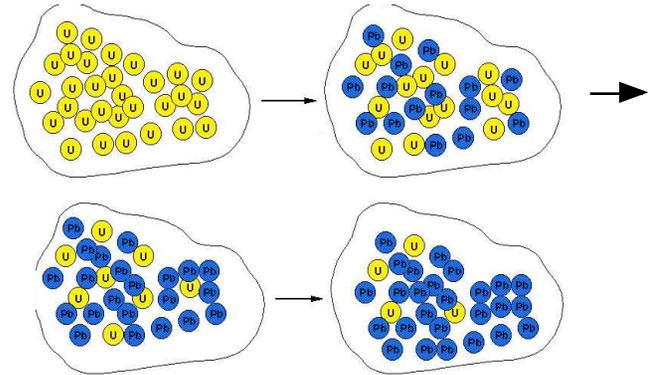


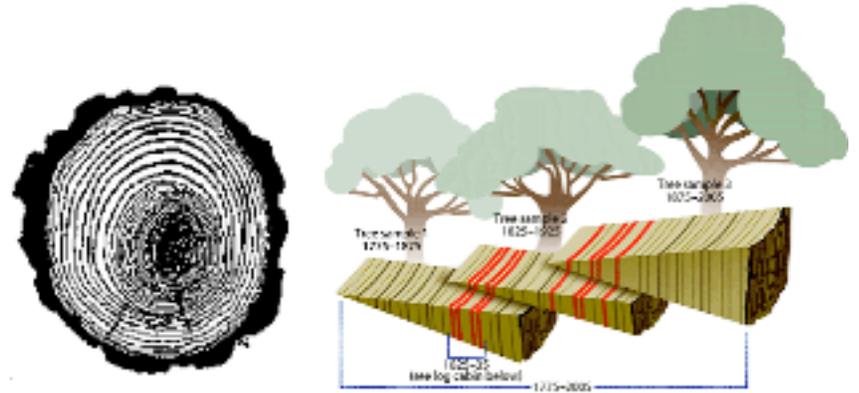
# HOW DO WE MEASURE ABSOLUTE TIME? --GEOLOGIC CLOCKS--

Name \_\_\_\_\_ Class \_\_\_\_\_

## Radiometric Dating



## Tree Rings



## Varves



Each tree ring = one year. Each ring is one dark and one light ring.  
The width of a ring depends on temperature and precipitation.  
Trees of the same species growing in the same region create similar patterns of growth rings.  
Bristlecone pine in California is oldest living tree - 4600 years old.

A Varve is any sediment that shows a yearly cycle. Each annual varve is different with a light colored summer and a dark colored winter layer. The varves of one lake can be correlated with the varves of other lakes. Varves can go back 15,000 years.

Radioactive elements decay at a constant rate.  
Usual approach: Compare amount of daughter isotope to amount of parent originally there.  
Igneous Rocks: Half-life of Uranium-238 = 4.5 billion yrs.  
Organic Material: Half-life of Carbon-14 = 5700 yrs.

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