

Name _____

HR _____

Earth's History Outline

Earth's History

■ _____ probably formed from an _____ of _____, _____, and

_____ drawn together by its own _____ about 4.6 _____ years ago

■ The _____ of Earth's _____ preserves _____ that help us unravel the mystery of

our changing _____, its _____, and the _____ of

terrestrial _____

Uniformitarianism

■ Geologists think that the _____ that they observe today are _____ to

_____ that occurred throughout Earth's _____

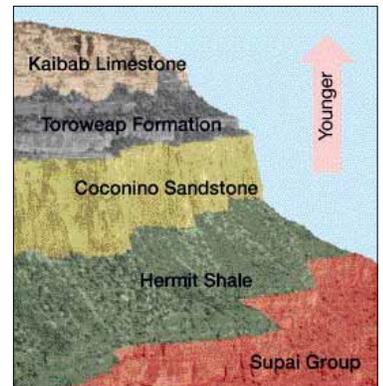
■ "The _____ is the key to the _____"

Law of Superposition

■ The _____ at the _____ of an undisturbed

exposure are usually the _____

—There are occasional _____ to this law



Original Horizontality

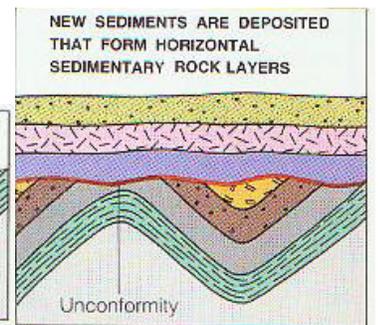
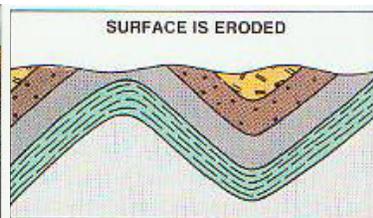
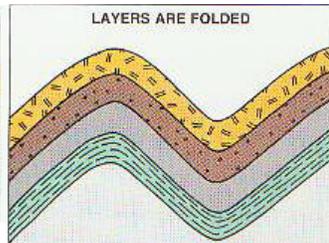
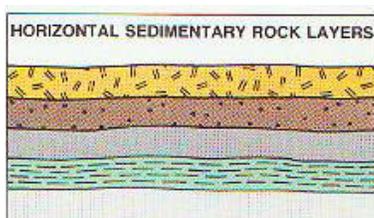
■ A _____ is always _____ than the _____ that changed it

■ _____ are usually _____ in _____

—When we see sedimentary _____, we usually assume that these _____

were deposited _____, and that they were _____ after they had

_____ into sedimentary _____



Igneous Extrusions

■ An _____ occurs when _____ rock flows onto Earth's _____, where it _____ to form _____ rock

– An extrusion is _____ than the rock _____ it, but _____ than the rock that will form on _____

– The rock _____ the extrusion will show a _____ of contact _____ where the hot _____ baked it

Igneous Intrusions

■ An _____ is an internal process where _____ squeezes into or _____ layers of pre-existing rock

– The hot _____ rock _____ the surrounding rock immediately _____ and _____ and _____ to it by contact _____

Folds and Faults

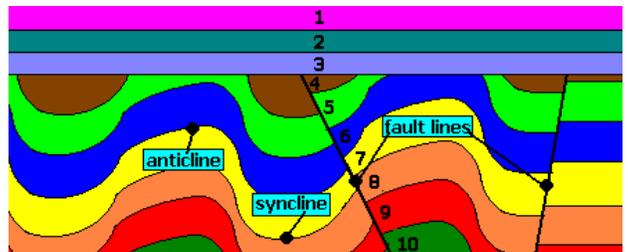
■ _____ are _____ in rock

layers produced by _____ of Earth's _____, generally related to Earth's _____ plates

■ _____ are _____ in the rock where _____ has occurred often associated with _____

■ _____ layers are indications of _____

– _____ and _____ occur after the rock has _____



Fossils

■ The _____ remains or traces of _____ things

– Can reveal a great deal about _____ life _____ and _____

-Can also provide _____ about the past _____ events or relative _____ of rock _____

■ _____ do _____ contain the _____ of the _____ that produced them

-Include the _____ of shells, dinosaur footprints, oddly shaped formations from sediments filling in animal burrows and petrified drippings

-Trace fossils reveal much about an organisms _____ and _____ to its _____ and _____ environment

Correlation of Rocks

■ _____ try to _____ similar rock _____ in different _____ to see if they _____ at the same _____ or under similar _____

- _____, _____, composition

-Compare index _____ in the _____

Correlation of Rocks Example

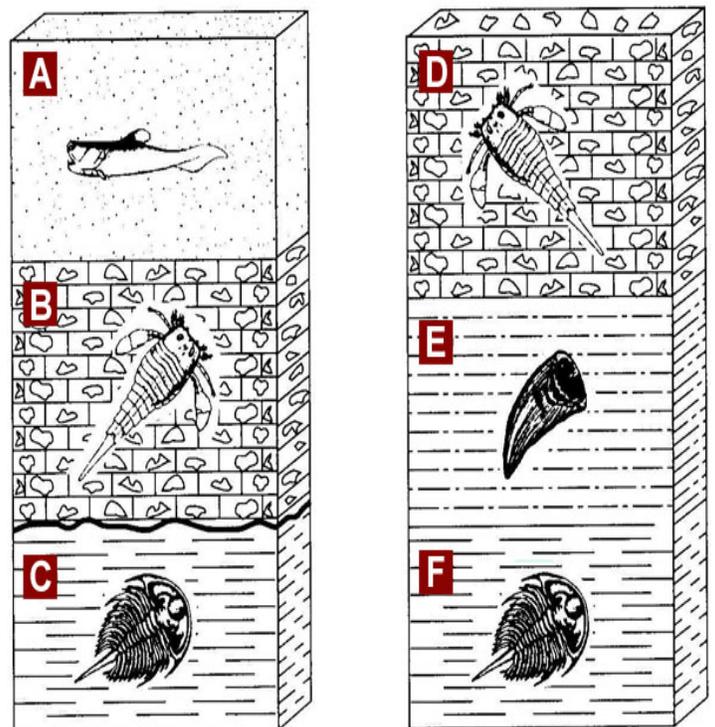
■ Which layers are the same?

■ Of the rock layers E and F, which is the oldest?

■ What is the correct sequence of rock layer from oldest to youngest?

■ An unconformity (buried erosional surface) is represented by the interface between which two layers?

■ What type of rock is layer A?



Geologic Time Scale

■ Based on rock _____ that contain characteristic _____ groups and on _____ in the kinds of _____ that inhabited _____

■ The _____ is divided into _____, _____, and epochs

Evolution of Life

■ _____ believe that life forms existed in the _____ Period

– They had _____ hard _____, therefore _____ left _____

– _____ fossils are very _____

■ More _____ organisms developed as time went on

– Some _____ (went _____) from the fossil _____

■ Within each species there are _____ in _____, shape and other _____

■ The **Evolution of Life** (Charles _____) states that _____ that have traits that better _____ them to their _____ will _____ longer and have more _____ to pass on these desirable _____

■ This process of _____ **of Life**, leads to the _____ of some species and _____ of new ones

■ _____ (geologists who study _____) have found remains of a large variety of _____ and _____ that lived in many different _____

– Some still _____, but most have become _____

■ Most organisms _____ or are _____ by other organisms after they _____, only a very _____ percentage leave any fossil _____

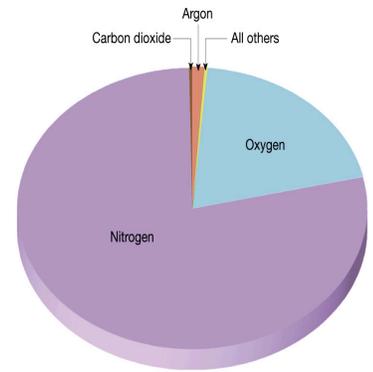
– Because of this, _____ forms of _____ will never be _____

Life and the Atmosphere

■ _____ organisms that developed about _____ years ago changed the _____ of _____ in our _____

■ About _____ billion years ago, the _____ probably consisted of a mixture of carbon _____, carbon _____, _____, nitrogen, ammonia, and _____

■ The atmosphere today is _____% _____ and _____% _____

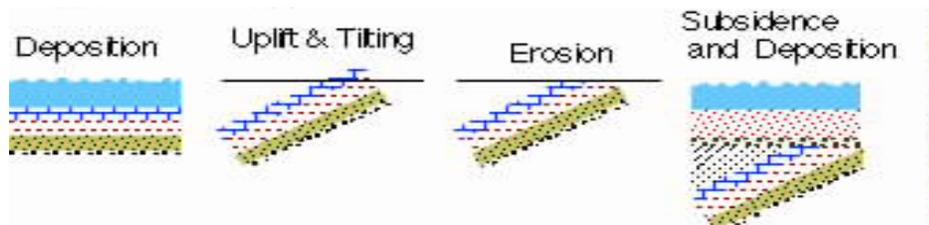


Past Geologic Events

■ No single _____ shows a _____ record of the geologic _____

■ If an area was _____ sea level for a while, it is likely that _____ were _____ deposited and _____ rocks have been destroyed by _____

■ When a new rock layer is layered on a surface left by _____, it forms a _____ erosion surface (_____)

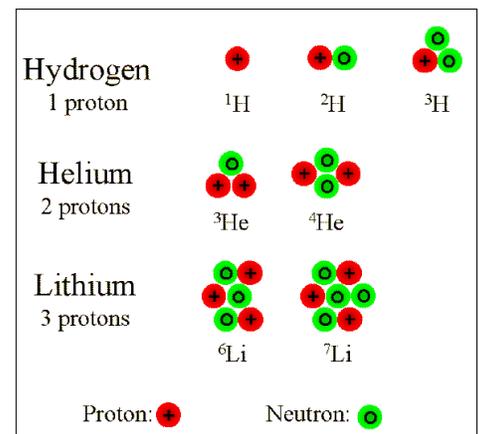


Radioactive Dating

■ _____ of natural _____ in the rocks have allowed the _____ time _____ to become an _____ time scale

–One that gives the _____ **age** (numerical age) of an _____ (measured in years)

■ _____ elements often have _____ forms (_____) that differ in the _____ of _____ in their atomic _____



-If the _____ of an _____ has _____ or _____ than the _____ number of _____, the isotope may be _____

-A _____ isotope will break down _____ into a lighter _____ called a _____ product

-In the process, it gives off _____

-A sample of a _____ element contains millions of atoms, from which we can _____ a _____ of _____

Half-Life

■The _____ of _____ of a radioactive element is measured by its _____ - _____

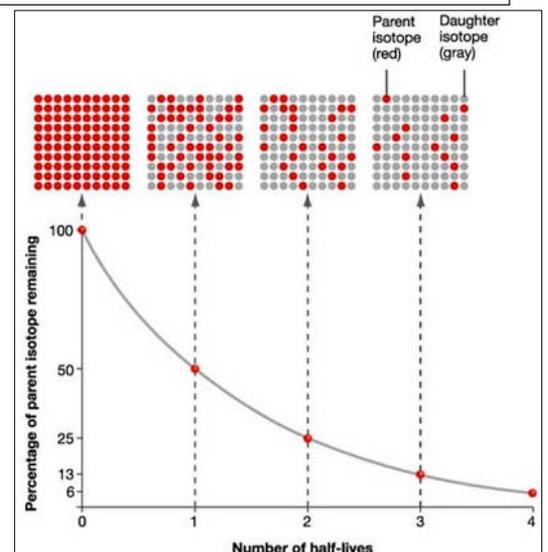
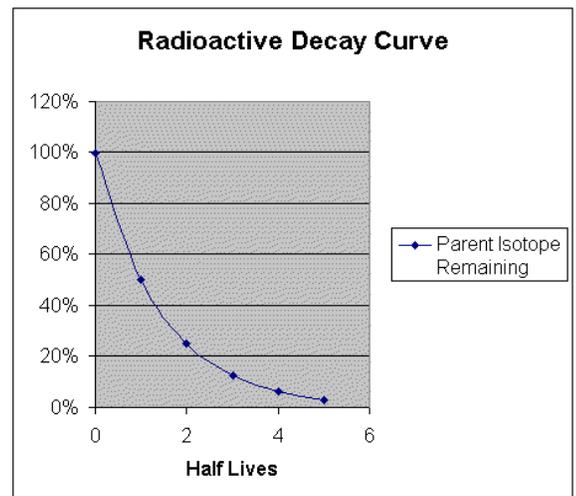
-Different radioactive _____ have _____ half-lives

■A half-life is the _____ required for _____ of an element's _____ in a _____ to _____ to the _____ product

-At the _____ of one half-life, a sample contains _____ amounts of the _____ element and its _____ product

■In each succeeding half-life, _____ of the remaining _____ decay

■As the element _____, fewer _____ atoms _____ in the _____, and more _____ product _____



—The _____ the _____ of _____ product to
 _____ element, the _____ the sample

Decay-Product Ratio

■The _____ between the _____ of a radioactive _____ and its
 _____ product in a _____

■After we determine this _____, we can _____ how many half-lives have gone by
 _____ the sample was _____ and then determine its _____

Selecting the Best Radioactive Element for Dating a Sample

■The sample to be _____ must contain a _____ quantity of a _____
 element and its _____ product

■A sample _____ the remains of _____ organisms is likely to contain radioactive
 _____ -14

■The sample's _____ must also be considered

— _____ -14 can only date samples no _____ than about _____ years

— _____ -238 can measure samples of the _____ rocks on our _____

Isotope	Half - life
Carbon ¹⁴ C	5700 years
Iodine ¹³¹ I	8 days
Polonium ²¹⁴ Po	1,6×10 ⁻⁴ seconds
Radium ²²⁶ Ra	1620 years
Uranium ²³⁸ U	4,5×10 ⁹ years