Name and briefly define the SIX (6) different types of fossils we covered in class:

1.

2.

3.

4.

5.

6.

7. What is the scientist who studies fossils called? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. A fossil originally contained 400 grams of carbon. How much is left after 2 half-lives? (SHOW WORK)

9. Suppose you are examining layers of sedimentary rock. In one layer, you discover the remains of an extinct relative of the polar bear. In a deeper layer, you discover the fossil of an extinct alligator. What can you hypothesize about changes over time in this area’s environment?

10. The half-life of potassium-40 is 1.3 billion years. If a fossil has about one third of its original K-40, how old is that fossil according to radioactive dating? (assume 2 half-lives). [SHOW WORK]

11. An anthropologist was digging to find relics and artifacts. He discovered several fossils during the dig. One fossil (fossil A) was found 2 feet below the earth’s surface. A second fossil (Fossil B) was found 15 feet below the earth’s surface. Assuming that there were no inversions or disruptions to that sample of ground, which fossil was older (A or B)? Explain your answer according to macro-evolution (Darwin’s theory).

12. A fossil is found to contain 30 grams of Uranium-238 isotope when discovered. Assuming it has passed through 3 half-lives, how many grams of U-238 were originally present? (SHOW WORK)

ANSWER KEY

Name the SIX (6) different types of fossils we covered in class:

1. **Trace Fossils – evidence of behavior or activities**

2. **Carbonized – carbon from soft-bodied organisms remain**

1 🡪 6

Any order

3. **Casts – fills in the “mold”**

4. **Molds – remains leave a mark of impression**

5. **Preserved (Amber & Frozen/ice)**

6. **Petrified Fossils – minerals replaced organic tissue**

7. What is the scientist who studies fossils called? **Paleontologists**

8. A fossil originally contained 400 grams of carbon. How much is left after 2 half-lives?

 **y = a (1/2) t y = (400 g) (1/2)2 y = (400 g)(1/4) = 100 grams**

**400 g 🡪 200 g 🡪 100 g**

9. Suppose you are examining layers of sedimentary rock. In one layer, you discover the remains of an extinct relative of the polar bear. In a deeper layer, you discover the fossil of an extinct alligator. What can you hypothesize about changes over time in this area’s environment?

The region may have changed from a warm climate (alligator) to a colder climate (polar bear relative). The alligator lived first since it was deeper in the earth.

10. The half-life of Potassium-40 is 1.3 billion years. If a fossil has one third of its original K-40, how old is that fossil according to radioactive dating? (assume 3 half-lives).

 **1.3 billion years 🡪 2.6 billion years 🡪 = 3.9 billion years**

11. An anthropologist was digging to find relics and artifacts. He discovered several fossils during the dig. One fossil (fossil A) was found 2 feet below the earth’s surface. A second fossil (Fossil B) was found 15 feet below the earth’s surface. Assuming that there were no inversions or disruptions to that sample of ground, which fossil was older (A or B)? Explain your answer according to macro-evolution (Darwin’s theory).

 **Fossil B is oldest because it is deeper in the earth. According to macro-evolution, change occurs gradually over a long period of time. Fossil B was produced before fossil A because it was covered over.**

12. A fossil is found to contain 30 grams of Uranium-238 isotope when discovered. Assuming it has passed through 3 half-lives, how many grams of U-238 were originally present?

 **y = a (1/2)t 30 g = (“a” g) (1/2)3 30 g = (“a” g)(1/8) = 240 grams**

**30 g 🡪 60 g 🡪 120 g 🡪 240 g**