**Unit 3 Study Guide**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Study Guide is due Tuesday, April 21st for a homework grade.**

Unit 3 Vocab Test will be Friday, April 24th. Unit 3 Multiple Choice Test will be Thursday, April 23rd.

**Lesson 1 – Pages 165-173**

1. Write down the names of the 5 spheres including a short description of each sphere.

Biosphere- contains all living things

Geosphere- the rocky parts of earth

Cryosphere- the frozen water

Hydrosphere- the liquid water

Atmosphere- the gaseous part of earth

1. The Hydrosphere and Cryosphere is made up of both fresh water and salt water. What percent of water on the Earth is fresh water? What percent of the water on the Earth is salt water?

Freshwater = 3%

Salt water=97%

1. The Geosphere is made up of three layers. Write down the names of each layer. Which layer has the most mass?

The crust, Mantle, and Core

The mantle has the most mass.

1. Describe the density of the mantle compared to the crust.

The mantle is a littler denser then the crust

1. What is the composition of the Earth’s atmosphere?

78% nitrogen, 21% oxygen, 1% all other gasses like Argon

**Lesson 2 – Pages 180 – 185**

1. What causes atmospheric pressure?

The weight of air pushing down on an object

1. At higher elevations, why is it harder to breathe?

There are less air molecules

1. What happens to air pressure as altitude increases?

Air pressure decreases as altitude increases

1. List the correct order of the atmospheric layers from lowest to highest.

* Troposphere
* Stratosphere
* Mesosphere
* Thermosphere

1. Which layer of the atmosphere would contain the most of the ozone molecule naturally? What is the main benefit of ozone?

Stratosphere- to block harmful UV radiation

1. What is a direct result of the trapping of energy by Earth’s atmosphere?

Keeps the earth warm so life can exist on the planet

1. How does carbon dioxide influence the atmosphere?

The more CO2 in the atmosphere the more heat is trapped on earth. (It’s a greenhouse gas)

1. Why are cloudy nights warmer than clear nights?

Clouds are made up of water vapor and water vapor traps heat (greenhouse gas)

1. What does the prefix “thermo” mean? Why is the uppermost layer of the atmosphere called the thermosphere?

Thermo means heat. The thermosphere is called this because it is the hottest layer of the atmosphere and absorbs the most heat from the sun.

1. Explain why air pressure is greater at the surface than higher in the atmosphere.

There is more air pushing down on you the lower you are.

More air molecules = more weight of air=higher air pressure

**Lesson 3 – Pages 190 – 199**

1. Mr. Holthaus measures the temperature of the retention pond here at school. The following table shows the data. At what time was thermal energy of the water the LEAST?

|  |  |
| --- | --- |
| Time | Temperature in Degrees Celsius |
| 8am | 13 |
| 10am | 15 |
| 12pm | 18 |
| 2pm | 16 |

**8am is when thermal energy is the least because it is the coldest**

1. Why is sand on the beach warmer than the water in the ocean during the day?

Water has a higher specific heat then sand and doesn’t change in temperature as much

1. When air becomes warmer it expands, which type of energy increases as air becomes warmer?

Kinetic energy (thermal energy)

1. Describe what happens to the kinetic energy and volume of water as it is boiling.

The both increase

1. What are the 3 ways heat can be transferred? Describe each method in detail.

Conduction-by direct contact

Convection-by the movement of fluids

Radiation-by electromagnetic waves traveling over space

1. Sunlight warming dirt in a garden is an example of what type of heat transfer?

Radiation

1. Which type of light is the main form of electromagnetic radiation from the sun that reaches Earth’s surface?

Visible light

1. Which way does energy flow when water is in contact with an ice cube and warm air?

From the warmer object to the colder object

1. Give three examples of conduction.

Feet walking on hot sand

Skillet on a hot stove

Touching a hot spoon

1. Give three examples of convection.

Warm magma flowing upwards and cool magma flowing down causing plate tectonics

Warm air rising and cool air falling creating wind currents

Warm water rising and cool water falling creating ocean currents

1. As air is heated, it becomes less dense and rises. What causes the decrease in density of the warming air?

Thermal Expansion

1. Which types of matter can convection happen in?

All matter (solid, liquid, and gas) but mostly liquids and gasses

1. In what direction will energy flow when a warm rock comes into contact with cooler ground?

From the warm rock to the cooler ground

1. During the day when the Earth receives energy from the sun, what is the main form of the electromagnetic radiation? What is the main form of radiation released by the Earth at night?

Day=Visible light

Night = infrared light or heat