Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_

**Earth Systems Core Test Review**

**Astronomy**

1. How old is the solar system (including Earth)? What evidence supports this age?
2. Describe the big bang theory.
3. There are three evidences that support the big bang theory. What are they? Describe each.
4. What is the nebular theory? Describe it.
5. What evidence supports the nebular theory?
6. Where did light elements form (hydrogen, helium, and lithium)?
7. Where did heavy elements form?
8. What is a technology that has helped us to better investigate the Universe?
9. What are two differences between the 4 inner planets (Mercury, Venus, Earth, Mars) and the 4 outer planets (Jupiter, Saturn, Uranus, Neptune)?
10. How big is our solar system compared to the Milky Way galaxy?
11. Match the following with the object in the solar system they would represent:

|  |  |
| --- | --- |
| Soccer ball  Apple  Grain of sand  Airsoft pellet | Earth  Sun  Mercury  Jupiter |

1. If the soccer ball were in the front of the room, about how far away would the Earth be?
2. What are the 5 conditions necessary for life on Earth?

**Plate Tectonics**

1. What are the two sources of the heat on the inside of the Earth? How does that energy reach the surface of the Earth?
2. What three evidences did Alfred Wegener have to support his theory of continental drift?
3. What are the 7 major plates that make up the Earth’s crust?
4. Draw a model of the interior layers of the Earth based on both composition (chemical properties) and physical properties (solid, liquid, semi-solid).
5. What evidence is used to infer that Earth has layers?
6. On your model above, show how convection currents in the mantle help move plates around. Indicate where the magma is hotter and where it is cooler.
7. How does gravity and density help to cause the plates to move?
8. Three important discoveries led to the theory of plate tectonics. They were mid-ocean ridges, oceanic trenches, and magnetic striping. Describe each of these.
   1. Mid-ocean ridges
   2. Oceanic trenches
   3. Magnetic striping
9. What is a mantle plume (hot spot)? How is it used to figure out how fast plates are moving?
10. What happens to the age of the sea floor as you move away from a mid-ocean ridge?
11. Where on the plates are the large majority of earthquakes and volcanoes?
12. Draw a model of each type of boundary. Label the following on the appropriate boundaries: mountain building, volcanoes, earthquakes, mid-ocean ridges, and oceanic trenches.
    1. Convergent
    2. Divergent
    3. Transform

**Meteorology**

1. How much of the sun’s energy is reflected off of clouds or off of the Earth’s surface? How much is absorbed?
2. Draw a picture that shows how the greenhouse effect works.
3. What are four greenhouse gasses?
4. Draw a picture that shows how the tilt of the Earth causes the seasons. (Show winter and summer)
5. What two factors cause the global circulation of air currents?
6. Draw a diagram showing these air currents. Label Hadley cells, prevailing westerlies, and the trade winds.
7. Where is the troposphere and the stratosphere? In which of these is ozone helpful and in which is it harmful?
8. What are the elements of weather and what instruments are used to measure them? Here is a list of instruments: thermometer, rain gauge, hygrometer, barometer, anemometer, satellite imaging.
9. What conditions give rise to each of the following severe weather events?
   1. Thunderstorms
   2. Tornados
   3. Hurricanes
   4. El Niño/La Niña
10. Draw a diagram of a cold front and a warm front.
11. How are climate and weather different?
12. How can we study the climate thousands of years ago when no humans were around to record it?
13. What are humans doing that is significantly altering the carbon cycle and possibly affecting the climate?
14. What are two negative impacts of humans burning fossil fuels?
15. What are three predicted consequences of global climate change?

**Hydrology**

1. What are the 7 reservoirs where water is stored on the Earth? What percentage of Earth’s water is in each?
2. Draw the water cycle and label the following: evaporation, condensation, precipitation, runoff, infiltration (or seepage), and transpiration.
3. What are two ways that water is purified by nature?
4. What are 5 special properties that water has that make it helpful to life on Earth?
5. What are abiotic factors? Name 5 that affect freshwater ecosystems.
6. What are biotic factors? Name 3 that affect freshwater ecosystems.
7. What are the 3 main uses for water by humans?
8. What are two theories about how oceans formed on Earth?
9. How do salinity, temperature, and pressure change as you go deeper in the ocean?
10. Why are most living things near the surface of oceans?
11. Compare the following properties of salt water to freshwater?
    1. Density
    2. Freezing point
    3. Boiling point
12. What causes surface ocean currents?
13. What causes deep ocean currents?
14. What are ways that humans affect oceans negatively?