**ES106 Video Exercise – Introduction to Heat Energy NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Part 1. Heat Transfer.** Watch the Introduction to Earth Science video on the class web site, located at the following URL: <https://www.youtube.com/watch?v=1fbG4zt9xn4>

The video is about 5 minutes in duration, watch and answer the following review questions.

1. True or False: I like the jam music in this video.
2. List the three methods of heat transfer.
3. True or False: convection involves heat transfer through fluids.
4. True or False: Conduction involves transfer of electromagnetic radiation through space.
5. True or False: Radiation involves transfer of electromagnetic radiation through space.
6. Provide a home example of conduction.
7. Provide a home example of convection.
8. Provide a home example of radiation.
9. True or False: the Earth’s atmosphere is heated by radiation from the sun.
10. Warm air rising from the Earth’s surface is an example of what type of heat transfer process?
11. True or False: cold air is more dense than warm air, and sinks towards the ground surface.
12. True or False: ocean water is heated by radiation from sun energy.
13. True or False: warm water is more dense than cold water, and sinks.
14. Plate tectonic plate motion is driven primarily by what method of heat transfer?
15. True or False: heat is a hot topic in science.
16. What is heat and how is it measured?
17. What is the only method of heat transfer that doesn’t require movement of physical matter?
18. What method of heat transfer uses direct contact of materials to exchange energy?
19. What method of heat transfer uses movement of fluids to exchange energy?

**Part 2. Water Phase Changes.** Watch the video on the class web site, located at the following URL:

<https://www.youtube.com/watch?v=tuE1LePDZ4Y>

The video is about 4 minutes in duration, watch and answer the following review questions.

1. What is matter made of? What is the basic building block of matter.
2. True or False: a single drop of rain contains 3 water molecules.
3. List the three main states of matter.
4. True or False: solid materials are very liquid and changeable in shape.
5. True or False: a liquid is fluid and changes its shape to that of it’s container.
6. True or False: a gas is fluid and changes its shape of that of it’s container.
7. What is the primary method of changing liquids to solids?
8. What is the primary method of changing solids to liquids?
9. True or False: water only exists as a liquid on planet Earth.
10. What is the primary process that results in surface water of the earth changing from a liquid to a gas vapor.
11. True or False: as air rises in the atmosphere, it results in warming of temperature and cloud formation.
12. What is the primary force that causes precipitation to fall from the sky.
13. True or False: fresh water on the continents results from evaporation and transport from the oceans through the atmosphere as part of the hydrologic cycle.

**Part 3. Density Facts.** Watch the video on the class web site, located at the following URL:

<https://www.youtube.com/watch?v=zlkpZZW29b0>

The video is about 3 minutes in duration, watch and answer the following review questions.

1. True or False: a can of Diet Coke and a can of Regular Coke have the same density?
2. True or False: warming of air causes it to expand in volume and decrease in density.
3. True or False: cooling of air causes it to contract in volume and increase in density.
4. True or False: warm air rises and cold air sinks.
5. True or False: warm water rises and cold water sinks.
6. What is the density of water in grams per cubic centimeter?
7. True or False: ice is more dense than liquid water and sinks in a martini.