

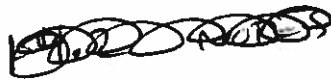
14.1 The Earth's Water

- 80% of the earth is made up of water, whether that is in the lakes and oceans or in the ground or air.
- Water is in continuous motion, it moves from the atmosphere to the earth's surface back to the atmosphere
 - This process is called the **WATER CYCLE**
 - The water cycle is powered by heat from the sun
 - Heat evaporates surface water creating water vapor which will rise into the atmosphere. As it rises it cools and condenses into clouds. Water droplets grow in the clouds and fall to the earth as precipitation and lay as surface water. The process repeats itself.
- So what happens when precipitation falls? → it sinks into the ground and becomes **GROUNDWATER**. (Water that does not sink is called surface water, this will evaporate and move through the water cycle).
 - The surface water that does not evaporate is known as **RUN OFF**- or water that runs over the earth's surface and flows into rivers and streams.
 - Groundwater can sink into the soil because it is very **POROUS** (contains air pockets where water can move through). Topsoil is very porous but soil gets more dense the deeper you go
 - As water moves downward, it eventually reach bedrock, through which it cannot move. The ground above this that is soaked with water is called the **WATER TABLE**
 - About half of the drinking water in the USA comes from ground water and the water table.
- Why doesnt all precipitation sink into the ground?
 1. The ground may already be saturated with water so it is unable to soak up anymore water
 2. On a slope, water flows too quickly to sink into the ground and instead will move downslope.
 3. The ground may not have enough vegetation to stop the water from flowing elsewhere. Plants and their roots soak up the water.

SOURCES OF FRESHWATER

- Fresh water is our most important resource. Only 3% of the earth's water is fresh and only 1% is NOT frozen or trapped underground.
- Fresh water is commonly found in lakes, reservoirs, rivers, caves, springs, and geysers.
 - Spring is a place where groundwater flows naturally out of the ground
 - Geyser is a place where hot groundwater and steam blast into the air
 - Moving groundwater will seep through cracks in the limestone of caves, and if the roof of the cave were to collapse this would create a **SINKHOLE** that would be filled with fresh groundwater.
 - Rivers start as run off that flows quickly creating paths in the ground, forming small streams. Streams would eventually combine to create rivers.
 - Rivers that join other rivers are called **TRIBUTARIES**
 - Lakes are formed from surface water that does not flow, but collected in a depression left behind usually from a glacier melting.
 - Artificial lakes are called reservoirs. They are created by placing a dam across a river

- Reservoirs serve 3 purposes
 1. They store water
 2. They control flooding
 3. They can produce electricity



OCEANS

14.2

NOTES

PROPERTIES OF THE OCEANS

- All ocean water is salt water. Its composition is 96.5% water and 3.5% dissolved salt. This salt comes from rocks on the ocean floor and can be washed into the ocean from rivers.
- Salinity (amount of salt in water) varies in each ocean.
 - In warmer climates, the water evaporates but not the salt leaving behind a saltier water
 - In rainier climates, the fresh rain water dilutes the salt water causing the waters here to be less salty.
- Ocean water is warmest near the surface because the sun is able to heat it up via radiation.
 - Near the equator surface water can reach a temperature of 86 degrees.
 - The water temperature decreases with depth, because the sun's radiation cannot reach it.
 - The space between the surface of water and the ocean floor is known as the THERMOCLINE. Here is where the sharp decrease in temperature occurs.

WAVES

- Wave is a regular up and down motion of water caused by energy traveling through the water. Waves get their energy from the wind. The stronger the wind, the larger the wave (duh).
- As a wave approaches the shore, the wave rubs against the ocean floor. This friction at the bottom of the wave is what causes it to slow down.
 - The bottom of the wave slows, NOT THE PEAK (CREST). This is what causes the spiral shape of waves as the peak crashes onto the surface in front of it.

OCEAN CURRENTS

- Current is a large stream of water flowing in oceans, rivers and some lakes.
- Currents tend to follow major wind belts.
- Currents carry warm water from the equator towards the poles and the cold water back towards the equator. In doing this currents can affect climates on land by warming or cooling the coasts of continents.
- Currents play a huge role in the climate of the world and some attribute this to the causes of global warming. The more warm water moving around, the more warm climates will be created.

OCEAN FLOOR

- The ocean floor is a great mystery to us because we have not been able to explore most of it.
- Can contain mountain ranges called MID OCEAN RIDGES. And can contain volcanic mountains called SEA MOUNTS.
- It is made up of 5 parts
 - Continental Shelf- part of the land mass that extends into the water. Slopes gently until about 130 meters deep
 - Continental Slope- sharp drop off into the deep ocean floor
 - Continental Plain- the deep ocean floor that comes off the slope
 - Trenches- long deep valleys that drop off the plain

- Abyssal Plain- the deepest part of the oceans, located at the bottom of trenches

OCEAN LIFE

- Ocean environments support a rich variety of living things. Scientists classify these living things into 3 categories
 1. Plankton- tiny organisms that live near or at the oceans surface EX. Plankton the animal
 2. Nekton- free swimming ocean animals EX Squid, jellyfish, sharks, seahorse, etc....
 3. Benthos- organisms that live at the ocean floor. EX coral, crabs, sponges

Name _____

1. How much of the earth is made up of water? _____

2. Explain the process of the Water Cycle.

3. What is groundwater? _____

4. As water moves downward it eventually will reach _____, through which it cannot move.

5. The top soil above the bedrock that is soak in water is called _____.

6. How much of our drinking water comes from groundwater? _____.

7. True or false: Only 3% of the earth's water is considered salt water.

8. Name 4 places fresh water is commonly found

9. What is a reservoir and how is it created?

10-12. What are the 3 reasons precipitation doesn't sink into the ground?

1. _____

2. _____

3. _____

13-15. What 3 purposes does reservoirs serve?

1. _____

2. _____

3. _____

Name _____

1. What is the composition of water? _____
2. Which climate has saltier water, cooler or warmer, why?

3. Where does salt in the oceans come from? _____

4. The temperature of water _____ as you go deeper because the _____ is unable to heat the deeper water.

5. The space between the surface of the water and the ocean floor is called _____.

6. Where is ocean water the warmest? _____

7. True or false: waves get their energy from the sun.

8. What role does friction play in the crashing off waves?

9. Explain how currents could be attributed to having an affect on global warming?

10-14. List and describe the 5 parts of the ocean floor?

1. _____

2. _____

3. _____

4. _____

5. _____

15-20. List and give an example of the three kinds of ocean life?

1. _____

2. _____

3. _____

Name _____

Define

1. Salinity
2. Wave
3. Current
4. Water Cycle
5. Run off
6. Porous
7. Groundwater
8. Water table
9. Thermocline
10. Geyser
11. Trench
12. Spring
13. Seamount
14. Tributary
15. Plankton

Short Answer

1. How much of the earth is made up of water? _____
2. What is groundwater? _____
3. As water moves downward it eventually will reach _____, through which it cannot move.
4. The top soil above the bedrock that is soaked in water is called _____.
5. How much of our drinking water comes from groundwater? _____.
6. True or false: Only 3% of the earth's water is considered fresh water.
7. Name 2 places fresh water is commonly found

8. What is a reservoir and how is it created?

- 10-11. What are the 2 reasons precipitation doesn't sink into the ground?

1. _____

2. _____

12. Give me 1 purpose that a reservoirs serve?

1. _____

13. What is the composition of water? _____

14. Why is water in a rainier climate not as salty as a warm climate?

15. What percent of water is salt? _____

16. The temperature of water _____ as you go deeper because the _____ is unable to heat the deeper water.

17. The space between the surface of the water and the ocean floor is called _____.

18. In general, is the water near the equator warm or cold? _____.

19. True or false: waves get their energy from the sun.

20. What force causes the bottom of a wave to slow down while the peak stays the same speed causing the wave to topple over itself? _____

21. Explain how currents could be attributed to having an affect on global warming?

22-24. List and describe the 3 parts of the ocean floor?

3. _____

4. _____

5. _____

25-30. List and give an example of the three kinds of ocean life?

1. _____

2. _____

3. _____