**Ch. 16 Determining Earth’s Age Notes**

Essential Question: How do we know how old earth is?

1. Uniformitarianism – the same geologic processes that happen today, happened in the past.
2. Fossils – preserved remains or traces of living things that lived in the past (organisms die and are buried by sediments
   1. Type of Fossils
      1. Mold – a hollow area in the sediment which shows the shape of an organism or a part of an organisms
      2. Cast – solid copy of the shape of an organism
      3. Petrified fossil – fossil in which minerals replace all or part of the organism
      4. Carbon film fossil – extremely thin coating of carbon on rock
      5. Trace fossil – provide evidence of the activities of ancient organisms (footprint, spoor)
      6. Amber, tar, ice – can preserve the remains of organisms with little or no change in the organism
   2. Fossil Record
      1. Provides evidence about
         1. History of life on Earth
         2. Changes to groups of organisms over time
         3. Past earth environments
         4. Theory of evolution (gradual change in living things over long periods of time)
3. Age of Rocks – to find the age of a fossil you can find the age of the rock it is found in.
   1. Relative age – compared with ages of other rocks around it
      1. Index fossils
         1. Widely distributed
         2. Organisms existed for brief time
         3. Help tell the relative age of rock layers
      2. Unconformities – gap in the geological record where some rock layers have been lost because of erosion
   2. Absolute age – number of years since rock was formed
      1. Carbon Dating – determines amount of a radioactive substance is in a rock.
         1. Radioactive decay - process by which radioactive substances break down into other substances
         2. Half-life – the time it takes for half of radioactive substance to decay.
   3. Law of Superposition – in undisturbed rock layers the oldest layer is at the bottom, each higher layer is younger than the layer below it.

**F**

Older Younger

Limestone

Basalt

Mudstone

Pleistocene Era Beach Sand

Recent beach sand

**E**

**D**

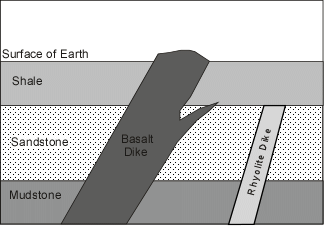
**C**

**B**

**A**

Dolomite

1. Cross-cutting – any feature that cuts across a section of layered rock is younger than all the layers it cuts through



**A**

**B**

**C**

**D**

**E**

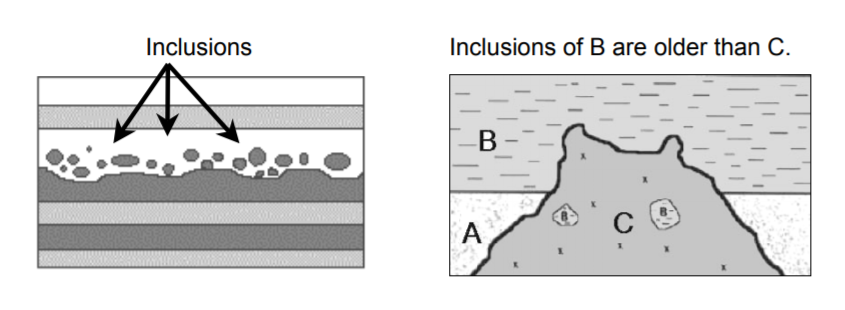
Oldest \_\_A\_\_\_

\_\_C\_\_\_

\_\_D\_\_\_

\_\_E\_\_\_

Youngest \_\_B\_\_\_

1. Inclusions – if a layer contains any pieces of other rock they are older than the rock it is in.

Inclusions D and E are older than C

E

D

Layer B and A are older than C