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Health Sciences 3290B: Teaching Toolkit - Younger

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DRIP'S WORLD OF WATER

WHAT DO WE WANT TO LEARN NEXT?

(1) What is water?

(2) Where does water come from?

(3) How old is my water?

(4) What is the water cycle?

(5) What happens when rain falls back to Earth?

(6) What happens if it rains too much?

(7) What happens if it doesn't rain at all?

(8) Droughts

(9) Water conservation

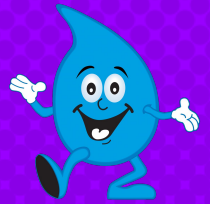
(10) Water treatment & water distribution

DRIP

My name is Drip!

Today, we will learn about all about water!

SING ALONG TIME



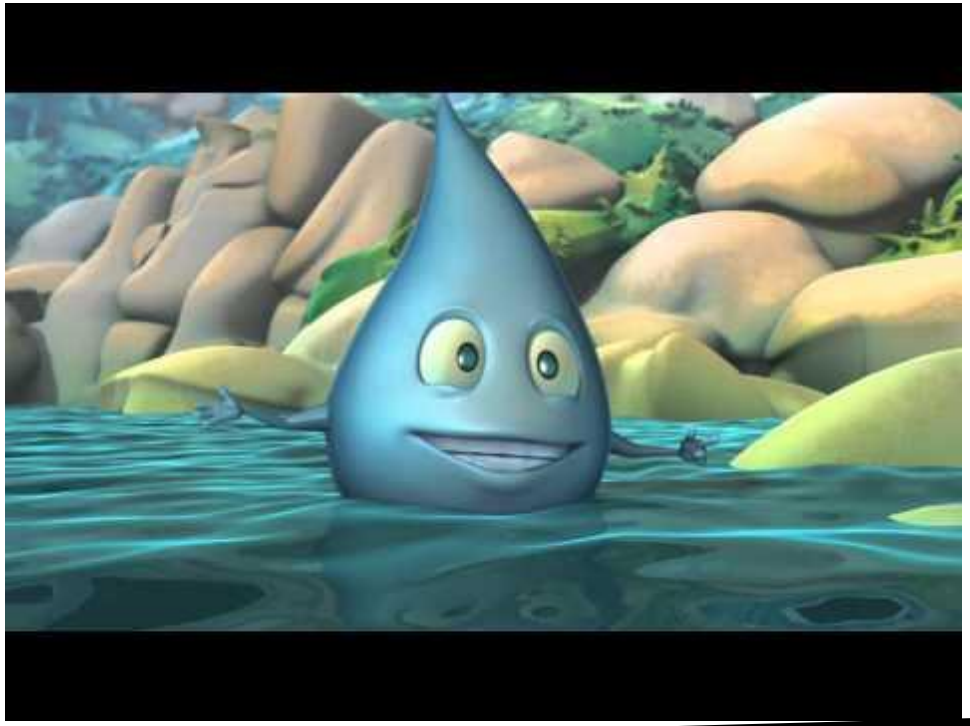
First, let's begin with a song!


The water cycle takes the water and moves it
up and down and all around the Earth.

1. WHAT IS WATER?

How do you use water?

THE LIFE OF DRIP



WATER IS MADE OUT OF

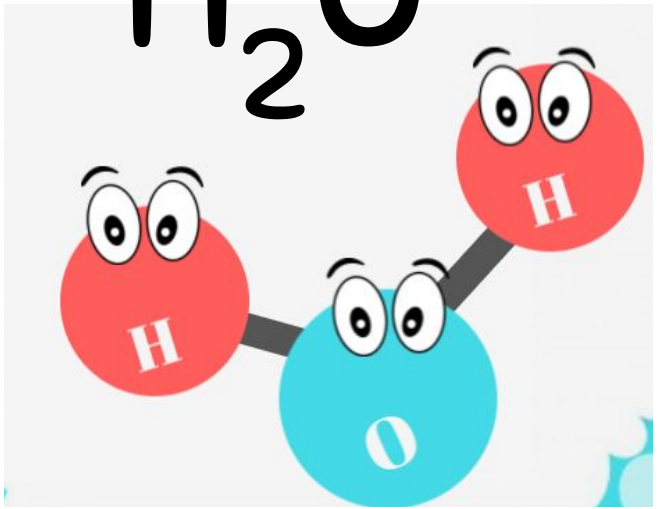
2 ELEMENTS

HYDROGEN

+

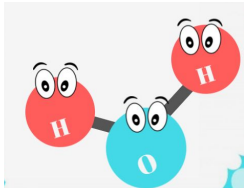
OXYGEN

H_2O

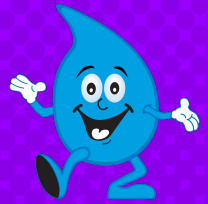


THAT IS WHY
WATER IS CALLED:

H_2O



ACTIVITY TIME



STATES OF MATTER

SOLID

LIQUID

GAS

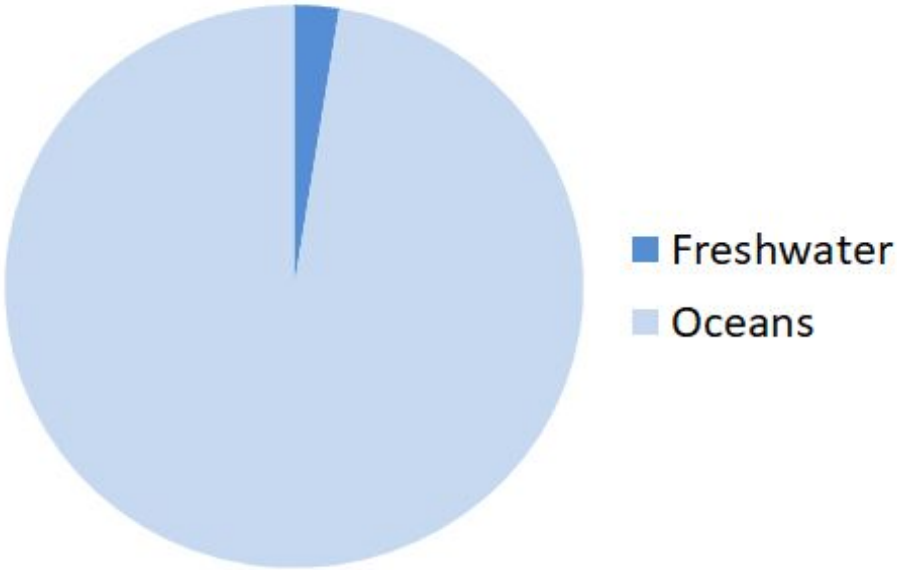
STATES OF MATTER

WATER STATES

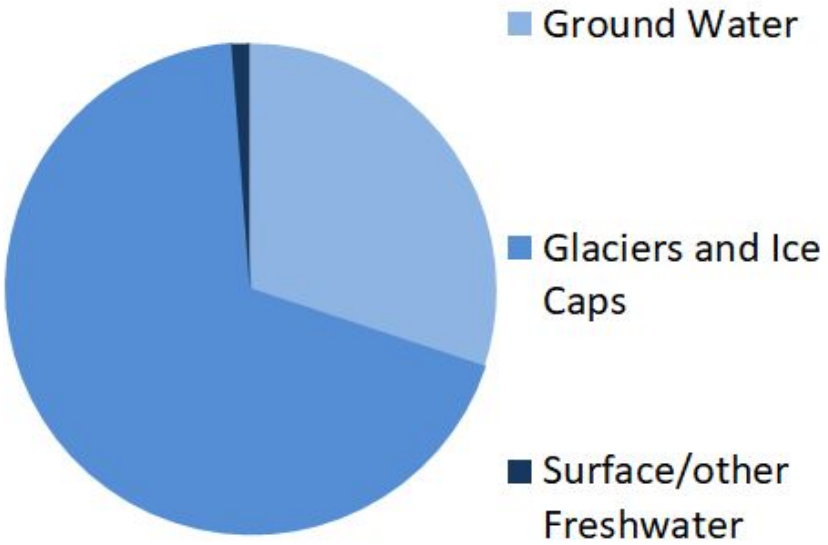

SPLASH SONGS
!

2. WHERE DOES WATER COME FROM?

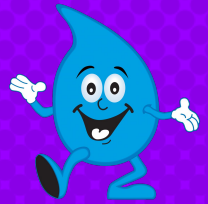
TOTAL GLOBAL WATER



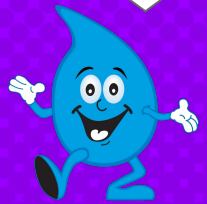
FRESHWATER SOURCES



SING ALONG TIME



My cousins from the OCEAN made this song for you!



3. HOW OLD IS MY WATER?

QUIZ TIME!

Time to put on that thinking cap!

Quiz Time!

How old do you think water is?

–1 day old

–10 days old

–100 days old

–Millions of years old

MILLIONS OF YEARS OLD

It is the same water that dinosaurs drank!

The same water knights on the battlefield drank!

The same water that your great great grandparents drank!

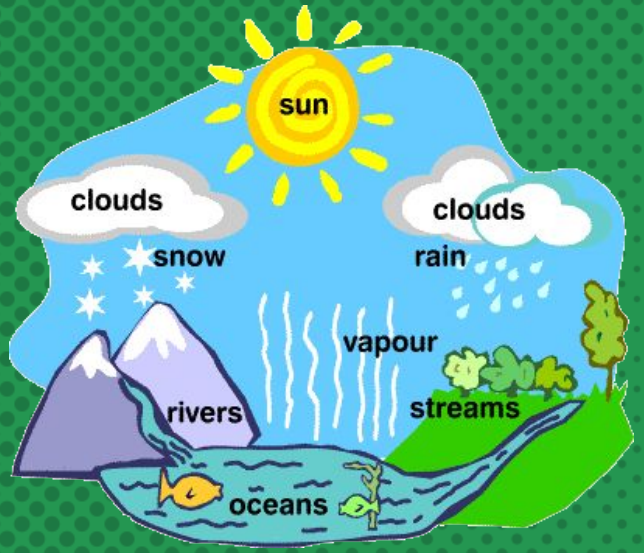
How can water be that old?

The amount of water on Earth never changes!

Water is always

recycled through

the WATER CYCLE

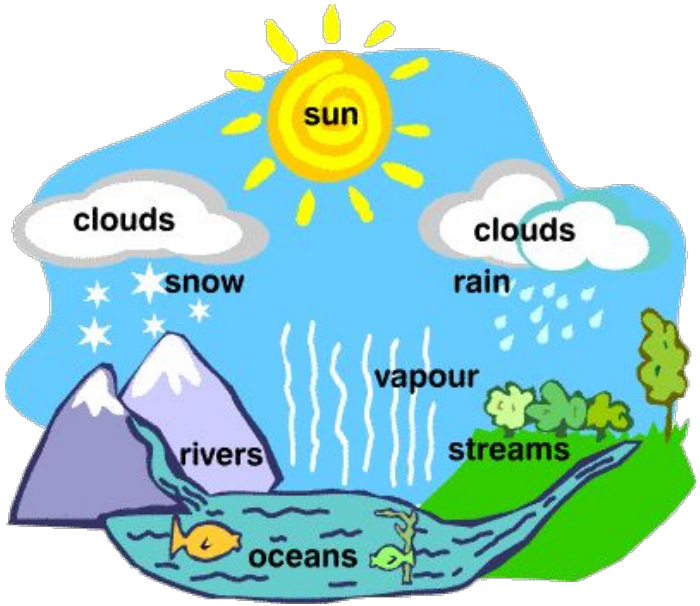


4. WHAT IS THE WATER CYCLE?

THE WATER CYCLE

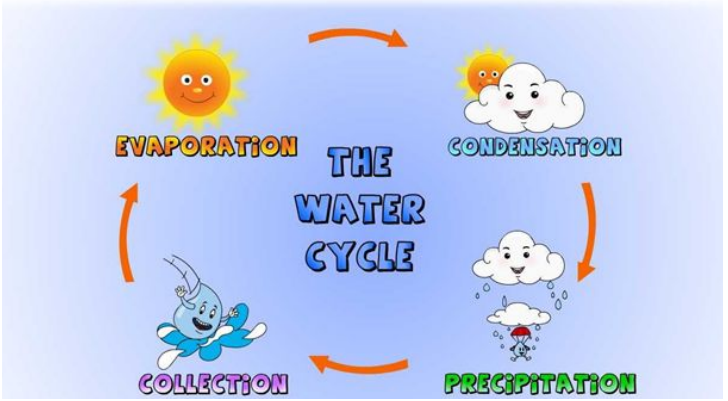
WATER IS ALWAYS MOVING!

ON, ABOVE, and BELOW the surface of Earth



THE WATER CYCLE HAS 4 STEPS

1. Evaporation
2. Making clouds (condensation)
3. Raining/snowing (precipitation)
4. Collection



STEP 1: EVAPORATION

The sun heats up water in rivers, lakes or the ocean and turns it into vapor or steam

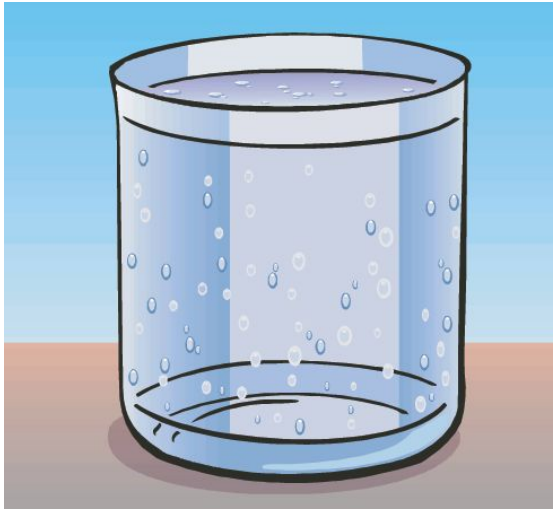
Evaporation Activity

Watch the steam come out of the kettle!

This is what happens when the sun heats the water on the ground

STEP 2: MAKING CLOUDS (CONDENSATION)

Water vapor gets cold as it rises and changes back into a liquid



CONDENSATION ACTIVITY

Watch the water droplets form on the book!

This is what condensation looks like!

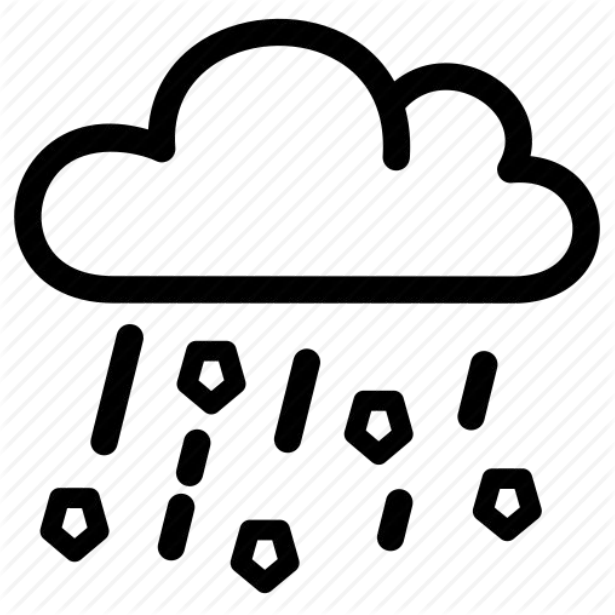
Step 3: Raining/Snowing (Precipitation)

When there is too much water the <u>clouds get heavy</u> and water falls back to the Earth

Precipitation Activity

Watch the water drip off the book!

This is like precipitation when there is too much water to hold!



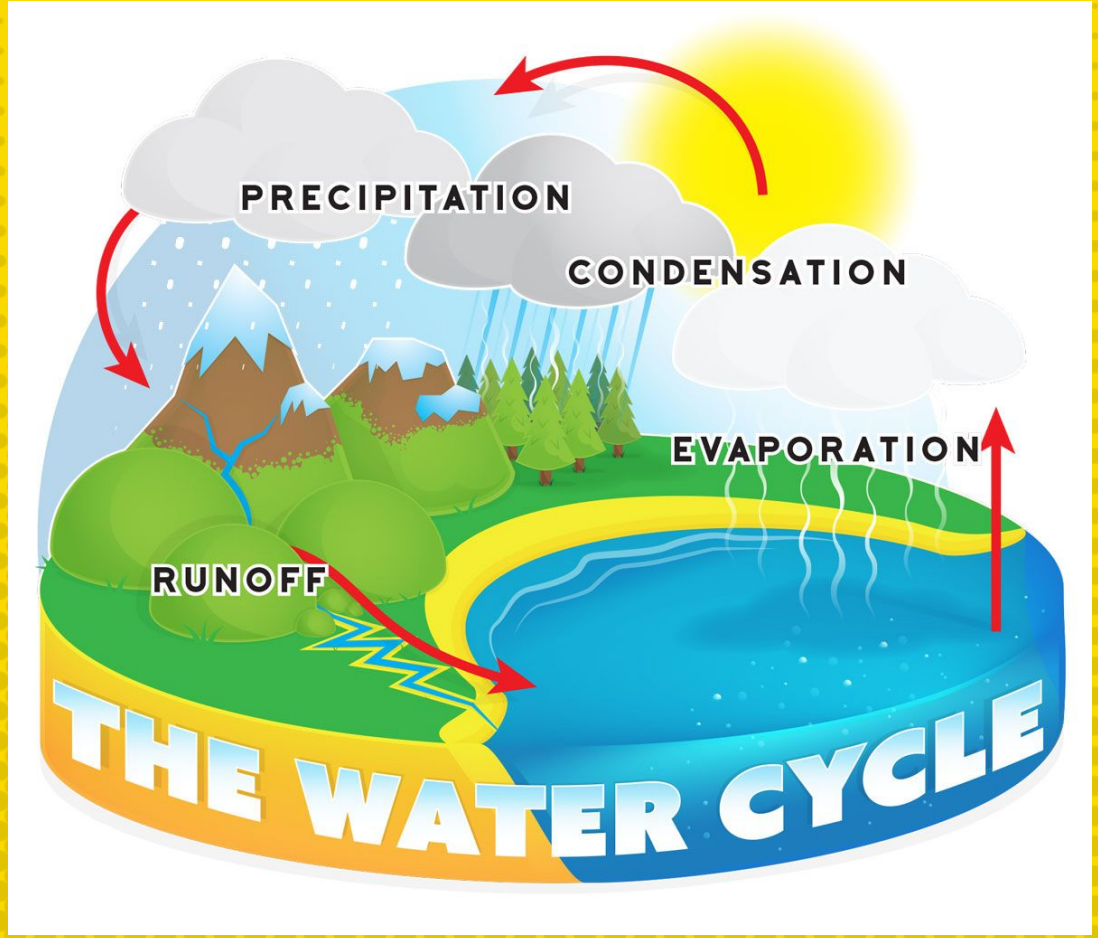
5. WHAT HAPPENS WHEN RAIN FALLS BACK TO EARTH?

STEP 4: COLLECTION

Rain falls into:

- Oceans
- Lakes
- Rivers
- Or it becomes groundwater that soaks into the Earth

Then the cycle repeats!



QUIZ TIME!

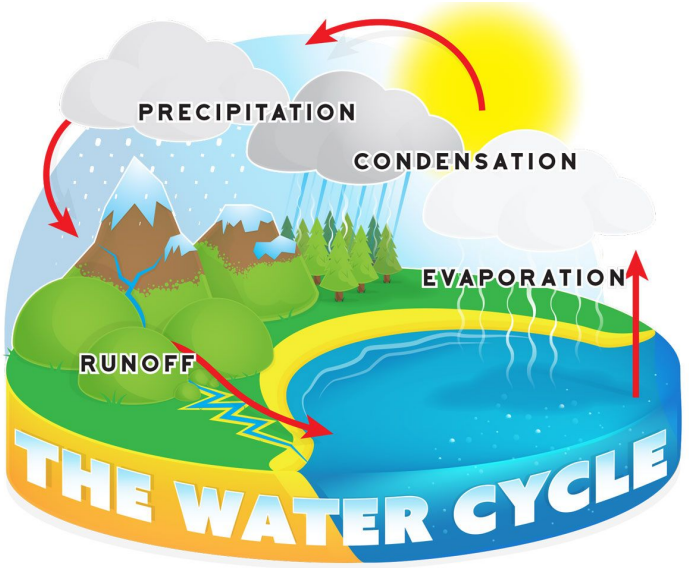
Time to put on that thinking cap!

Quiz Time

What are the steps of the water cycle?

STEPS OF THE WATER CYCLE

1. Evaporation
2. Making clouds (condensation)
3. Raining (precipitation)
4. Collection



6. WHAT HAPPENS IF IT RAINS TOO MUCH?

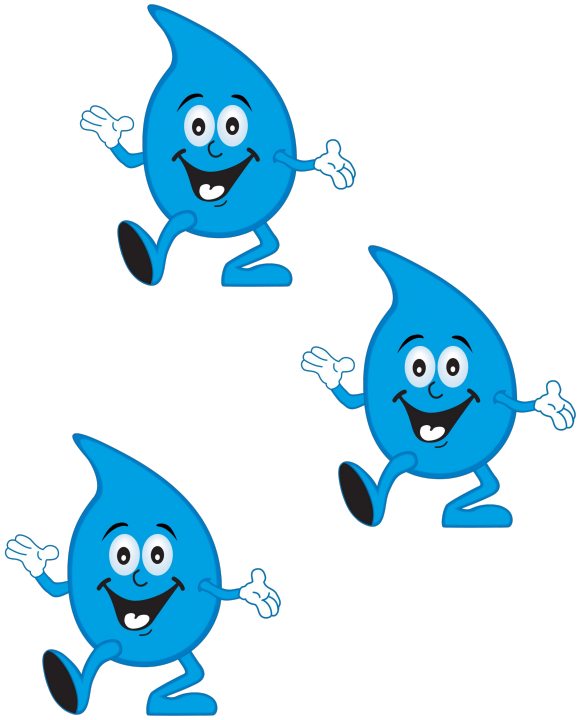

TOO MUCH RAIN CAUSES
FLOODS

FLOODS

WHAT ARE FLOODS?

Too much water in one place can cause a flood!

Examples: backyards, fields and parks



HOW DO FLOODS HAPPEN?

Floods happen when water overflows a river bank, or even when too much water is trapped in one place

PREVENTING FLOODS

Defense walls

A type of wall that stops water from flooding

Vegetation

Large areas with lots of plants that stop water from escaping the soil, and flooding neighbourhoods

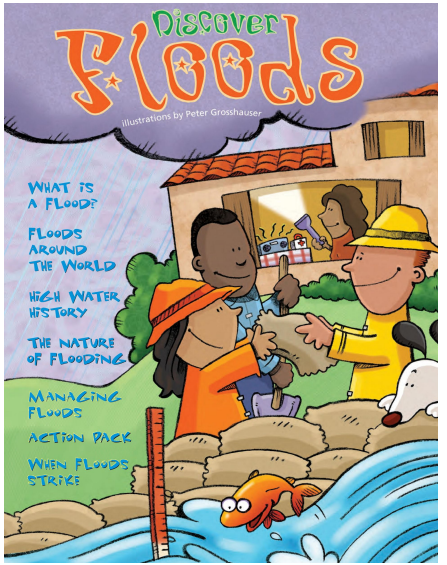
DEFENSE WALLS IN LONDON: RETAINING WALLS

VEGETATION

SANDBAGS

How can we prevent flooding?

- Education is key in preventing flooding. The more you know about how and where flooding happens, the more prepared you are to face it.

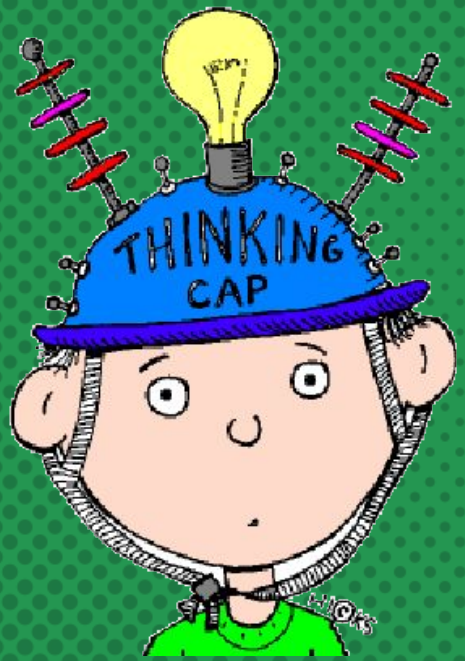


QUIZ TIME!

Time to put on that thinking cap!

WHAT IS THIS IMAGE?

WHAT IS THIS IMAGE?



7. WHAT HAPPENS IF IT DOESN'T RAIN AT ALL?

Forest fires

Droughts

8. DROUGHTS

HOW DO DROUGHTS HAPPEN?

No rain

OR

Not enough rain

Droughts can make areas look like deserts

PREVENTING DROUGHTS

Droughts are an imbalance in the water cycle and are hard to prevent

TIP TO REDUCE DROUGHTS

Water conservation

9. WATER CONSERVATION

How can YOU help save water?

CHOOSE THE CORRECT WORD

Turn the tap ____(on/off) when not in use

CLOSE
THE WATER TAP AFTER USE ALWAYS

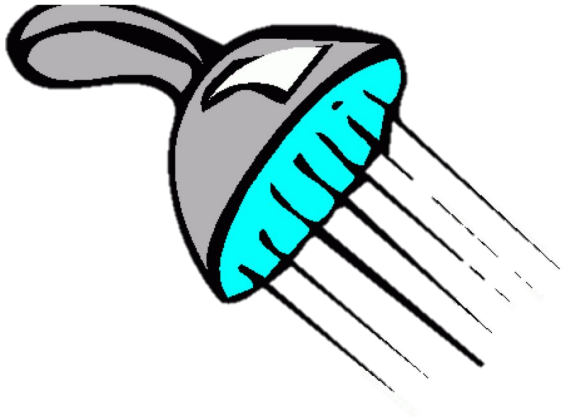
CHOOSE THE CORRECT WORD

____ that leak (Fix/Ignore)


CHECK
YOUR TOILET
FOR LEAKS
London
CANADA
LONDON TAP WATER
The Clear Choice
London
CANADA

CHOOSE THE CORRECT WORD

Take ____ showers (longer/shorter)



10. WATER DISTRIBUTION

WHERE DOES LONDON'S TAP WATER COME FROM?

LONDON'S WATER COMES FROM 2 SOURCES

LONDON'S WATER SOURCES

1. Lake Huron
2. Lake Erie (Elgin Area)

These are 2 of the 5 Great Lakes!

The average household uses about 14 cubic metres of water per month!

This is about the size of ONE backyard swimming pool!

WATER TREATMENT

DID YOU KNOW?

IT TAKES 10 STEPS TO TREAT WATER

How do we get clean drinking water?

HOW DO WE GET CLEAN DRINKING WATER?

Through filtration

WATER TREATMENT PLANTS

Water is cleaned at water treatment plants before it goes to our homes

FILTRATION

After water is cleaned,
it is safe for drinking!

DID YOU KNOW?

FLUORIDE IS ADDED TO LONDON'S WATER

DID YOU KNOW?

FLUORIDE HELPS PREVENT TOOTH DECAY

WHY DO WE NEED TO TREAT WATER?

WHY DO WE NEED TO TREAT WATER?

Because water is recycled and reused

WASTEWATER

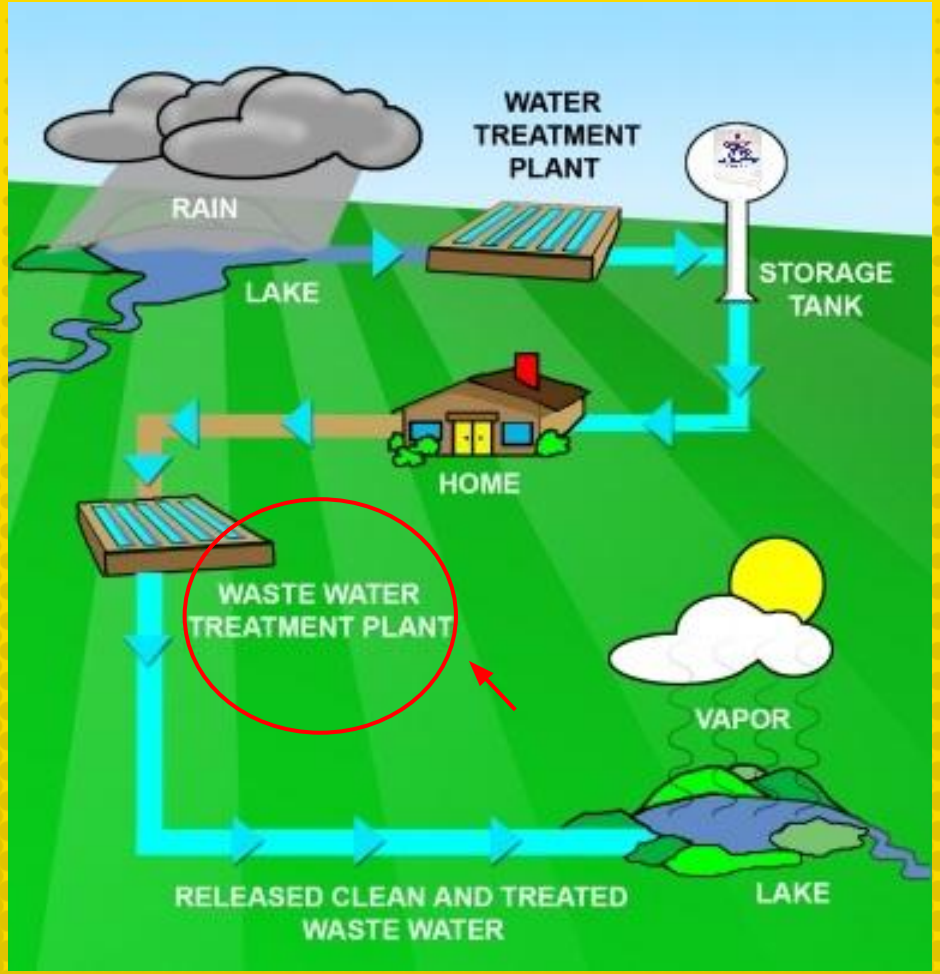
Water that is used becomes wastewater

Examples: flushing the toilet, water from brushing your teeth, showers

WASTEWATER

Harmful chemicals can be found in wastewater

These chemicals are bad for the environment and our health!



WASTEWATER TREATMENT PLANTS

Used water goes to waste water treatment plants

Water is also cleaned here before it is released into lakes

WANT TO BE A SUPERHERO ?

Save our water challenge!

WHERE IS TANZANIA?

SAVE OUR WATER CHALLENGE !

Collect Change For Tanzanian Villagers

Fun Tip:

Get a bucket from your local hardware store so your kids can collect funds in the same bucket that Tanzanian children collect water!

$10 = Clean water for 1 person

TEACHER'S GUIDE:
CITY OF LONDON - WATER SUPPLY SYSTEM LESSON
JUNIOR LEVEL (GRADE K-3)

OVERVIEW

The City of London has various resources available to you throughout this lesson including informational videos and webpages. If you have any questions about the material before or after the lesson please do not hesitate to contact us. If you have an idea for another lesson, or have connected this lesson to curriculum we have not, please let us know. We are always looking for feedback, ideas for improvement and new lessons.

NOTE

- How to use this teaching toolkit: This Teaching Presentation can be modified according to your needs. We recommend that you pause the lesson after each section (10 sections overall), and assign students the "Take Home Challenges" (THC) available in this guide. This way, students have time to 'digest' the information, and have the opportunity to apply the lesson in their community.
- Videos: Our team handpicked YouTube videos that may correspond with the lesson as a way for the visual learners in your classroom to learn.
- Easy navigation: On slide 2 – You may start off from last day's section by easily clicking on the desired section.
- Feedback: If you have any suggestions, please feel free to contact us at: engagedlearning@gmail.com :)

LESSON OUTLINE

Lesson	Slides	Recommended Class Time (mins)
1. What is water?	6–16	5
2. Where does water come from?	17–21	5
3. How old is my water?	22–31	10
4. What is the water cycle?	32–41	20–25
5. What happens when rain falls back to Earth?	42–47	7
6. What happens if it rains too much?	48–60	10
7. What happens if it doesn't rain at all?	61–63	2
8. Droughts	64–68	5
9. Water conservation	69–75	8
10. Water treatment and water distribution	76– 97	10–15

RECOMMENDED TOOLKIT GUIDELINES

*THC= Take Home Challenges (Homework)

Slide #	Information
5	Introduction – Water Cycle Video
7	Sec.1: How do you use water? [video] - ASK: "How do you use water at home?" - WATCH: "Water and its Uses" [video] - THC: Have children journal about the ways they used water tonight
8	Sec.1: The Life of Drip [video] - WATCH: Video
10–12	Sec.1: H20 - DRAW: Have students draw out the molecule in class; cut out 3 circles (two red+1 blue) and 2 rectangles – then have students glue the H20 molecule as depicted on slide 10 - ACT: Play "ATOMS" (See instructions in activity section)
13	Sec.1: States of Matter - ASK: "Does anyone know the three states of matter (water)?" (Answer: Solid, liquid, gas)
14	Sec.1: States of Matter - WATCH: https://www.youtube.com/watch?v=Nb01JqbeR30 - SHOW: http://www.abcya.com/states_of_matter.htm - DRAW: Have students draw out the three states (solid, liquid, gas) chart, and have them identify other things that are in these states. - Example: Solid (car, coin, pencil…), liquid (water, oil, juice…), gas (condensation, air, oxygen…)

15	Sec.1: States of Matter – Water – SHOW: Show students the three states of water: an ice cube, water (liquid), and water (gas) – THC: Ask students to bring back three things (a solid, liquid, gas* bonus – their breath) tomorrow – Other resources: https://www.neok12.com/States-of-Matter.htm
16	Sec.1: Splash Songs! – SING: Choose "water rhymes" from here to sing with your class: https://www.kidsparkz.com/preschool-sings-ocean.html
18	Sec.2 – Total Global Water – SHOW: Before class, fill ⅛ of a water bottle with water (blue food coloring), then put it in the freezer until the water freezes . Then, when it's time to do section 2, fill the rest of the frozen water bottle with water (liquid). The frozen blue ice in the water bottle will show the amount of "fresh water" there is compared to "ocean water". You can use this activity as a THC as well.
19	Sec.2 – Freshwater Sources – DRAW: Have students duplicate the pie graphs ("Total Global Water" and "Freshwater sources") in their journals
21	Sec.2 – Sing Along Time – SING: Sing along video
23	Sec.3 – Quiz – How old is my water? – ASK: "How old do you think water is?" – 1 day old – 10 days old – 100 days old – Millions of years old Answer: Millions of years old

29–31	Sec.3– How can water be that old? – ASK: "How can water be that old?" Answer: The amount of water on earth never changes. Water is always recycled through the water cycle.
33	Sec.4 – The Water Cycle? – WATCH: https://youtu.be/nIkRu9LL4sk
46	Sec.5 – What happens when rain falls back to Earth? – QUIZ TIME: Show students the water cycle image and have them list the steps – ANSWERS: Evaporation, making clouds (condensation), raining (precipitation), collection
58–60	Sec.6 – What happens if it rains too much? – QUIZ TIME: Ask students what each image is – First image → a defense wall preventing flooding – Second image → vegetation
61–63	Sec.7 – What happens if it doesn't rain at all? – ASK: Ask this question and give students some time to come up with some ideas before proceeding to slides 62 and 63
70–75	Sec.9 – Water conservation – FILL IN THE BLANKS: Have students choose the correct word for the following phrases on water conservation (slides 71, 73, & 75) – Answers: OFF (slide 71); FIX (slide 73); SHORTER (slide 75)
77	Sec.10 – Water distribution – ASK: Ask students this question before proceeding with the next 2 slides

ACTIVITIES	OVERVIEW	MATERIALS
Section 1: What is Water? *Game: Atoms; slide 12*	INSTRUCTIONS: Children run around the gym in all sorts of directions. The teacher calls out "Atom___" and a number. Which ever number is called, the children have to get into groups of that number. For example, the teacher calls "Atom 6!" and children get into groups of 6. Those left out of a group, are out. Children who are 'out' could jog on the edge of the playing area – after every round some children, who are jogging sensibly, could come back in which would mean they are still active at all times! You could introduce rules like... children cannot go with someone who has been in the same group as them, or there has to be at least one boy and girl in each group?	N/A
Section 1: What is water? Drip Drip Drop	Instructions: When the weather gets hot, we head outside to play. Most of the time, our play includes WATER! This gross motor game is a spin off the classic Duck, Duck, Grey Duck (or Goose!), but with a cup of water.	– Bucket – Plastic cups

	Learning objective: The children will learn to follow directions, take turns, and run! *This game is best played in a group of 3 or more children. 1. Children sit in the circle. One child is "it." They scoop a 1/2 cup of water from the bucket. 2. Starting where they were sitting, they dip their fingers in the cup and sprinkle a drip of water on the next child's head and say, "drip." 3. Play continues with drips until the child DROPS the rest of the water on someone's head and says, "DROP." 4. That person then chases the child who is it around the circle, trying to beat them back to their original space. 5. The player that sits last (or is still standing) scoops a 1/2 cup of water and goes around the circle again.	
Section 1: What is Water? *Music: Splash Songs*	Splash Time – songs	– https://www.kidsparkz.com/preschool-sings-ocean.html – PDF Printables – Ocean Animals Theme – https://www.kidsparkz.com/ocean-animals.html
Section 1: What is Water? *Art: KOOL-AID PAINTING*	Sprinkle unsweetened Kool-Aid on a piece of paper. Have the children move a piece of ice over the Kool-Aid. Watch as the Kool-Aid turns to liquid and makes a yummy smelling picture	– Kool-aid – paper – ice cubes

Section 1: What is Water? *Art: Kool-AID ART*	1. Sprinkle Kool-aid crystals onto a piece of paper 2. Have children spray water from a spray bottle onto the paper 3. Use different colored kool-aid mix 4. For added adventure, you may choose to take children out into the rain with a piece of paper that has Kool-aid on it.	- Kool-aid - spray bottle - paper
Section 1: What is Water? *Crafts: Ocean in a bottle*	1. Fill bottle halfway with water. 2. Add a few drops of blue food coloring and swirl around to mix. 3. Add glitter and sea creatures/shells and then fill bottle the rest of the way with vegetable oil using a funnel. 4. Make sure that cap and rim are dry--- and then apply white glue around the rim and seal cap. 5. Use a layer of hot glue around the outside edge of the cap for additional protection from leakage. 6. Turn the bottle on its side to create a wave in this ocean habitat!	- plastic bottle (500ml) with a cap - vegetable oil - water - funnel - blue food coloring - glitter - shells and toy sea creatures - hot glue gun
Section 4: Evaporation Activity *Demonstration*	1. Use example of kettle (plug in an let the students watch the steam come out of the top) explain to them that this is the same thing that the sun does to water. 2. Once the water gets warm it evaporates.	- Electric kettle

Section 4: Condensation Activity *Demonstration*	1. Show students condensation by putting a hardcover book in the freezer for about an hour. 2. Put the book overtop the boiling kettle of water from the previous experiment. 3. Make sure you use oven mitts! Water droplets will form on the book, which is what causes condensation.	– Hardcover book – Freezer – Oven mitts
Section 4: Precipitation Activity *Demonstration*	1. Continue the previous experiment long enough so that so much water will condense on the book that it won't be able to hold it all. 2. The water will begin dripping down from the book, creating precipitation.	

Sources/Other Resources

1. Elementary School Water Activities: http://www.kidactivities.net/category/Theme-Water.aspx
2. Ontario Ecoschools Water Awareness and Action Campaign Kit: https://www.ontarioecoschools.org/wp-content/uploads/2016/03/Water-Awareness-and-Action-Kit_Final.pdf
3. https://theeducatorsspinonit.com/drip-drip-drop-outdoor-water-game-for/
4. https://wateruseitwisely.com/toolkit/

CREATED BY:

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