Name_____ Date_____ Section_____ **E.S. Notes 5.3**

AIM: What is absolute dating? **Unit 5**: Geologic History

Do Now:

1) For each pair of terms below, circle the one that is **older** (happened first)
   a. Mrs. H / you
   b. Sediment layer on top/ sediment layer on bottom
   c. The rock / the crack that forms in the rock
   d. The fragments in a sedimentary rock / the minerals that glue the fragments in a sedimentary rock together

2) Place the following events in their correct order, starting with the oldest first. Include unconformities (erosion) folding, faulting, and igneous intrusions as events.

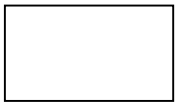
1) **Absolute age/time:** _____

2) **Ways to measure absolute time:**

a. **Tree rings:** _____

_____
_____
_____
_____

b. **Varves**: _____



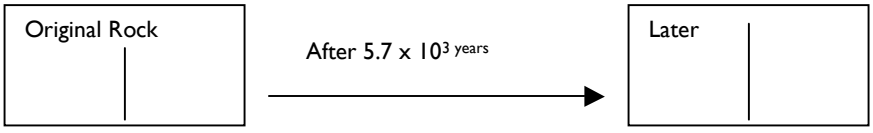
_____
_____

c. **Radioactive Dating:** _____

_____

i. Rocks and minerals are made up of _____; varieties of the same element are called _____

Example: The Carbon-14 atoms in a rock can disintegrate or _____ into nitrogen-14 atoms



	Radioactive decay/disintegration: when isotopes _____ **Half-life**: _____ _____ Example: **Where can you find information about radioactive decay?** _____

Try It Out:
1) Complete the table below using the information you find from your ESRT

Radioactive isotope	Disintegration	Half-life	What is the half life written out as a whole number? (Hint: remember the rules of scientific notation)
Carbon-14			
Potassium-40			
Uranium-238			
Rubidium-87			

Answer the following questions using the table

3) What is the half-life of Carbon-14? _____
4) What is the product of Carbon-14 disintegration? (what does it turn into when it decays)? _____
5) How long will it take for half of the Uranium-238 atoms to turn into Pb-206 (lead) atoms? _____
6) Which radioactive isotope takes the longest to decay? _____
7) Which radioactive isotope takes the least amount of time to decay? _____
8) Think question: Which radioactive element(s) would you use to <u>date rocks on Earth that are billions of years old</u>? Why?

9) Which radioactive element would you use to date rocks that are thousands of years old? Why?

10) If you start off with 10 grams of Carbon-14, after 17, 100 years, how much Carbon-14 will be left? What will be the amount of Nitroge-14?

11) Some uranium is obtained from an intrusive granite formation. It is then analyzed and found to contain approximately 1 gram of lead-206 to every 3 grams of uranium-238. Approximately how many billions of years old is the granite?
    a. Nine b. two c. eighteen d. four

Summary and Reflection: