**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**ES106 Laboratory Video Review Exercise Atmosphere: Earth-Sun Relations**

Watch the introductory videos linked on the class web site, at the URL’s posted below, and answer the review questions.

**Solar Heating of the Earth (3 min)** [**https://www.youtube.com/watch?v=dg\_DOM1OQoo**](https://www.youtube.com/watch?v=dg_DOM1OQoo)

1. What is our primary external energy source on planet Earth.
2. Explain the basic process by which the sun creates energy.
3. What is the speed of light in miles per second?
4. How long in Earth time does it take light and electromagnetic radiation to travel from the Sun to the Earth?
5. True or False: all solar radiation from the sun penetrates the atmosphere and makes it to the Earth’s surface.
6. True or False: solar radiation is absorbed by the oceans, continents, and atmosphere to heat the Earth’s surface.
7. True or False: the atmosphere is heated mostly at high altitudes as the solar radiation first strikes the Earth’s air.
8. What is the greenhouse effect and why is it important?
9. What is the Earth’s average atmospheric temperature, globally, in degrees Fahrenheit?
10. True or False: all solar radiation that strikes the Earth’s surface is absorbed and used at the surface.

**Earth-Sun Relations and Seasons (~10 min)** [**https://www.youtube.com/watch?v=rcquRMaVSKU**](https://www.youtube.com/watch?v=rcquRMaVSKU)

1. True or False: the Earth tilts on it’s axis at an 23.5 degrees
2. How long does it take for the Earth to complete one rotation on it’s axis? (answer in hours)
3. How long does it take for the Earth to travel around the sun in one complete orbit? (answer in years)
4. True or False: the presenter in the first part of this video is a little creepy.
5. True or False: the seasons are caused by solar energy hitting the Earth at various angles throughout the year.
6. True or False: all locations on Earth surface receive the same amount of solar energy throughout the year.
7. True or False: the most direct solar radiation striking the Earth creates the highest heating factor.
8. Where is the most direct overhead sun located in terms of latitude at the spring and fall equinoxes?
9. True or False: at equinoxes, the length of day and night are the same all over planet earth, 12 hours each.

***MORE ON BACK…..***

1. At northern hemisphere summer solstice, at what latitude is the most direct heating effect of the overhead Sun located?
2. True or False: summer in the northern hemisphere is the longest day of the year for that region.
3. True or False: at fall equinox, the southern hemisphere receives most of the solar energy penetrating the Earth atmosphere.
4. At northern hemisphere winter solstice, at what latitude is the most direct heating effect of the overhead Sun located?
5. True or False: in the northern hemisphere, the sun’s path during the summer solstice is at a higher angle over the horizon than at the winter solstice.

**Heating of Land and Water (~3 min)** [**https://www.youtube.com/watch?v=y986-h3dfCk**](https://www.youtube.com/watch?v=y986-h3dfCk)

1. True or False: desert regions air temperature between night and day are very similar and constant.
2. True or False: in heating a bowl of sand and water with sun light, both will have the same temperature effects.
3. True or False: water heats faster than sand, all things being equal under the sun.
4. True or False: the music in this video is annoying.
5. True or False: during the day at the coast, the sun heats the land faster, the air rises, and winds are drawn landward from the ocean.
6. True or False: during the night at the coast, the land loses heat faster than the ocean, and winds are drawn seaward towards the ocean.