4th Grade Science 4/27-5/1

Hello 4th Graders and welcome to Science this week! So this week we are celebrating Earth Week! This week we hope that you explore our Earth.

Monday	Tuesday	Wednesday	Thursday	Friday
Land and Water: Exploring dirt -You will explore what is in your dirt sample	Land and Water: Water Cycle -Watch Mr. Korn's video and write observations	-Reading and response to the reading -Tapping into the Water Cycle	-Land and Water: Water Erosion -Watch Mr. Korn's videos and write observations	-Reading and response -Read about filtering water at a treatment plant.

MONDAY:

Hello 4th Grade Scientists, welcome to Land and Water.

Today what you will be doing is exploring and observing the dirt in your backyard. For this investigation you can either do this one of two ways. Go outside and take the observation chart out there and fill it out OR you can get a plastic cup or dish and put a sample on it and then fill out the observation form below. If you would like, 4th grade teachers have posted the editable versions on their Google classroom for your convenience.

Observation Chart: Dirt mixture (Size of a small cup) from your backyard

Appearance: How does it look, color, shine, clumping	
Texture: How does it feel	
What happens when you mix some of the dirt in water?	
Other observations	

Tuesday: Water Cycle

Mr. Korn's lecture: (Watch first) https://youtu.be/gV9nzh7V3Wg

Mr. Korn's experiment: (sorry about the rubber band)
https://youtu.be/0MRXsz2Ymbo

For Mr. Korn's lecture and experiment, you can take notes and then use the same page to write your observation. I will give you a digital copy if you want to type it up and send it to me.

Example of how the paper should be:

Lecture Notes:

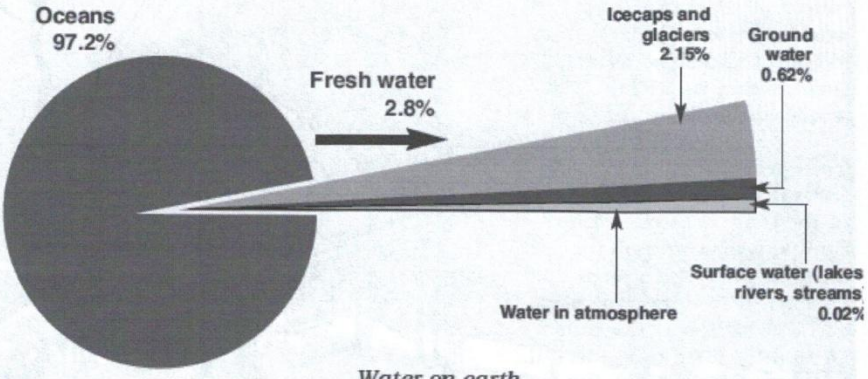
Observation Notes:

Wednesday: Tapping into the water cycle

Tapping into the Water Cycle

Turn on a faucet and what happens? Out comes fresh, clean water. But where does this water come from and why doesn't it ever run out?

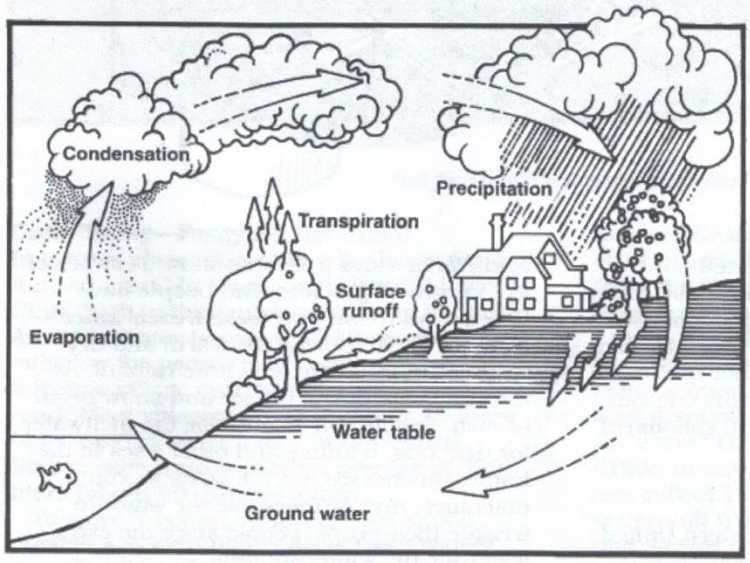
Think about all the water on earth. You can find it in lakes, streams, and oceans. Some of it is frozen on snow-capped mountains. Other water is hidden underground. Of all the water on earth, only a small amount can be used for drinking.



Water on earth

What Goes Around Comes Around

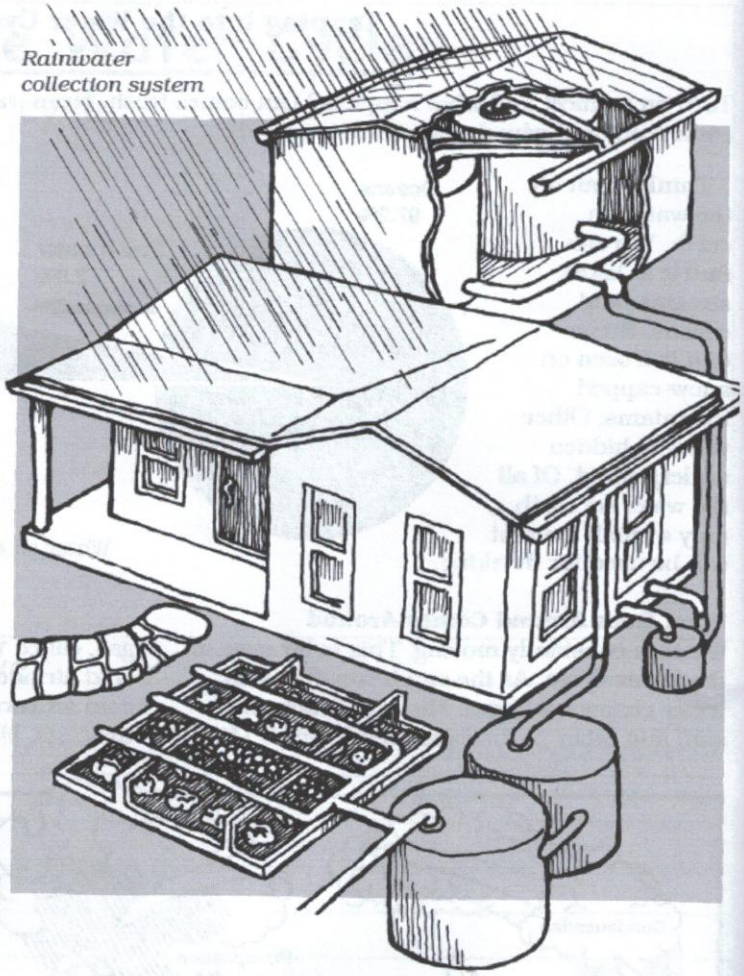
Water is constantly moving. This is because of the **water cycle.** As the sun heats the earth, water changes to a gas. Minerals, such as salt, and other particles are left behind. The gas, called **water vapor,** rises high into the cold air and clings to particles of dust. The cold air turns the gas back into water droplets. Many of these droplets combine to form clouds. Eventually the clouds gather more water than they can hold. Then the water falls back to earth as rain, snow, sleet, or hail. In a continuous cycle, water moves out of the oceans, into the atmosphere, and back down to earth.



The water cycle

The water cycle is vital to life on earth. Without it, all of the world's water would end up in the oceans and stay there forever. Rain would not fall to the earth. Plants could not live. Streams would dry up. Ponds would empty. The land would become a lifeless desert. And your faucet would run dry.

Rainwater keeps our lakes, streams, and land filled with water. It supplies our drinking water. But rainwater does not fall evenly over the earth. In fact, some areas get almost no rain at all. People all over the world have found clever ways to collect and store water. How do they do it? Let's visit a few places and see.



Rainwater collection system

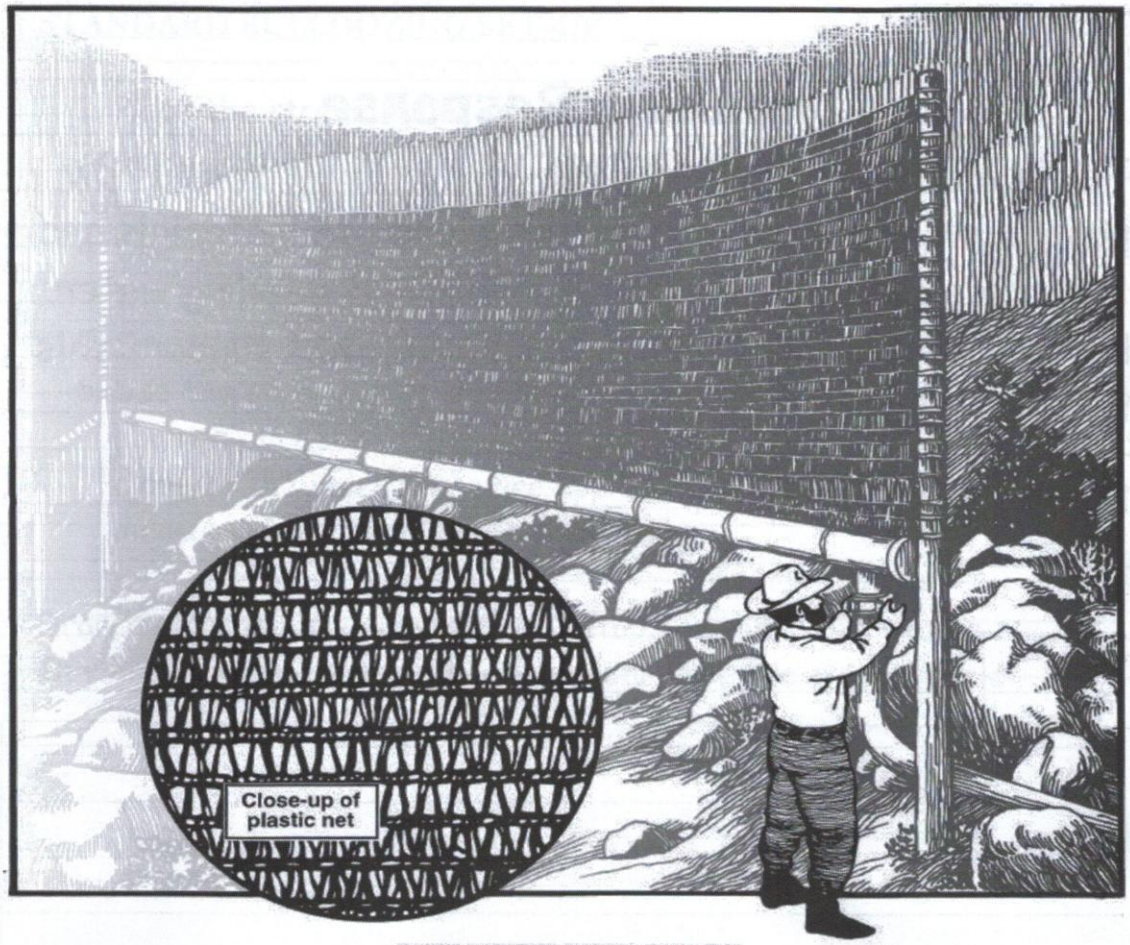
Collecting Rainfall for Year-Round Use

In the southwestern United States, weeks and often months go by without rain. **Droughts,** or long periods without rain, are common. Droughts cause crops to fail. Streams flowing over the dense clay soil gradually dry up.

To deal with this problem, citizens in Austin, Texas, have created a way to collect rainfall they can use all year long—they use their roofs! Outside one family's house, two 32,000-liter (8,500-gallon) tanks sit inside a large shed with a tin roof. When it rains, rainwater runs down the tin roof into the tanks below. Special lights in the tanks kill bacteria in the water. Water tests make certain the water is pure and clean. Then pipes carry the collected rainwater to different parts of the house. Even the downspouts along the edge of the house are set up to collect rainwater. This water can be used for appliances and outdoor use. A rainwater collection system like this one can supply a family with 190 liters (50 gallons) of water a day for 11 months!

Melting Rivers of Ice

In the mountains of the northwestern United States and Canada, most of the year is very cold. Water stays frozen as snow or rivers of ice, known as **glaciers.** But people have found ways to tap into these frozen water sources. How? During the warm and dry summer months, there is little rainfall. As the sun beats down, the ice and snow begin to melt. People collect and use the meltwater for drinking, bathing, and other uses in the home. Businesses use the water to run machines. And farmers use the water to irrigate their crops. People store the extra water for the winter months.



Net for collecting water from fog

Chile Today—Foggy All the Time!
Imagine a place where there is always fog, but it never rains! In Chungungo, a rural town in Chile, high in the Andes mountains in South America, water is scarce. Until recently, the only way for people to get water was to truck it from a village over 13 miles away on a dirt road. Most villagers could buy only 15 liters (4 gallons) of water a day. In the United States, each person uses an average of 350 liters (about 90 gallons) a day!

To solve this water shortage, scientists created a system that collects fresh water from fog. They lined up 75 enormous plastic nets on the mountain. Each net is the size of eight queen-sized beds. Particles of water from the fog collect in the triangular-shaped holes in the nets.

Over 10,000 particles of fog must combine to make one single drop of water. Yet each net collects over 152 liters (40 gallons) of water a day! A solar-powered system puts chlorine in the water. This makes the water safe to drink. In one day, the entire system of nets can collect 11,400 liters (3,000 gallons) of water—all from fog! This is enough water for one day for each of the town's 330 people.

Response sheet:

This response sheet can also be found on Google classroom at your teacher's site.

The selection "Tapping into the Water Cycle" shows how people in different parts of the world use materials and technology to solve the same problem of needing water. Provide TWO details from the selection that supports this idea:

_____
_____
_____
_____
_____
_____
_____
_____

Thursday:

Weathering and water erosion:

Mr. Korn's lecture video: https://youtu.be/Pb3UvzyKj1M

Mr. Korn's backyard Science: https://youtu.be/AbRyekbqks8

Pictures from the experiment to compare:

How does the speed of water affect the amount of soil that is carried away(eroded) and the amount of soil that is dropped off (deposited)?

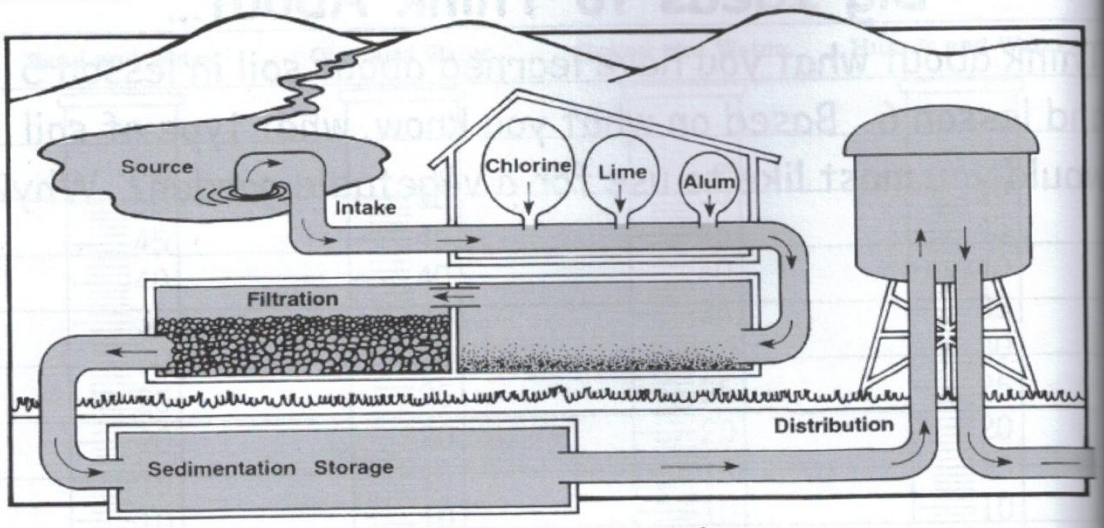
_____
_____
_____
_____
_____

What is alike about fast moving and slow moving water? How are fast moving water and slow moving water different?

_____
_____
_____
_____
_____

Friday: Filtering at a water treatment plant

Read the article and answer the questions



Filtering water at a treatment plant

Well drillers are workers who make holes deep into the earth until they find water. Sometimes a well can be more than 305 m (1,000 ft) deep! After the well is drilled, the driller puts a plastic or steel pipe that looks like a giant drinking straw into the hole. This keeps the soil and rock from caving in. Then the well driller attaches an electric pump to the pipe. The pump forces the water that has seeped into the pipe upward, through the pipe, and into your house.

Cleaning the Water

Have you ever poured sandy water through a strainer at the beach? The strainer is like a **filter.** It separates some of the sand from the water. You might say it helps to clean the water.

The land can be a filter, too. As water seeps through the soil, layers of sand and gravel clean the water. People can usually drink spring water, which has been underground, just the way it is.

Surface waters, however, usually are not clean. Do you remember what the water in your catch bucket looked like? It was very dirty because of sediment. When water flows over land, it wears away soil and rock and carries the particles along. This is called **erosion.** Pollutants—like fertilizer, road salt, and other chemicals—can get into both surface water and ground water. Then the water is not safe to drink.

Utility companies must clean the water before people can use it. In treatment plants, utility companies add certain chemicals to the water. For example, chlorine gets rid of bacteria that might harm you. Alum makes particles clump together and sink to the bottom. This is called **sedimentation.** After the sediment is removed, the water passes through layers of sand and gravel. These layers filter the water and remove smaller particles. This is called **filtration.** Before the water can be stored or distributed to homes and businesses, utility plant workers bubble air through the water to make it taste fresh. Many utility companies add fluoride to the water, too. This helps keep your teeth from getting cavities.

Getting the Clean Water to You

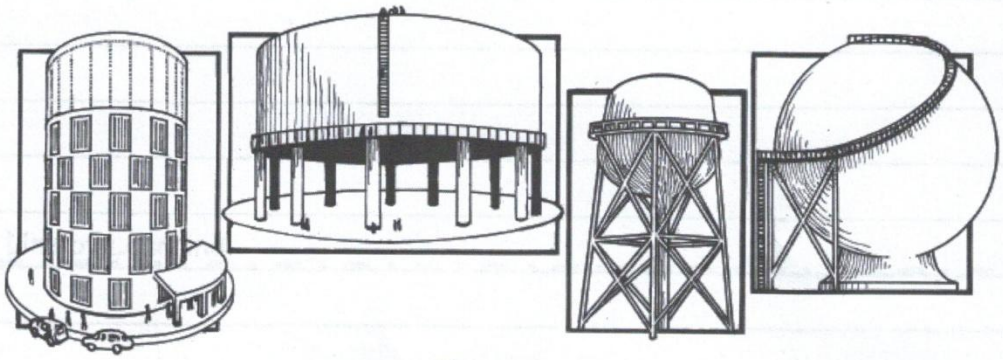
Have you ever noticed a water tower in your town or on top of a building? Utility companies use water towers to store clean water until you are ready to use it.

Why do you think water towers are so tall? Think of pouring water from a cup. The higher you hold the cup, the bigger the splash. That is because the **water pressure** is greater when the water falls from a greater height.

When water is released from the tower, the pressure of the water pushes it down and through pipes. The pipes carry the water directly to your home, offices, and other buildings.

Conserving Our Water

What happens to the water we use after it disappears down the drain? This **wastewater** must be cleaned before we can use it again. Cleaning our water costs money and takes time. Clean water is a limited resource. We must be careful not to waste it. Continue to keep track of how much water you use each day. Then decide if you are using it wisely.



Water towers

According to the selection, what are three steps, in order, that companies take to get clean water to people?

_____

_____

_____

_____

_____