

Name: _____

Study Guide for Exam 3

8. In detail, describe and draw both a land breeze and a sea breeze.

Land breezes come from the land and go toward the sea. This is usually at night. The land cools down faster, so the ocean is warmer. Cooler air over land moves toward warmer air rising over the ocean

Sea breezes come from the sea and go toward the land. This is usually during the day. The land heats up faster, so the cooler air over the ocean moves toward warmer air rising over the ocean.

9. Explain in detail the causes wind?

Air molecules move from a higher pressure (more crowded) to a lower pressure (less crowded) This horizontal movement of air is wind.

Differences in temperature cause differences in air pressure, which causes wind.

10. Define and provide an example of conduction, convection, and radiation. Which is responsible for the majority of heating in the troposphere?

Conduction heat transferred through touching (a metal spoon in a hot liquid)

Convection is heat transferred through a fluid, by convection currents. (heat rising, cool sinking) this can be seen in the atmosphere, ocean, and mantle.

Radiation is transfer of heat or light through space. (light from the sun to the earth)

11. Describe in detail the global wind belt and why it curves. Does this change from day to day or remain constant? Global wind belts blow constantly over long distances. This is because the equator and poles are unequally heated. They remain constant and do not change. The polar easterlies, prevailing westerlies, and trade winds are the global wind belts.

They curve due to the Coriolis Effect. The Coriolis Effect is caused by the rotation of the earth.

12. Compare and contrast the characteristics of warm and cold air.

Warm air is less dense and has less pressure. This is because the molecules have more energy (heat) and spread out.

Cold air is more dense and has more pressure. This is because the molecules have less energy (colder) and come together.

13. Compare the weather conditions of high pressure and low pressure systems.

High pressure systems (H) are clear and dry. This is because air moves away from this area.

Low pressure systems (L) are cloudy or wet. This is because air moves toward this area.

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1. Does the amount of water on earth change over time? Why?

No, the amount does not change over time. (it is fairly constant). This is because water is recycled through the water cycle. Water evaporates and is returned by precipitation.

2. Where is the greatest amount of water on earth? Where is the greatest amount of fresh water?

Salt water or the ocean is the greatest amount of water on earth at 97% compared to fresh water at 3%. ($97\% + 3\% = 100\%$)

The greatest amount of fresh water is in the form of ice. The polar ice caps and glaciers hold most of the fresh water.

3. How much of earth is covered with land? How much is water? How much salt water? How much fresh water?

Land 25% Water 75%

Salt water 97% Fresh water 3%

4. Explain how temperature on earth is affected by the unequal heating of land and water.

Earth has a moderate (just right) temperature because water and land heat unequally. Water heats slower and cools down slower than land. The water will hold more heat and will also allow areas near the coast (coastal) to have milder temperatures compared to continental (land locked areas)

5. Explain how land absorbs radiation from the sun compared to water.

Land (rocks and soil) heats up faster and cools down faster than water.

6. Explain why the upstairs of a house is hotter than downstairs during the summer.

Heat air rises and cool air sinks. This air moves upward in convection currents. This is also why it is cooler in the basement or lower areas of the house.

7. Why does earth's surface not heat evenly. Explain how land and water heat and cool differently.

3 things can make the earth heat unevenly.

Light surfaces reflect light. Dark surfaces absorb more light.

Land heat and cools down faster than water. Water heats up and cools down slower than land.

Angles of sunlight make the most difference. This is why we have seasons as the Earth revolves around the sun with a 23.5 degree axis tilt.