Lesson 26- Plate Tectonics

1. Earth looks solid, but it is actually made up of huge sections which are in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The **lithosphere** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the Earth made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The lithosphere is broken into sections called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. As plates move, they interact causing **geologic events** such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The regions where two **tectonic plates** meet is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. The highest **mountains** in the world were formed by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How does this happen?

4. How are **volcanic mountains** formed? How are volcanic islands formed?

5. **Seafloor spreading** forms new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The oceans are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by seafloor spreading. **Mid-ocean ridges** are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. **Earthquakes** occur when:

7. **Faults** are:

8. What is the **Ring of Fire**?

EOG Practice: 1.\_\_\_\_\_\_2.\_\_\_\_\_\_3.\_\_\_\_\_\_4.\_\_\_\_\_\_5.\_\_\_\_\_\_

Lesson 27- Earth’s Changing Surface

1. **Weathering** breaks rocks down into smaller pieces.

**Mechanical weathering** is: Example:

**Chemical weathering** is: Example:

2. **Erosion** is a process by which weathered rock is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to new places. The agents of erosion are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How was the **Grand Canyon** formed?

3. **Deposition** is the dropping of pieces of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carried by \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_. Deposition can create: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Rocks are classified into 3 types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How are each formed?

5. The **rock cycle** is the continual change of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

EOG Practice: 1.\_\_\_\_\_\_2.\_\_\_\_\_\_3.\_\_\_\_\_\_4.\_\_\_\_\_\_5.\_\_\_\_\_\_

Lesson 28- Evidence of Earth’s History

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can provide scientists with **evidence** and details about what Earth was like millions or even billions of years ago.

2. **Fossils** are the preserved \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of organisms that lived in the distant past. Most fossils were formed in a process in which an organism dies and then is covered by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Most often, **shells, bones and teeth** are preserved in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_. Behaviors or actions can also leave fossils including \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. An **ice core** is a cylinder of ice removed from an ice sheet. How are layers seen in an ice core?

4. What **data** does an ice core provide?

5. When studying rocks and fossils, scientists use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ age and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ age. What is the difference?

6. **Radioactive dating** measures the age of a material by comparing the amount of a radioactive substance with its amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (Remember the M+M Lab?) Using radioactive dating, scientists estimate the Earth to be \_\_\_\_\_\_\_\_\_\_\_ billion years old.

7. Scientists use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when absolute dating is not possible. This is the age of an object or event in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to another object or event. Geologists use the Law of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to find relative age. It states that in undisturbed rock layers, older layers of rock lie under\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. Sometimes rocks become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or even overturned due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Magma can also affect rock layers by creating intrusions. **An intrusion is ALWAYS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the layers it cuts through.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can wear away rock, exposing layers below. If new layers are then deposited, there will be \_\_\_\_\_\_\_\_\_\_\_\_ in the rock record. These are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (this term is not in the coach book, but we learned it).

9. Fossils can help identify the age of \_\_\_\_\_\_\_\_\_\_\_\_ layers that contain them. An index fossil is the fossil of an organism that existed for only a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of time. If the same index fossil is found in rock layers in different areas, scientists can conclude those rock layers were laid down during the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. What can explain why **marine fossils** could be found in the desert?

EOG Practice 1.\_\_\_\_\_\_ 2.\_\_\_\_\_\_ 3.\_\_\_\_\_\_ 4.\_\_\_\_\_\_

Lesson 29- Geologic Time Scale

1. The **geologic time scale** is a timeline that organizes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in Earth’s history. Fossils show that life started in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ about \_\_\_\_\_\_\_ billion years ago. **Simple organisms** such as algae and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were the main life forms during most of Earth’s early history. **Complex organisms** such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and fish only appeared within the last 500 million years. Humans did not appear until about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years ago.

2. The geologic time scale is divided into \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An \_\_\_\_\_\_\_\_\_\_ is the longest unit of time. Almost all known fossils come from the most recent eon, the Phanerozoic eon.

3. **Eons** are divided into eras (just like days are divided into hours). Scientists use evidence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the dividing line between eras. One event that could cause a **mass extinction** is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or comet crashing into Earth.

4. **Eras** are divided in to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (just like hours are divided into minutes). **Periods** are divided into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (just like minutes are divided into seconds), which is the shortest unit of time.

5. The **Cambrian** **period** is marked by the Cambrian explosion, because of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of living things that developed during that time.

EOG Practice: 1.\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_ 4.\_\_\_\_\_\_

Lesson 30- Genetic Variation and Evolution

1. **Evolution** is the process by which species \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is a slow gradual process usually happens over long periods of time and is responsible for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of living things on Earth.

2. As species evolve, they develop new traits, and lose others. The traits that help and organism survive in a given environment are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Organisms have many types of adaptations. Some are physical traits, such as the long neck of a giraffe or the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on a pine tree. These are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adaptations- part of the organism’s body. Some are physiological- how the body \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, like being about to regulate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Some adaptations are behavioral, like the ability to build a \_\_\_\_\_\_\_\_\_\_\_\_.

4. An organism that survives longer is likely to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Adaptations that help an organism survive are passed from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An adaption depends on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in which the organism lives.

5. Variation:

Mutation:

6. Because individual members of a species have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, some are better suited than others to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. What antibiotic resistance?

8. Natural selection is a process by which organisms that are best suited \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_survive and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The fittest organisms survive and pass on their traits to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. By passing useful traits from generation to generation, a species develops \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is credited with the theory of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which he published in his book, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. Darwin based his ideas about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in part on his observations of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species living on the Galapagos Islands. He observed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ according to the type of \_\_\_\_\_\_\_\_\_\_\_ they ate.

11. Evolution leads to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of species. As species change, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arise. But environments change, too. Therefore, species that are not able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ new conditions become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Of all the species that have ever lived, only a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of those species are alive today.

EOG Practice 1.\_\_\_\_\_\_2.\_\_\_\_\_\_3.\_\_\_\_\_\_4.\_\_\_\_\_\_\_

Lesson 31- Evidence of Biological Evolution