**Absolute dating**

*Potassium Argon (Calcium) dating*

* Based on the decay of potassium-40 into calcium-40 and argon-40
* The ratio of potassium-40 and argon-40 determines the age of the fossil
* Potassium has a half life of 1.26 billion years
* **Limitations**

-not all rocks contain potassium-40

-can only date samples older than 100,000-200,000

-a suitable rock with the same age as the fossil must be found, eg rocks formed from volcanic eruptions bury bones

*Carbon-14 dating*

* Based on the decay of carbon-14 into nitrogen-14
* The ratio of carbon-14 and carbon-12 determines the age of the fossil
* Carbon-14 has a half-life of 5730 years +/- 40
* **Limitations**

-material over 60000 years old cannot be dated as the amount of carbon-14 is negligible

-material dated needs to be organic in nature, eg cave painting, bones and wood

-need at least 100 micrograms from sample

-variations of the ratio between carbon-14 and carbon-12

*Tree ring dating (Dendrochronology)*

* Allows for corrections of carbon-14 fluctuations for the past 9000 years
* Rings on the surface of a tree trunk represent 1 years’ worth of growth
* Living trees can be compared with timber taken from human structures and the **marker rings** can be used to correlate the 2 pieces
* Certain rings that produced in years of exceptional weather can be used as marker rings
* **Limitations**

-tropic countries do not have sufficiently distant seasonal patterns that they can be used

-has to be well preserved