Unit 2 Study Guide – Geologic Time, Earth’s History, Biochemistry, Carbon Cycle Name:

**Geologic Time**

1. How old is the Earth?
2. List the current Eon, Era, Period, and Epoch. (*4 answers)*
3. How long ago did the current Eon, Era, Period, and Epoch start? (*4 answers)*
4. Identify the Era that the dinosaurs lived during, and list the periods from oldest to youngest. (*4 answers)*
5. Of the 4, which is the longest geologic time period?
6. Of the 4, which is the shorted geologic time period?
7. Why do we have many more periods now than we did during ancient geologic times?

**Earth’s History**

1. Where on Earth did early life first develop?
2. What effect did the formation of the ozone layer have on life developing on Land on Earth? Why was this Ozone Layer development so important?
3. What allowed the ozone layer to develop?
4. What 3 major gasses was the atmosphere made of before oxygen started to be released in to the atmosphere in small amounts? Why were these 3 gasses found in the early atmosphere?
5. Place these events in order from oldest to most recent:

\_\_\_\_\_Life appears on land for the first time

\_\_\_\_\_Life forms on Earth for the first time

\_\_\_\_\_Humans appear

\_\_\_\_\_Dinosaurs appear

\_\_\_\_\_Photosynthesis starts to happen

\_\_\_\_\_Ozone layer forms

\_\_\_\_\_Dinosaurs become extinct

\_\_\_\_\_Cambrian Explosion occurs.

1. What is important about the Cambrian Explosion?
2. As we get closer and closer to the present geologic time, what is happening to the number of species found in the fossil record?

**Requirements for Life**

1. What are the 5 requirements for life (*go back and look at the FIXED .pdf on the weebly)*?
2. What is the problem with life being found around very large stars?
3. Why does Earth need to be found within the Habitable Zone to develop life? Why can’t it be closer or further from the Sun?
4. Why does life need protection from Ultraviolet (UV) rays from the Sun?

**Biochemistry**

1. What are the 6 elements that make up all life? Circle the 3 that are found in every biomolecule?
2. Why do atoms bond?
3. What part of the atom is responsible for bonding?
4. What is found in bonds?
5. What allows that “thing that is found in bonds” to be released?
6. What is a chemical reaction (Mr. Banker’s class definition)?
7. What is a physical reaction (Mr. Banker’s class definition)?
8. What is the equation for photosynthesis?
9. What organisms do photosynthesis?
10. These organisms are *( producers / consumers* ) AND ALSO *( autotrophs / heterotrophs ).*
11. What is the major end product that organisms doing photosynthesis are trying to make?
12. What is the equation for cellular respiration?
13. What organisms do cellular respiration?
14. These organisms are *( producers / consumers* ) AND ALSO *( autotrophs / heterotrophs ).*
15. Fill in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Biomolecule** | **Building Block** | **Purpose** | **Found in Which Foods? (list 3+)** | **Elements found in this Biomolecule** |
| Carbohydrate |  |  |  |  |
| Protein |  |  |  |  |
| Lipid | Xxxxxxxxx |  |  |  |
| Nucleic Acid | xxxxxxxxx |  |  |  |

**Carbon Cycle**

1. What is the law of conservation of matter?
2. Why does that law matter when discussing the carbon cycle?
3. When shelled marine creatures die, get covered by sediment and compacted over millions of years, what specific type of rock do they turn into?
4. Which of the 3 major types of rock is this?
5. What type of rock would it become if that eventually moved close enough to a volcano to be melted and turned into magma?
6. If that rock were processed and expelled by the volcano, where (and in what form) would the carbon move to?
7. What causes CO2 to travel from surface ocean to the atmosphere?
8. What causes CO2 to travel from surface ocean to deep ocean?
9. What allows CO2 to travel from atmosphere into plants?
10. Once plants get that CO2, what do they turn it into?]
11. Draw me a picture of the carbon cycle. Include the following: *Trees, a living land animal, a dead land animal, soil, CO2 in the atmosphere, a sea/ocean, fish, CO3/HCO3, some shelled creature, and limestone.*
	1. Include arrows, and label each arrow by naming the change in carbon.

**Fossil Fuels**

1. How long ago did coal and natural gas form?
2. What is a hydrocarbon?
3. List 4-5 examples of hydrocarbons that you should know/recognize.
4. Coal:
	1. Which organism is going to eventually be turned into coal?
	2. Where does this organism have to die for that to happen?
	3. What is special/important about that environment that allows it to eventually turn into coal?
	4. What happens to that organism after it dies over the next couple million years?
	5. Starting with dead ferns, and ending with the highest quality coal, list the 5 different types/steps of coal.
	6. What causes one “type/step” of coal to turn into the next “type/step” of coal?
	7. What is the most efficient and cleanest burning type of coal?
	8. What is the most common type of coal found and used in the United States?
5. Natural Gas
	1. Which organism is going to eventually be turned into oil and natural gas?
	2. Where does this organism have to die for that to happen?
	3. What is special/important about that environment that allows it to eventually turn into oil and natural gas?
	4. What happens to that organism after it dies over the next couple million years?
	5. Has oil or natural gas been exposed to massive sedimentation layers, massive temperatures, and massive pressure for longer?
	6. What is special about the rock layers that allow the oil and natural gas to rise towards the surface after they are formed?
	7. What property of oil and natural gas causes it to actually rise?
	8. What eventually stops the oil and natural gas from rising any further?