Name _____

# Determining Ages Of Rocks

## I. The Fossil Record

1. **Scientists who study fossils are called** paleontologists.
2. **All the information that paleontologists have gathered about past life is called the** fossil record. Incomplete!
3. **Circle the letter of each sentence that is true about the fossil record.**

   a. It provides evidence for the history of life on Earth.
   b. It shows that organisms have changed over time.
   c. It reveals that complex organisms have given rise to simpler organisms.
   d. It provides evidence to support the theory of evolution.

## II. Relative Ages

1. **Define the term relative age.**

   Relative Age – age of a rock compared to the ages of other rocks

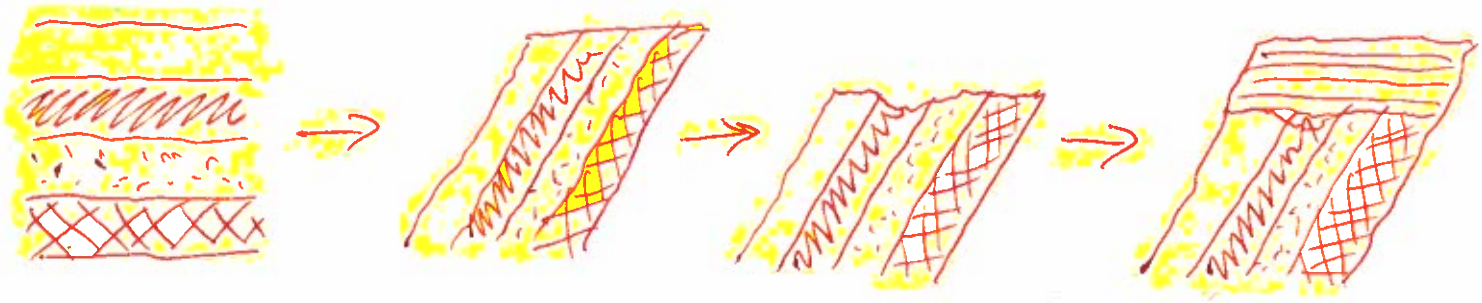
2. **Define the term principle of superposition.**

   Principle Of Superposition – law that states that oldest rocks are on bottom and younger on top (Undisturbed Layers)

3. **The deeper one travels into the Grand Canyon, the ~~younger~~ older the rocks become.**

   Circle One : True False

4. **Draw a sequence of how an angular unconformity develops.**



## III. Matching Up Rock Layers

1. **How can correlations be determined in rock layers from two different regions?**

   1. Same fossils in similar layers

   2. Radiometric Dating (Absolute Rock Ages)

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## IV. Absolute Ages

1. **Define the term absolute age.**

   Absolute Age – # of years since the rock formed (More useful when rock layers are disturbed)

2. **What are the three subatomic particles that make up an atom?**

   1. Electrons 2. Protons 3. Neutrons

   Nucleus

3. **Define the term isotope.**

   Isotope – Subatomic particle that determines the form of an element

4. **Define the term half-life.**

   Half-Life – time it takes for ½ of the atoms in the isotope to decay

Radium-226 to Radon-222 (1,602 yrs.)
Rubidium-87 to Strontium-87 (49 million)
Potassium-40 to Argon-40 (1.3 billion)
Uranium-238 to Lead-206 (4.5 billion)

5. **All elements decay over time.**

   Circle One : True **(False)** → (Most are stable!)

6. **How long does it take for half of Carbon-14 atoms in a rock to decay into Nitrogen-14?**

   5,730 years

7. **Define the term radiometric dating.**

   Radiometric Dating – process used to calculate the absolute ages of rocks (Compares parent material to daughter material)

8. **Create a chart showing radioactive decay of 600 grams of Carbon-14 over three half-lives.**

(600g) – 100% : C-14 N-14 : 0% – (0g)
↓ 5,730 yrs
(300g) – 50% : C-14 N-14 : 50% – (300g)
↓ 5,730 yrs
(150g) – 25% : C-14 N-14 : 75% – (450g)
↓ 5,730 yrs
(75g) – 12.5% : C-14 N-14 : 87.5% – (525g)

9. **Using radiometric dating, what have scientists estimated the age of Earth to be?**

   4.5 billion years old