Name_____ Date_____ Block_____

Earth's Water Features

Earth's water features include <u>oceans, lakes, ponds, glaciers, rivers, streams, creeks, bays, and wetlands.</u>

Earth has many different kinds of water features. Surface water features are bodies of liquid or frozen water that are located on the Earth's surface. Most of the surface water on Earth is saltwater, and it is found in the oceans that surround the continents.

Most of the Earth is covered by the oceans, which are shown as blue on the globe above.

Many smaller bodies of surface water are made up of freshwater. Below is a description of different types of surface bodies of water.

Oceans

<u>Oceans</u> are the largest bodies of water and cover over 70 percent of Earth's surface. The continents separate the oceans into five parts: the Atlantic, Pacific, Indian, Southern, and Arctic oceans. Oceans contain saltwater.

Oceans are so large that it is not possible to see land on the other side.

Name_____ Date_____ Block_____

Lakes

Lakes are large bodies of water that are surrounded by land. Though most lakes contain fresh water, some have salt water. Lakes are smaller than oceans, but they are usually large enough to use a motorboat in.

Lakes can be large, but they are often still small enough to see the other side.

Lakes are lentic ecosystems. In lentic ecosystems, water stands almost still. The different layers of a lentic body of water may have different ecosystems. This is because different amounts of light and heat can reach the different layers. Organisms living in the top layers of the water receive more light and heat. Organisms living in the bottom layers may receive almost no light, and it can be very cold. The amount of oxygen in the water of a lentic ecosystem also changes with the depth of the water.

Ponds

Ponds are very much like lakes, but ponds are smaller.

Ponds are smaller than lakes. They are not usually large enough to use a motorboat in.

Like lakes, ponds are lentic systems. Since ponds are smaller, they can be shallower as well. Therefore, ponds usually contain fewer layers, or zones, than lakes. Fewer layers means fewer different kinds of ecosystems within a pond than in a lake.

Name_____ Date_____ Block_____

Bays

Bays are bodies of water that are surrounded on almost all sides by land. But bays are connected on one side to an ocean or river.

Bays are surrounded on almost all sides by land.

The water in a bay is usually more still than the water in the connecting river or ocean. They can therefore be considered lentic ecosystems.

Glaciers

Glaciers are very large sheets of frozen water that sit on top of land. Glaciers are found where it is cold, like high in the mountains or near the Earth's poles. All glaciers are made of freshwater. Most of Earth's freshwater is present in the form of glaciers.

Glaciers are frozen surface water.

Name_____ Date_____ Block_____

Wetlands

A wetland is land where water soaks the soil and forms shallow pools during at least part of the year. Wetlands serve many purposes. For example, wetlands provide good protection from flash flooding and help to clean up pollutants. Plants in wetlands purify water by absorbing any pollutants the water contains.

Wetlands are also rich habitats for plants and animals because they offer plenty of food resources and protection for breeding. Wetlands are home to many different types of animals, such as frogs, turtles, beavers, raccoons, and migrating birds.

Swamps and marshes are two main kinds of wetlands.

> **Swamps are flooded part of the year and are home to trees and shrubs. They are lentic ecosystems. The water in a swamp can be freshwater, saltwater, or brackish water. Brackish water is saltier than freshwater but not as salty as ocean water. Swamps usually appear in low-lying areas. The Florida Everglades are classified as a swamp. Swamps usually have many trees.**

Name_____ Date_____ Block_____

Marshes are flooded most of the year and are home to non-woody plants like reeds and grasses. Marshes can be between about 6 inches and 3 feet deep. They can appear around the edges of lakes and rivers where the water is shallower. Marshes have fewer spans of open water than swamps. Marshes can be associated with **estuaries**, which are areas where a river ecosystem meets an ocean ecosystem.

Marshes have few trees but many grasses.

Rivers

Rivers are natural bodies of flowing water that empty into oceans, lakes, bays, or other rivers. Though a few rivers contain salt water, most have fresh water. Rivers are generally larger than streams or creeks.

Rivers are often very wide and almost always very long. They are generally larger than streams or creeks.

Rivers are **lotic ecosystems**.
This means that:

- Water in the ecosystem flows, and the flow is in one direction only.
- The water and make-up of the system is constantly changing.
- Plants and animals living there are adapted for living in flowing water.

Name_____ Date_____ Block_____

Different lotic ecosystems can have different characteristics. Some of the characteristics are affected by the speed of the moving water. Fast-moving water can carry more particles of soil, so the river may be murky. This can decrease the light available to plants living in the ecosystem. Speed of water flow can also affect the amount of oxygen in the water. Animals living in the water need oxygen. Fast-moving water tends to be cooler, and it mixes with the air above it more. So these kinds of lotic systems can have higher levels of oxygen.

Streams

Streams are flowing bodies of fresh water that empty into rivers or lakes. They are usually narrower and shallower than rivers.

Streams are usually smaller than rivers.

Like rivers, streams are lotic systems. The speed of the water in a stream may be lower than that of a river, but it also may be higher. It is determined by the elevation of the land through which the stream is flowing.

Creeks

Creeks are flowing bodies of fresh water that empty into rivers, lakes or ponds. Creeks are types of streams that are usually quite small and shallow. Creeks are often smaller than rivers.

Creeks are also lotic systems. Flow of water through a creek can be very slow, except in times of heavy rain. During and just after heavy rains, creeks may swell and overflow their banks, causing flooding.

Name_____ Date_____ Block_____

Watersheds

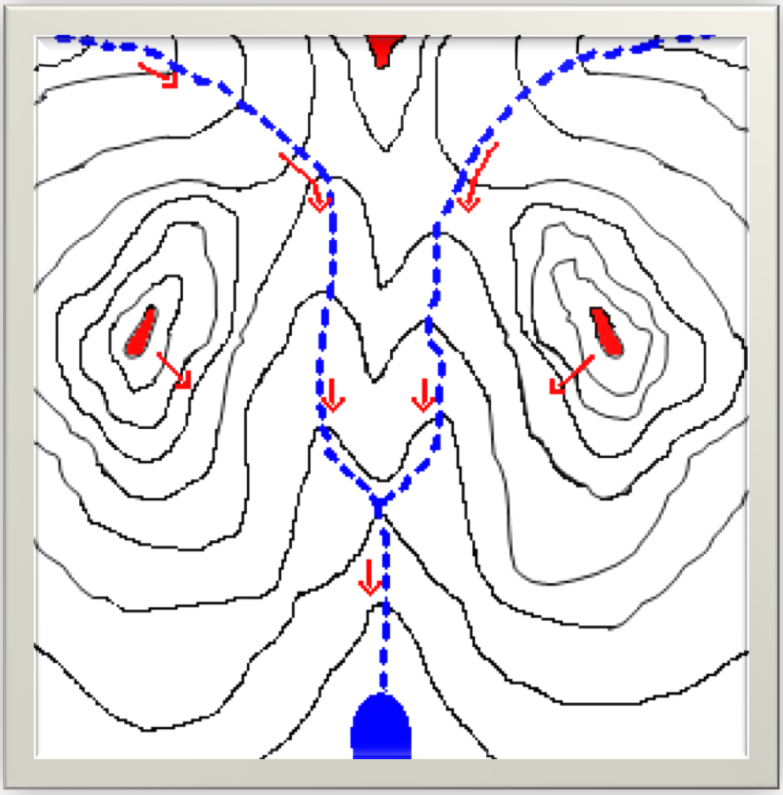
A watershed is a region of land on which rain or snow drains downhill into a certain body of water, such as a river, lake, sea, ocean, or wetland.

Watersheds are sometimes called drainage basins because all of the precipitation that falls on the land within a watershed drains into one body of water located at the lowest elevation (the lowest point) in the watershed. Compare a watershed to a funnel: it collects all the water within the drainage area and channels it into a waterway.

Some important facts about watersheds are listed below:

- **Watersheds can be very large and can include many different types of land, plants, animals, and ecosystems.**
- **Runoff from land in a watershed, along with any sediment or dissolved materials the runoff picks up, may drain to a body of water that is very far away.**
- **Everything humans put into their air and water ends up in the body of water that acts as the watershed's collection area.**

A watershed includes waterways, such as rivers and streams, and the land that drains into them. Watersheds are separated topographically by a ridge, hill, or mountain. These geographical features are called drainage divides, and they do just what the name implies: they divide the land into separate watersheds. A watershed map is shown to the left. The black lines on the map are elevation lines. Where the black lines are close together, the elevation is high. Where they are far apart, the elevation is low.



The highest areas of the map—the hills at the top and sides of the watershed—are highlighted. The path of water drainage is shown by arrows. The river is shown by a dotted line, and the lake into which the water drains is shown at the bottom..

Name_____ Date_____ Block_____

Runoff & Groundwater

Groundwater is precipitation that has soaked into the ground. This water can cause aquifers, caverns, and sinkholes to form.

Rivers Begin as Runoff

Precipitation or melting snow or ice can either soak into the ground or become runoff. Runoff is surface water that travels downhill and drains into streams and rivers. This process of draining into a body of water is called collection. First, the water may collect in small gullies and streams. As the water travels downhill, the streams join together into larger streams until they flow into a lake, river, or ocean. The whole area of land that drains into a river, lake, or ocean is called a watershed.

Precipitation that falls onto these hills drains into the river in the floor of the valley.

Name_____ Date_____ Block_____

Groundwater is Stored in Aquifers

Groundwater is water that soaks into the ground through cracks and tiny holes, called pores. Groundwater may collect in a large area underground, almost like a lake. If porous (sponge-like) rock sits on top of a layer of non-porous (more solid) rock, then it keeps the water from flowing deeper into the ground. These natural underground water tanks are called aquifers.

Movement of water into aquifers is called groundwater recharge. Groundwater recharge is a very slow process. Humans use aquifers as a source of freshwater. When humans use a lot of the water in an aquifer, it may not refill as fast as the people are using it.

The speed of water as it travels over land can affect whether the water becomes groundwater or collects on the surface. When water travels over land slowly, it is more likely to seep into the ground. One thing that affects the speed of moving water is the presence of plants. Plants slow the flow of water. This gives the water time to seep in.

The video shows how plants on a slope can slow down runoff and affect whether water ends up as groundwater or surface water. Write your observations about the video below.

_____

_____

_____

_____

_____

Name_____ Date_____ Block_____

Groundwater Forms Caverns and Sinkholes

Groundwater can also help to form caves, caverns, and sinkholes. As groundwater seeps through porous rocks, small amounts of minerals dissolve into the water and are carried away. Over thousands of years, enough rock may be removed that a cavern forms. A cavern is a hollow area under the ground. Caverns often form in limestone or dolomite rock because those kinds of rock dissolve more easily than many other rocks.

Caverns can form when water erodes underground rock.

If a cavern is close to the surface, the weight of the ground above the cavern may cause the soil to fall down into it. When this happens, a sinkhole forms. It usually isn't possible to tell that a cavern is forming until the ground collapses and a sinkhole forms. Sinkholes can be dangerous. They can be deep and filled with water. People, animals, roads, or buildings can fall into them.

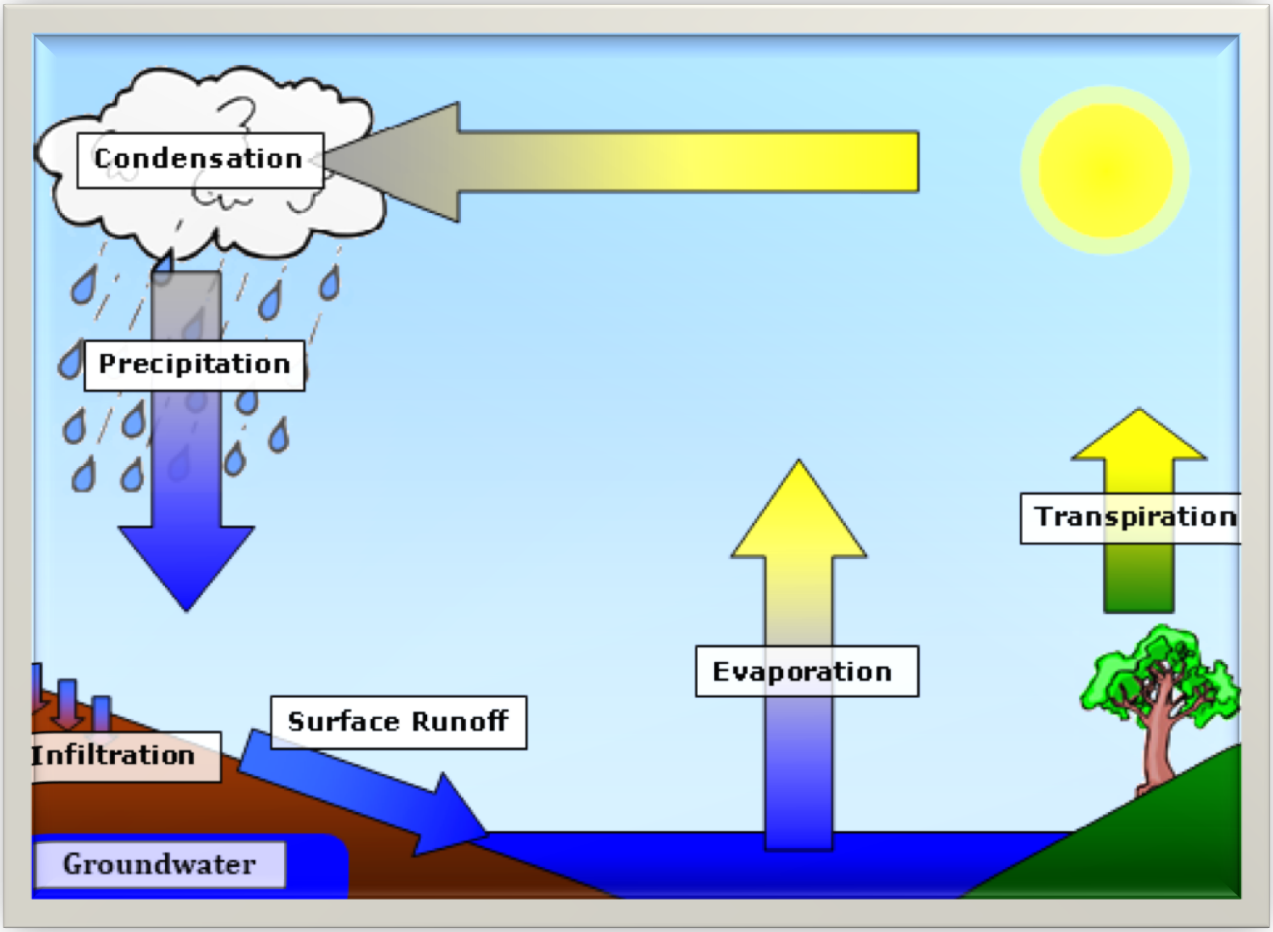
The Water Cycle

The water cycle is how water moves from the Earth's surface into the air and back down to the Earth again.

The water cycle is mostly caused by the Sun heating ocean water. Most of the water on Earth is stored in the oceans as a liquid. Energy from the Sun can cause this liquid water to change state. The steps of the water cycle show the way that water changes between its solid, liquid, and gas forms. These steps include evaporation, condensation, and precipitation. Once liquid water reaches Earth's surface, it can go through two more steps: infiltration and surface runoff.

EARTH'S WATER

Name_____ Date_____ Block_____



The Sun heats liquid water on the Earth's surface and changes the liquid into a gas. This step is called evaporation. Most of the water vapor—water in a gas state—in the atmosphere comes from the surface of the oceans. This is true because most of the Earth's liquid water is in the oceans. Water also evaporates from the lakes and rivers. This removes water from a watershed.

Water vapor in the atmosphere eventually cools and once again becomes liquid. In this step, called condensation, tiny water droplets are formed inside clouds or fog. The water droplets grow until they become too large and heavy to be contained by the clouds. The heavy droplets then fall to Earth as liquid precipitation—such as rain. If freezing takes place while this liquid water is still in the air, precipitation will be in the form of snow, sleet, or hail. Large amounts of precipitation can lead to flooding.

Some of the precipitated water soaks into the ground. This step is called infiltration. This water may become trapped between rock or clay layers; this is called groundwater. However, most of the water flows downhill as runoff, eventually returning to the ocean.

Name_____ Date_____ Block_____

Earth's Water

Question 1 .
What type of water system is made of moving water such as streams and rivers?

A. lantic
B. limbic
C. lentic
D. lotic

Question 2 .
The picture below shows a body of water found on the Earth.

What is the body of water shown in the picture called?

A. a stream
B. a lake
C. an ocean
D. a river

Question 3 .
How do plants and animals benefit from watersheds?

A. Watersheds provide a continuous supply of freshwater.
B. Watersheds provide a continuous supply of saltwater.
C. Watersheds stop the flow of sediment.
D. Watersheds protect against drought.

Name_____ Date_____ Block_____

Question 4 .
Salmon swim upstream to mate every year in rushing creeks and rivers. What type of water system are they traveling through?

A. lotic
B. lantic
C. lentic
D. limbic

Question 5 .
What happens in the process of the water cycle?

A. Water keeps the same physical properties.
B. Water becomes a gas in between each step.
C. Water changes from one state to another.
D. Water transforms into other types of liquid.

Question 6 .

A sea is
A. a large body of freshwater that is also called a lake.
B. a small body of saltwater that connects a river to a pond.
C. a small body of freshwater where rivers usually begin.
D. a large body of saltwater that usually connects to an ocean.

Question 7 .

After rain, water soaks into the ground and is added to the groundwater. This process is known as
A. groundwater filtration.
B. groundwater pollution.
C. groundwater recharge.
D. groundwater recycling.

Name_____ Date_____ Block_____

Question 8 .
If a watershed includes a polluting factory, how will the factory affect the water source of a downstream town?

A. It will increase the downstream town's water quality.
B. It will decrease the downstream town's water quality.
C. It will have no impact on the downstream town's water quality.
D. It will eliminate the downstream town's water.

Question 9 .

Which definition below describes a lentic water system?

A. moving or running water
B. standing or still water
C. salty or brackish water
D. all of these

Question 10 .

How does water move during the water cycle?

A. Water moves in a continuous cycle from the surface of the Earth, through the crust, oceans, and atmosphere.
B. Water moves through a non-repeating cycle from the surface of the Earth, through the crust, oceans, and atmosphere.
C. Water moves through a non-repeating cycle from the oceans to beneath the Earth's surface only.
D. Water moves in a continuous cycle from the oceans to beneath the Earth's surface only.

Question 11 .

Which type of body of water is enclosed by land on all sides?

A. lake
B. bay
C. estuary
D. cove

Name_____ Date_____ Block_____

Question 12 .

Which of these would remove water from a river?

A. snow in the mountains above the river melting
B. rain falling in the area near the river
C. a stream flowing into the river
D. river water seeping into the soil

Question 13 .

Which term below refers to water that falls to the Earth in the form of rain, snow, hail, or sleet?

A. transfiguration
B. condensation
C. evaporation
D. precipitation

Question 14 .

Which part of a watershed plays the greatest role in water filtration?

A. estuary
B. wetland
C. stream
D. lake

Question 15 .

A stream is part of a watershed. The main role of the stream is to

A. transport water.
B. filter water.
C. collect water.
D. produce water.

Name_____ Date_____ Block_____

Question 16 .

Which of the following bodies of water are part of the lentic system?

A. lakes and creeks
B. brooks and lakes
C. streams and rivers
D. ponds and lakes

Question 17 .

If a watershed suddenly receives a great deal of rainfall, what will happen to its wetlands and rivers?

A. Their water levels will go down.
B. Their water levels will rise.
C. Their water levels will stay the same.
D. Their birds will migrate earlier in the year.

Question 18 .

Which stage of the water cycle removes water from a watershed?

A. condensation
B. evaporation
C. runoff
D. precipitation

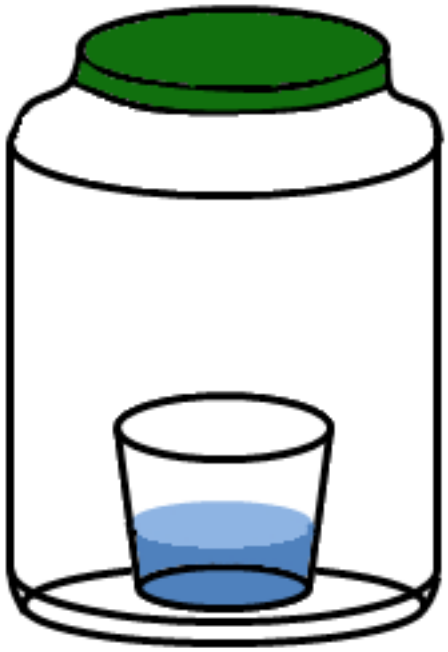
Question 19 .

What is the water cycle?
A. the movement of water from water sources to your home
B. the movement of water in the ocean against the shore
C. the path water takes as it circulates from land into the air and back again
D. the path water follows as it travels from creek to river to the ocean

Name_____ Date_____ Block_____

Question 20 .

Kevin designed and built a model of the water cycle using a jar and a small cup of water. He placed the cup of water inside the jar and covered the jar with the lid. He placed the model in a sunny spot.



Then, he observed the model each day. Some of his observations are listed below, but they are not in the correct order. In what order did they happen? Label the following observations 1,2, and 3.

- **Water evaporated from the cup._____**
- **Water precipitated, or ran down the walls of the jar._____**
- **Water condensed on the walls of the jar._____**

Question 21 .

The bowfin is a fish that is found only in fresh water. In which of the following bodies of water would you expect to find it living?

A. sea
B. lake
C. gulf
D. ocean

Name_____ Date_____ Block_____

Question 22 .
Which of these best describes how snow leads to runoff in a watershed?

A. Snow melts and the water flows into streams and rivers.
B. Snow falls and is buried by dirt.
C. Snow clogs up streams and rivers.
D. Snow evaporates and forms clouds.

Question 23 .

What role do the wetlands perform in the water cycle?

A. moderate flood waters
B. stabilize underground water sources
C. filter pollutants
D. all of these

Question 24 .

Which of the following is always a water body consisting of saltwater?

A. pond
B. river
C. ocean
D. stream

Question 25 .

What is a watershed?

A. a community of living things and the environment where they live
B. land that is always flooded with shallow water
C. a man-made habitat that has been built to replace natural wetlands
D. the land area from which all water drains into one lake, river, or ocean

Name_____ Date_____ Block_____

Question 26 .
Look at the image below.

Which of the following is shown in the image?
A. cave
B. watershed
C. island
D. glacier

Question 27 .

A small, flowing body of freshwater that flows into a river is _____.
A. a stream
B. an ocean
C. a sea
D. a pond

Question 28 .

Most drinking water comes from rivers, lakes, or water underground. What step in the water cycle does drinking water come from?
A. evaporation
B. condensation
C. collection
D. precipitation

Name_____ Date_____ Block_____

Question 29 .

Before water vapor in the air condenses into clouds, the air must become _____ than it was when the water evaporated.
A. lighter
B. warmer
C. cooler
D. drier

Question 30 .

Whitney is fishing with her father. They are fishing at a body of freshwater that is smaller than a lake and surrounded by land.

Whitney and her father are fishing at _____.

A. a sea
B. an ocean
C. a river
D. a pond

EARTH'S WATER

Name_____ Date_____ Block_____