

Retrieved from: <https://www.eschooltoday.com/waste-recycling/effects-of-poor-waste-management.html>



This website is a great online resource for both teachers, students, and parents. There are a lot of different topics covered on this website that can help children learn about the importance of a sustainable environment and how they can help in working towards this. As seen in the picture to the left, these are the topics that are covered on the website and can be accessed to help in learning about many different topics. This could be assigned as homework to help the children and parents learn more about this topic, or each of these sections could be set up as stations around the classroom to help children learn about these topics more in depth. Not only are these subjects covered, but there are also many other resources that can be found through this site to help teach this outcome as well such as climate change, waste water, natural resources, and so much more.

Some of the Other Topics Covered on the Website:



This website can be used to reinforce the following curriculum outcomes:
2.5.4 Demonstrate an understanding of sustainable development and its importance to the future

A Student's Guide to the Water Cycle

Retrieved from <https://www.youtube.com/watch?v=ncORPosDrjI>

3:08 YouTube video that asks "where rain comes from?" then explains in an animation how the water cycle works. This video would be the best to use at the beginning of the water cycle unit as it allows for kids to start thinking about where water comes from. This is also a very easy and intriguing animation for grade 2 students to watch and allows them to start thinking about water. This could be used



before an activity to demonstrate the steps of the water cycle: evaporation- first step of the water cycle, condensation- second step and precipitation- third step and produces rain, hail or snow. The video also touches on how the water process is a continuous cycle and also gives some fun trivia facts at the end of the video that can later be used in the unit.

National Geographic for Students

Retrieved from <https://www.natgeokids.com/za/discover/science/nature/water-cycle/>

A website put out by National Geographic for children and students to help further their understanding on the water cycle. This can be used for students who may be struggling with understanding the water cycle and can be adapted into the lesson as it clearly states with images how the water cycle works. Can be used at the beginning for students to get a brief understanding of the unit or can be given as an external resource for students struggling. Also provides a link to "becoming a water hero" which gives students 25 ways to help protect the planet and its water resources. Helpful for future lessons (such as culminating unit lesson) on how to conserve water and reduce carbon footprint in class as well as teach about sustaining a healthy environment.

NATIONAL GEOGRAPHIC KIDS

Earth has been recycling water for over 4 billion years...

Pour yourself a glass of water and take a sip. Did you know that the water you've just swallowed is the same water that woolly mammoths, King Tutankhamun and the first humans drank? That's because Earth has been recycling water for over **4 billion years!**

The world's water moves between lakes, rivers, oceans, the atmosphere and the land in an ongoing cycle called - you guessed it! - the **water cycle**. As it goes through this continuous system, it can be a liquid (water), a gas (vapour) or a solid (ice).

So, are all you budding young geographers ready to learn some splashing new facts? Then join **NG KIDS** as we take a look at the different stages of the wonderful water cycle...

An infographic from National Geographic Kids. It has an orange header with the text "Earth has been recycling water for over 4 billion years...". Below the header is a white box containing text about the water cycle. At the bottom of the infographic is a colorful illustration of the water cycle, showing a sun, clouds, rain, and a water droplet.

Indigenous Teachings About Sustainability

Retrieved From:

http://www.unesco.org/education/tlsf/mods/theme_c/mod11.html?fbclid=IwAR3xf_8bVMV3ZAboKnf1thb-TS9NuPa4x14o8j3QDEoLymgX3W4X7b4IPsl

Within this website (especially in Activity 4), there is a lot of knowledge that can be learned about all the different ways Indigenous Peoples can show us how to live a sustainable lifestyle through the ways they either are currently or have in the past. This also teaches a lot about the importance and the strong connection that these Peoples have with the Physical Environment and how important it is to protect what we have left. One of the examples they give on how to do this is through interviews with Indigenous People or Elders within your community. However, this would have to be done in a culturally appropriate manner that the teacher would have to look into to see how to ask them to come into the classroom. They can give the children a lot of information and knowledge from first-hand experience in their interactions with the physical environment. Children would love this within the classroom and would learn so much from someone who is very knowledgeable about the environment actually coming into the classroom to speak. There are also examples of questions that students could ask to help better understand this subject.

This website would be a little too advanced for Grade two, but this would be a great resource for teachers to use to gain knowledge themselves on this topic. From this they could then build off of the information provided by this website to then better teach their children on the Indigenous practices. And get ideas on how to teach the children about the People who discovered the land we live on and how the treated it.

Some examples of provided questions that were on the website that could be asked of the Elder are:

1. Garbage Disposal	2. Personal Hygiene	3. Purifying Water
Examples of traditional practices	Examples of traditional practices	Examples of traditional practices
Resources (e.g. herbs) used	Resources used	Resources used
Contemporary status	Contemporary status	Contemporary status

This website can be used to reinforce the following curriculum outcomes:

2.5.3 describe how people's interactions with the environment have changed over time; and
2.5.4 demonstrate an understanding of sustainable development and its importance to the future.

Culminating Unit Lesson

Lesson Title: Water Conservation and You (50 minutes)

Grade Level: Grade 2 Unit 5 (You and Your World)

Lesson Topic: Examining personal water consumption and ways that we can improve this consumption to help conserve water.

Objectives: By this time the students will have become familiarized with the key scientific concepts of water (2.5.1 *describe how air and water interact in the environment and how these elements impact on people and places* and 2.5.2 *compare properties of familiar liquids and solids and investigate how they interact*). The objective of this culminating lesson is to familiarize students with the social aspects of conservation based on the scarcity of resources (2.5.3 *describe how people's interactions with the environment have changed over time*) and develop individualized conservation strategies for water usage (2.5.4 *demonstrate an understanding of sustainable development and its importance to the future*). The idea is that everyone can make a difference, and by identifying where changes can be made, students can create a degree of accountability for their water consumption habits.

Materials:

- Average Daily Water Use worksheet (appendix C)
- Water Conservation Goals worksheet (appendix D)
- I Will Become a Water Conservation Hero worksheet (appendix E)

Procedures:

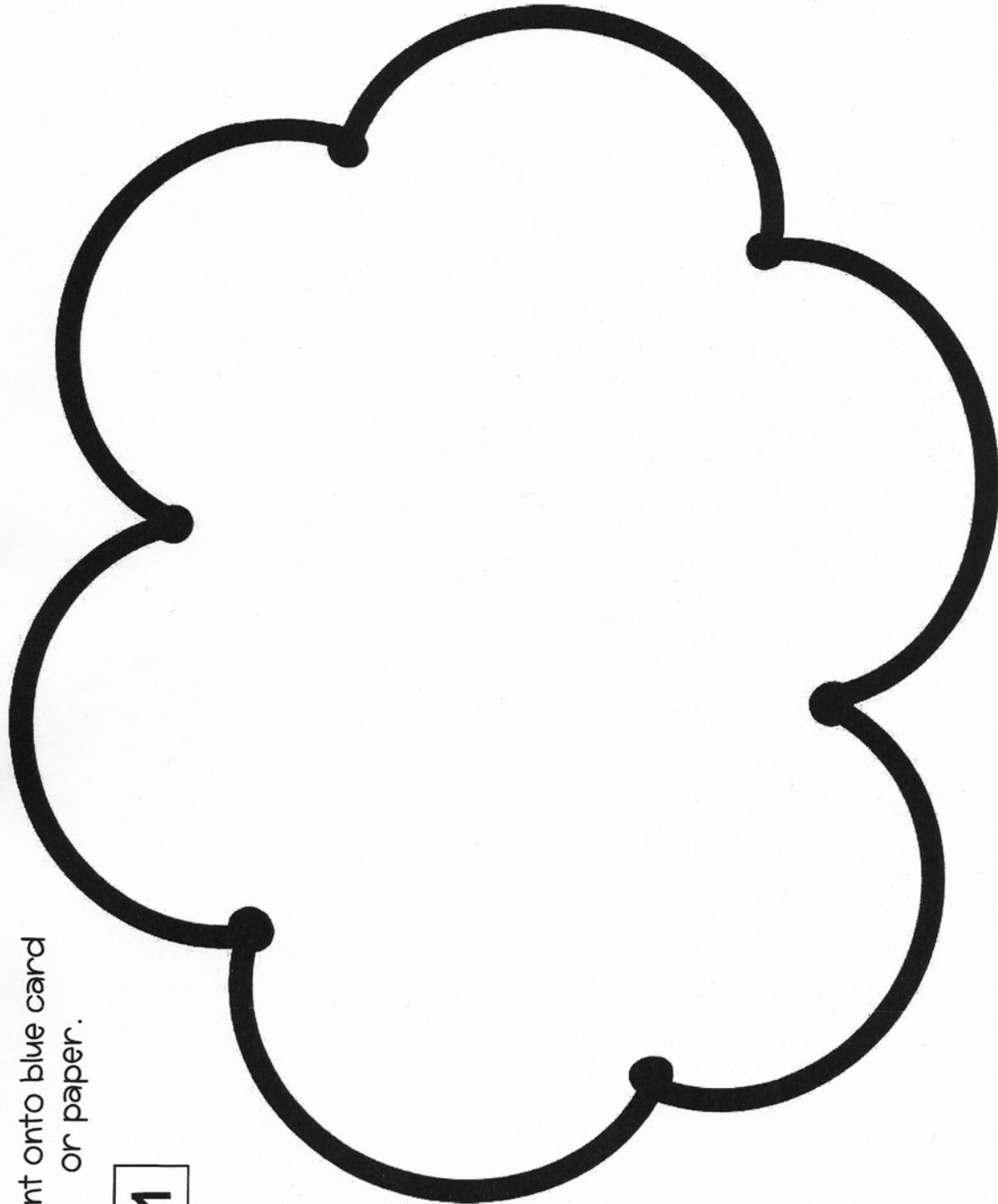
- Begin by crowdsourcing the class to obtain definitions of conservation and consumption. Discuss the idea that water is a finite resource required for daily life and tie it in with how human consumption is exceeding the amount of water we have, hence the need for conservation.
- Brainstorm ideas of how water is used at home. As a class, have students come up with five ways in which they use water daily. Record these ideas on the blackboard or SMART board so that the students have a reference point.
- Pass out the *Average Daily Water Use* worksheet and have the students fill it out according to their usage. Stress that it is important that they answer honestly. Read the list item by item and have the students tally or checkmark next to the items that they perform daily (or most days). Note that figuring out column D will likely require some assistance from the teacher. By providing a visual of what one litre of water is (perhaps in a container), this will help to emphasize just how much water we use on daily tasks.

- Pass out *Water Conservation Goals* worksheet. Ask the students to write down three ways in which they can help to better conserve water. Some examples may be brushing teeth with the water off rather than on, showering instead of taking a bath, taking a shorter shower, etc. Have the students sign the bottom of the sheet to add a degree of accountability, then have volunteers read their ideas aloud to the class.
- Time permitting, begin working on the 'I Will Become a Water Conservation Hero' poster. Encourage creativity in their artwork. These can be continued in a later class.

Post-Lesson Extension Ideas:

- Hold students accountable. The purpose of this lesson is to have the students understand that everyone can make a difference with regards to conservation, children or adults. Perhaps display Appendix D somewhere in the room in order to remind students of what they have agreed to change.
- Follow up with Appendix D! If the students have agreed to, say, brush teeth with the water off rather than water running, check in later by providing Appendix C again. This will allow the teacher and students to compare with the students' previous answers (provided a copy has been kept) to see if they are indeed working to conserve water.

Appendices: A. Water Cycle Activity



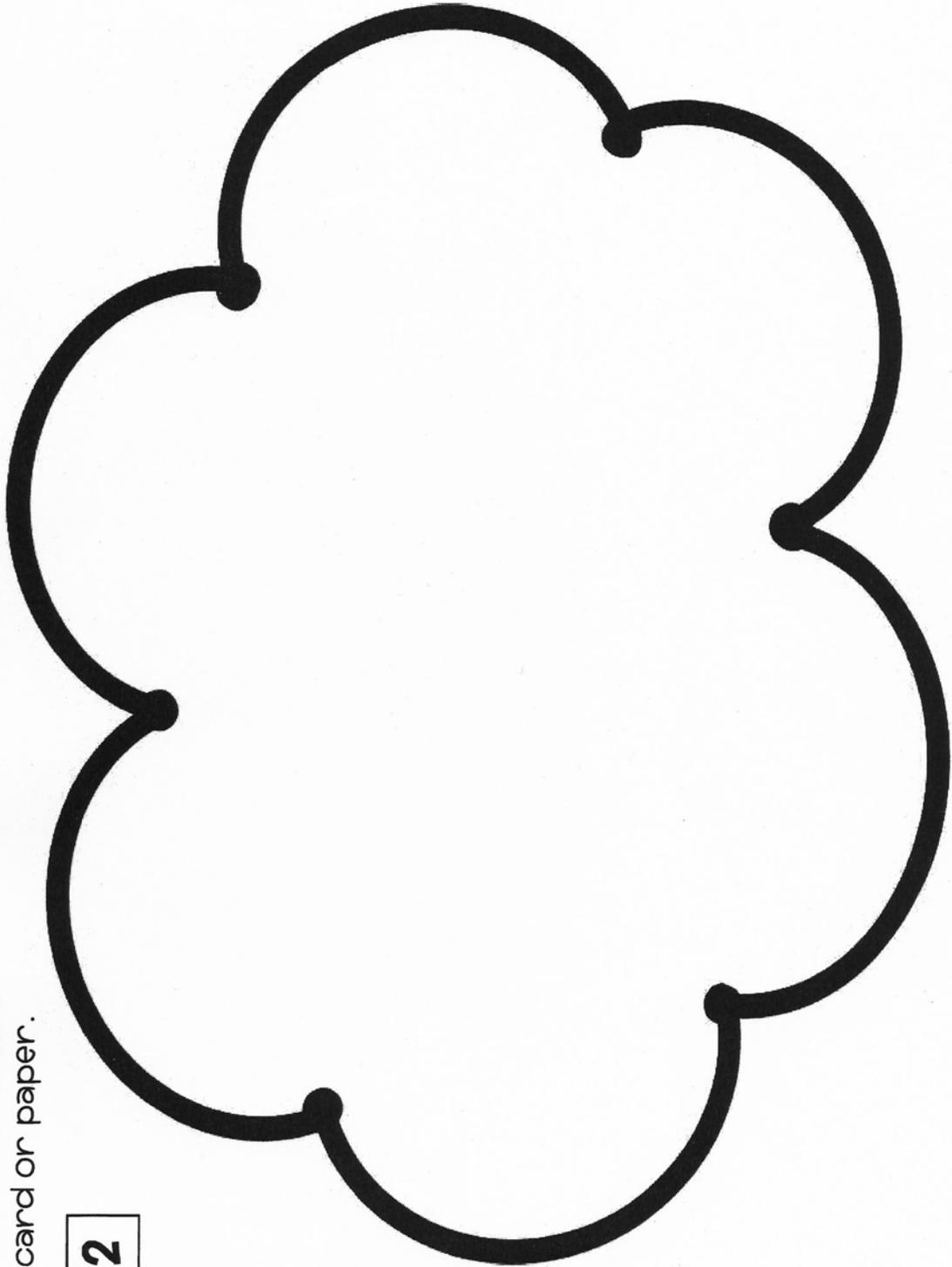
Appendix A

Print onto blue card
or paper.

1

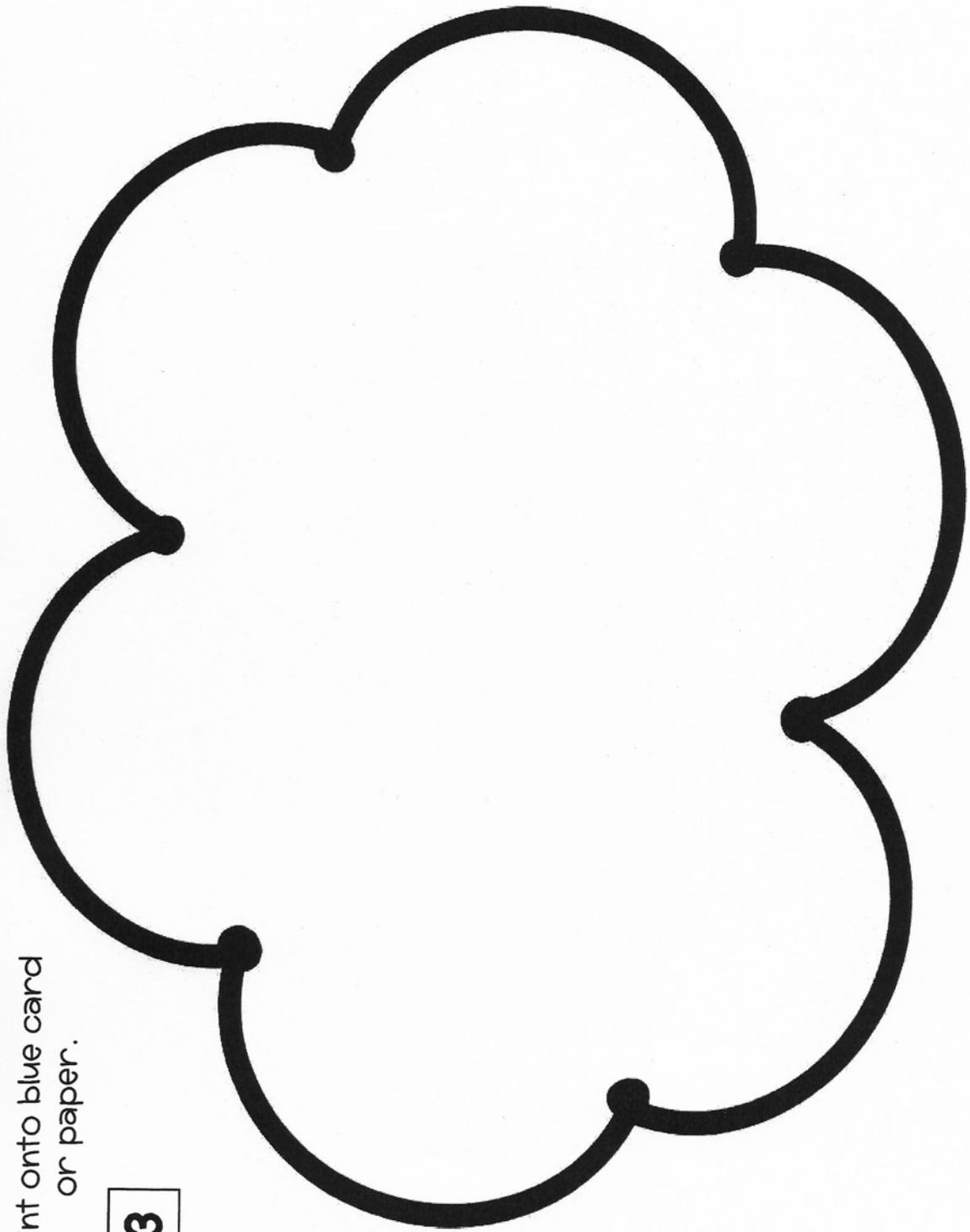
Print 4 x onto blue
card or paper.

2



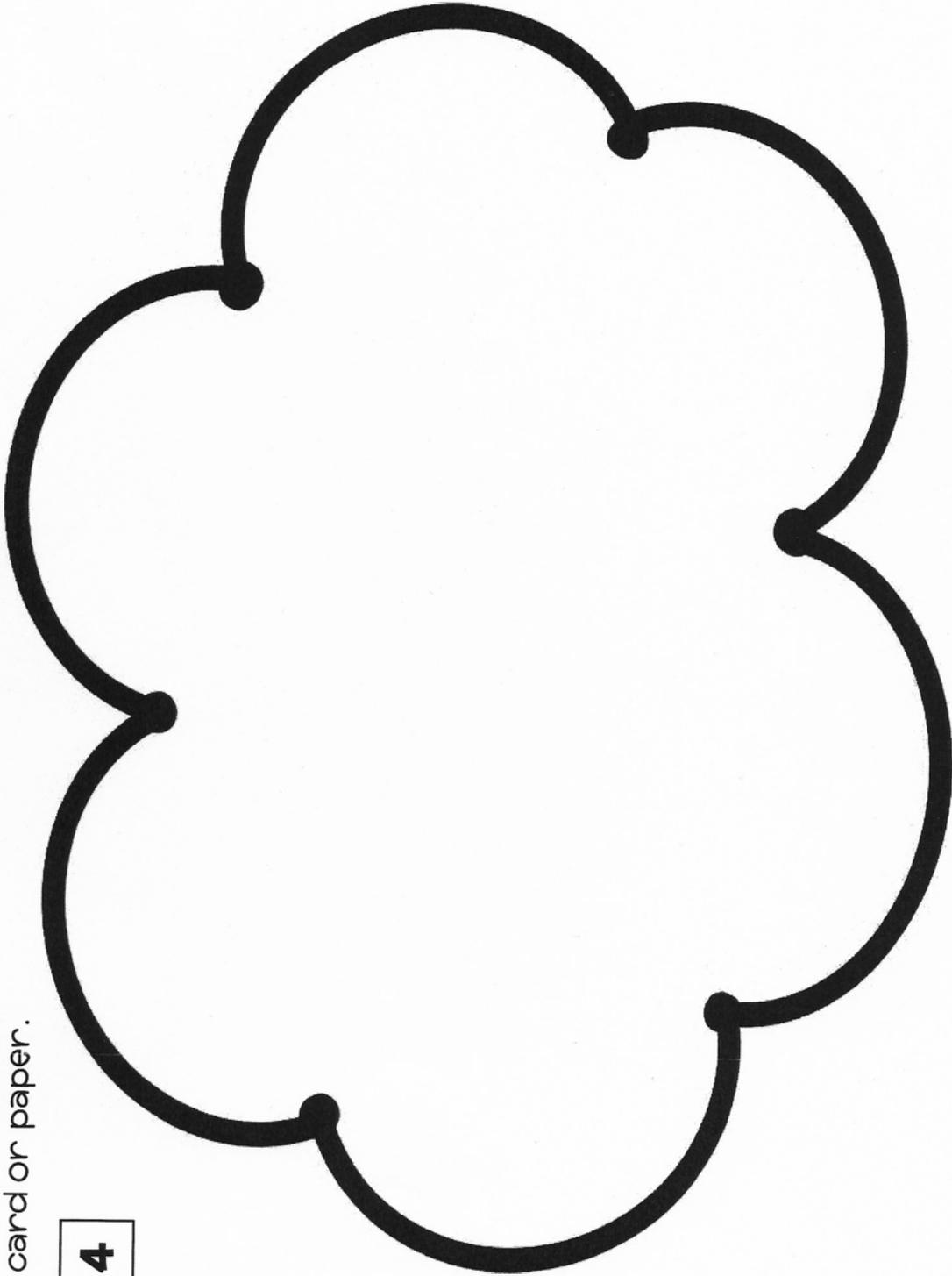
Print onto blue card
or paper.

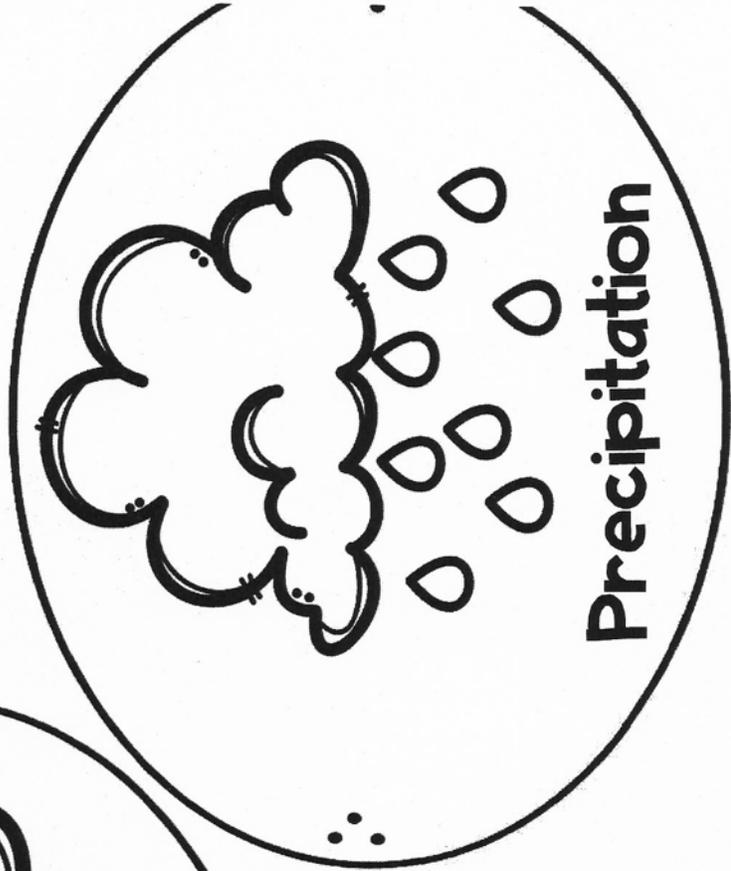
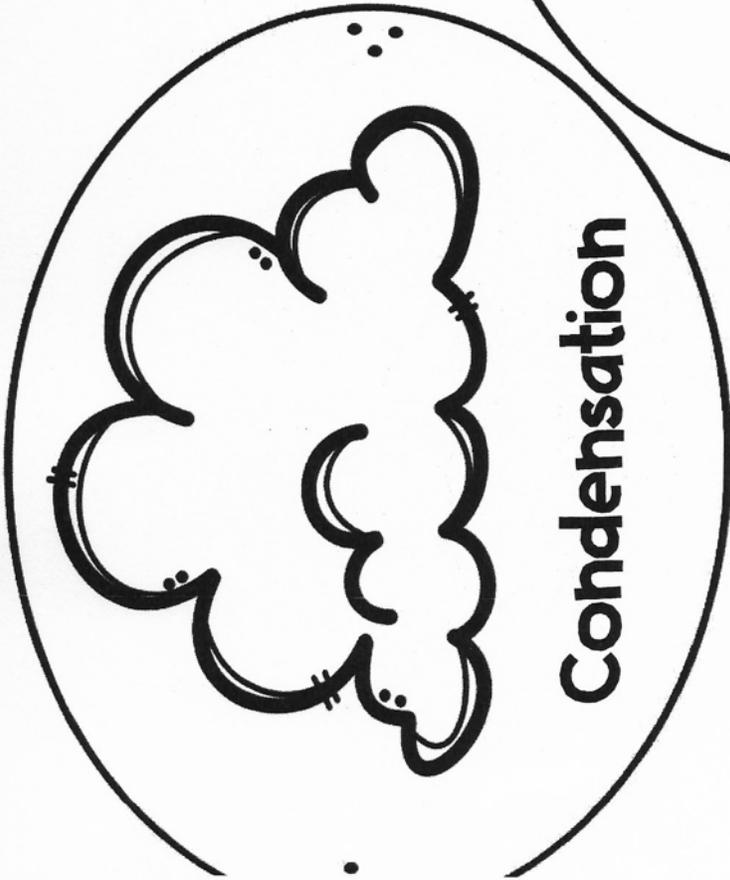
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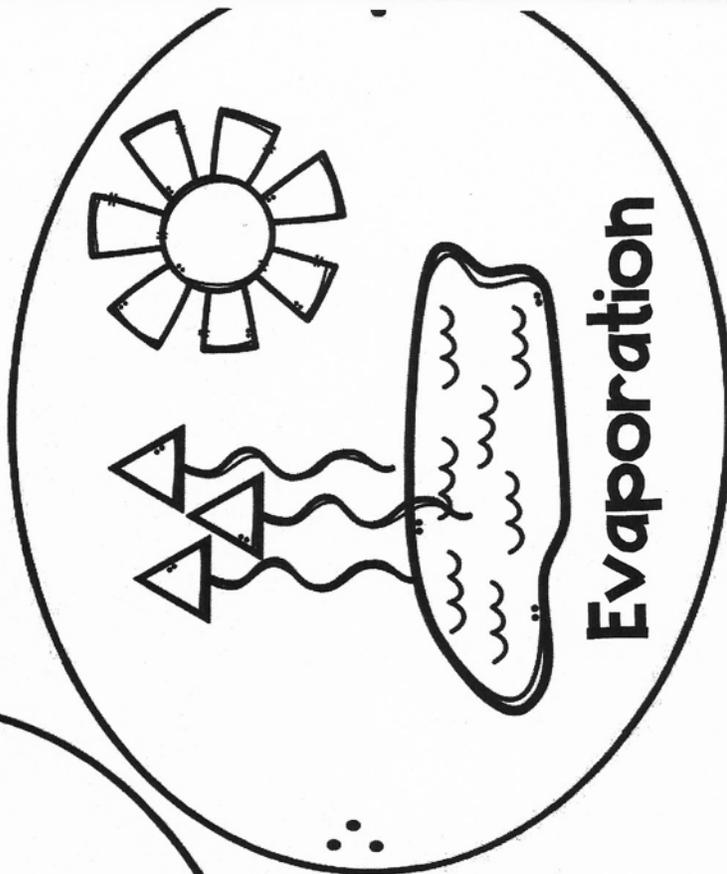
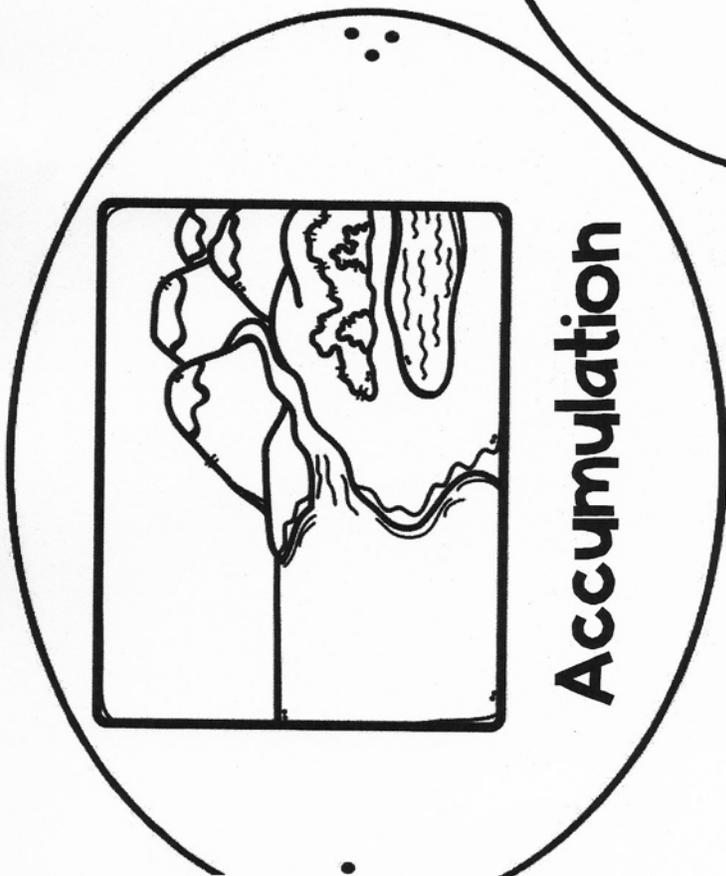


Print 4 x onto blue
card or paper.

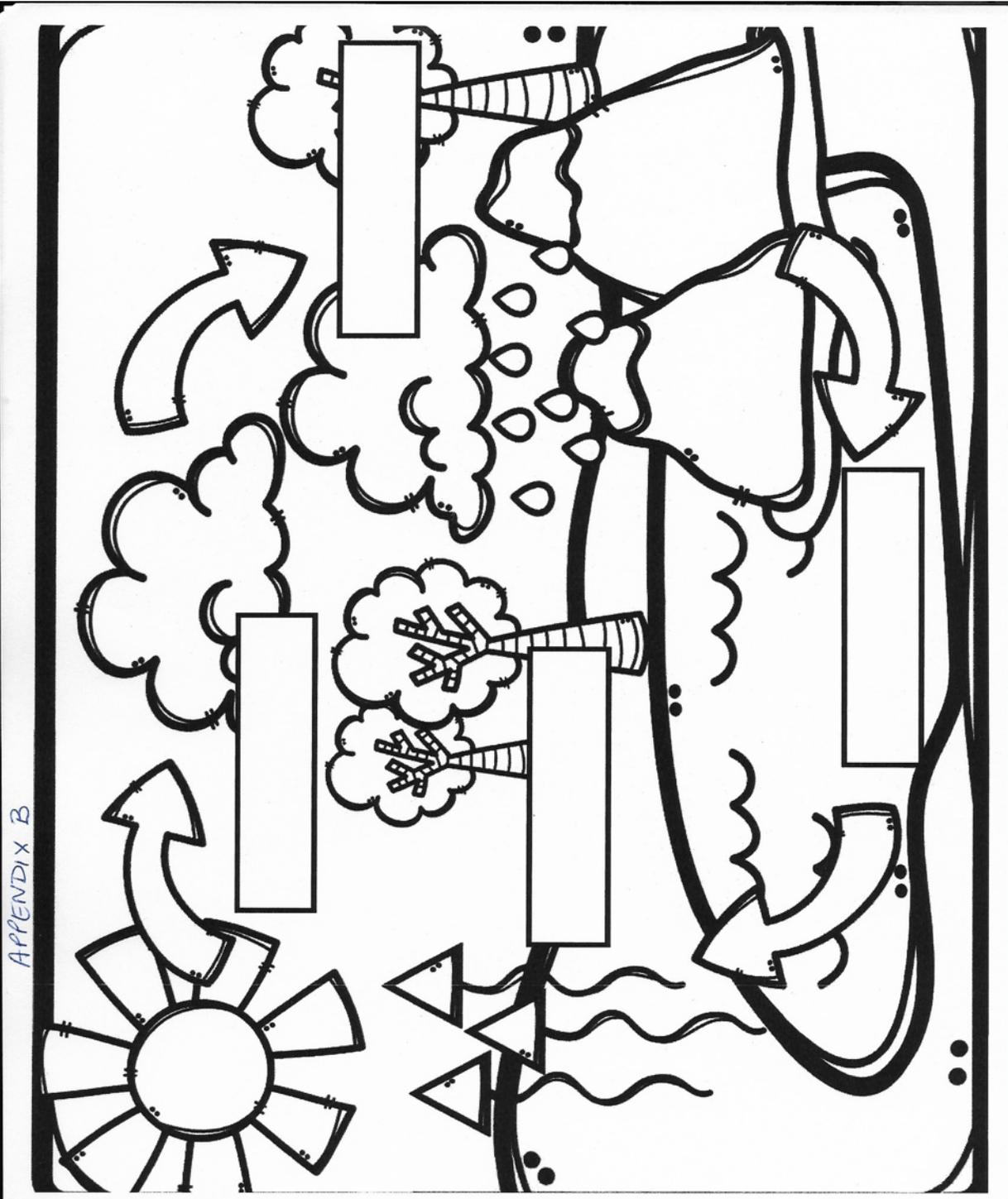
4







B. Water Cycle Summary



C. Average Daily Water Use

Water Use Task	Times Used Per Day	Litres Per Usage	Litres Per Day (multiply C x D)
Flush toilet		6	
Run faucet for 1 minute		4	
Fill a bathtub		60	
Shower (5 minutes)		35	
Run dishwasher		15	
Wash dishes by hand (without sink running)		4	
Wash dishes with running water		30	
Wash 1 load of large clothing		45	
Wash 1 load of small clothing		30	
Brush teeth with water running		4	
Brush teeth with water off		1	
Wash hands		1	
Drink water		0.25	

D. Water Consumption Goals

Now that you have identified different ways in which you use water, what are **three** changes that you can make in order to help to better conserve water. Write your answers below:

1. _____

2. _____

3. _____

Signed,

D. I Will Become a Water Conservation Hero