Read

Water pollution is a huge problem.

- Humans destroy water usability
- Overuse and mismanagement of limited natural resource
- Pollution (air, water, soil)
- The water cycle helps to clean some things out, but water by its nature, picks up many substances and carries them in dissolved or non dissolved (dissolved) form.

- Point source- a specific source (origin) of pollution can be identified. For example: a specific industry dumping waste.

can point →

- Non point source- no one particular source (origin) of pollution can be ident For example: general runoff of motor oil from cars in a city.

can't tell →

Water pollution is a huge threat to the oceans.

1. dumped deliberately and directly into the ocean
2. accidently lost into the ocean in storms, accidents, or overboard (oil spills- Deep Horizon oil well April 20, 2010
3. Rainwater picks up pollutants in the air and they come down in the rain.
4. Pollutants reach the ocean by being carried in rivers that reach the ocean.

Common pollutants

Sewage- acts like a fertilizer and upsets the balance of the ecosystem. This can cau algae to grow too fast (called an algal bloom) which can kill many organisn

Chemical pollution: (many cause cancer)

- Herbicides- weed killers
- Insecticides- insect killers
- Heavy metals- mercury, lead, aluminum
- Industrial chemicals such as PCB(polychlorinated biphenyls)

Heat- from industry, nuclear power plants

Many pollutants can get "biomagnified" or increase up the food chain.

Oil pollution

Solid waste- trash-(plastic, glass, aerosol cans, light bulbs, etc)

Many can kill sea animals (sea turtles choke on plastic bags because they th they are food such as jellyfish)

Sediment- silt from weathering and erosion on land can accumulate in coastal area destroying coral reefs, and salt water marshes

Controlling Water pollution

There are many laws (Water Pollution Control Act

Safe Water Drinking Act 1996, Clean Air Act, Clean Water Act 1987) etc that hel people STILL POLLUTE

What can you do?

- Volunteer to clean up (rivers alive, beach clean ups)
- Recycle and reuse
- Never dump chemicals like oil, gasoline, or paint into soil or water.

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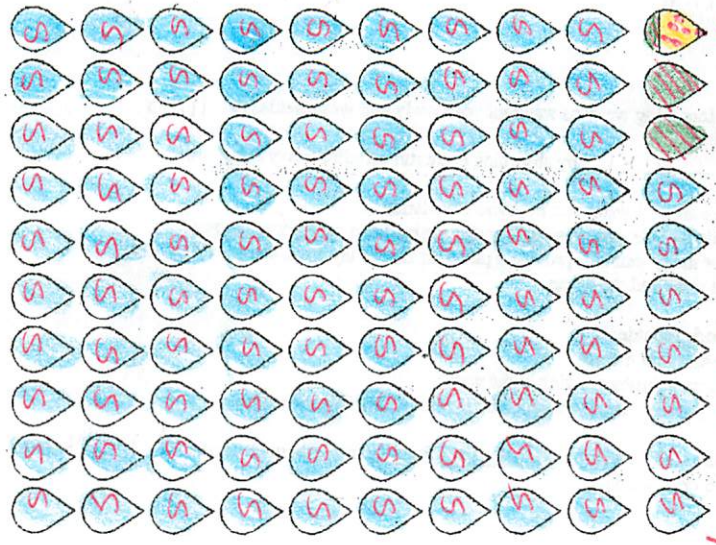
Name _____ Period _____

How much water?

Directions: Choose five different colors. Color the five boxes below. Use that color to fill in the specified number of "drops".

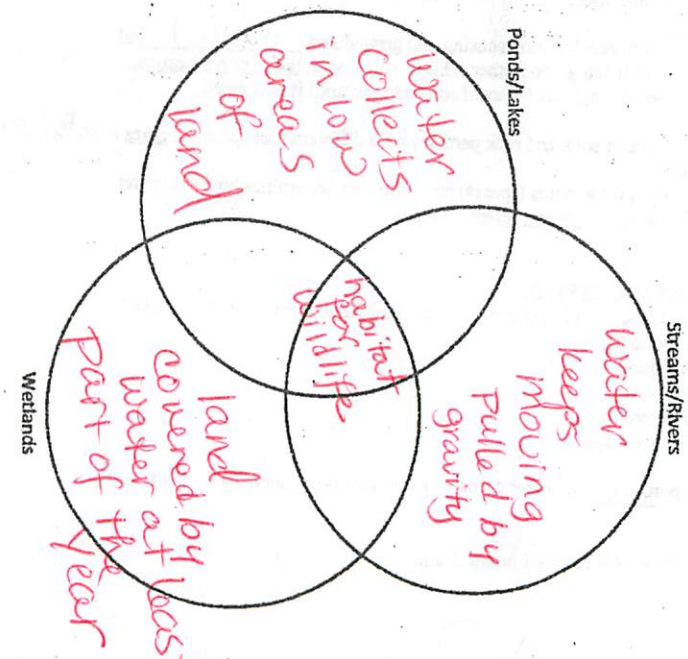
- top section of 1st drop
- second section of 1st drop
- third section of 1st drop
- bottom of 1st drop & 2 more drops
- all other drops



river, lakes, streams
groundwater
frozen
ocean salty = 5

Types of Surface Water

Directions: Use your textbook and the three part Venn Diagram below to compare and contrast some of the different types of surface water: Streams/Rivers, Ponds/Lakes, and Wetlands.



Why wetlands are important

cut off missing

1. ** Filtering incoming water as water moves slowly and waste settles out. This
2. **help control flooding by absorbing extra run off after heavy rains

Recognize that there are salt water and freshwater wetlands.
Salt water wetlands include **estuaries (salt water marsh)** and **mangrove swamp**
These are homes for many animals, provide a place for fish to lay eggs, and provide a barrier between the river and the ocean.

Freshwater wetlands include:
Bogs have acidic water and mosses.
Swamps have trees and shrubs growing in the water.
Marshes are usually grassy areas with water or streams. (cattails are seen here)

Major swamps in the south east are the **Okefenokee Swamp** in southern Georgia and the **Everglades** in southern Florida.

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17. Groundwater:

- Shallow ground water 11% of freshwater
- Deep ground water 12% of freshwater

- Comes from precipitation soaking into ground and gravity pul down until it can go no farther. This is called percolation or permeation.. percolates through the layers of soil and rock until it is stopped.

Different types of soils and rock particles have different size spaces or pores between particles.
The size and if these pores (spaces) are connected determines how easily wat (trickles = percolates = permeates) through.

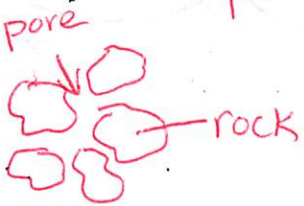
CRCT REVIEW QUESTION
Which factor is the most important in determining how much groundwater can b in underground rocks

A. Location
B. Porosity
C. Harness
D. Geologic age

Answer: B porosity; Remember porosity determines how much water flows dov rock layers.

Draw a picture of rocks and pores: Label

pore = connected air spaces



Know

Freshwater Powerpoint notes pg2

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Permeable- Characteristic of a material that is full of tiny, connected air spaces that water can seep (percolate) through. (gravel, sand, limestone)

Impermeable- characteristic of a material that will not allow water to pass through due to having few or no cracks and pores. (granite, clay)

******Be able to label a diagram of groundwater. See workbook page 158.**

Unsaturated zone- area of rock above the zone of saturation that is not filled with water.

Water table- the top edge of the saturated zone.

Saturated zone-The area of permeable rock that is saturated or filled with water

*****You would want your well to be drilled into the saturated zone and below the water table.**

Aquifer- Any underground layer of rock or sediment that holds water.

Many large aquifers supply water for household, agriculture, and industry. Many aquifers were filled up a long time ago and it takes many years to replenish (sometimes thousands of years). The Ogallalah aquifer is an example where the water table has dropped significantly due to excessive water being pumped out and not replaced.

An **artesian well** is a well that has built up pressure inside and usually does not require pumping for it to flow. The water rises on its own.

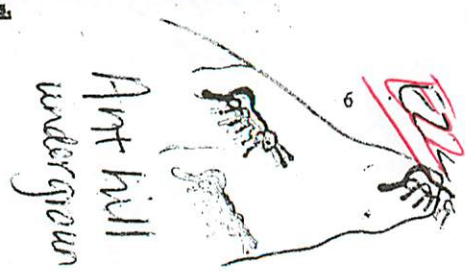
Geysers and Hotsprings are found where underground water is heated by the mantle. **Geysers** build up pressure and are periodically released into the air with a spray of steam and very hot water. The most famous is Old Faithful in Yellowstone National Park. We have Warm Springs in Georgia where President Franklin D. Roosevelt visited and swam to help relieve his polio symptoms. He called his house, in Warm Springs, Ga., "The Little White House."

- **Geothermal Energy** is the use of heat of the earth to produce energy: warm water, heat homes, and to produce electricity using steam driven generators.

Homework: Read pages 326-331 complete workbook pages 157-159.

Humans use water for:

- Household purposes (drinking, cooking, toilet, cleaning)
- Industry
- Transportation
- Agriculture **(irrigation)- the process of supplying water to areas of land to make them suitable for growing crops.**
- Recreation (boating, skiing)



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