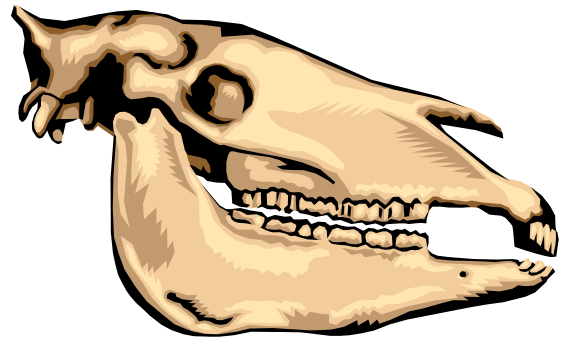


# Uncovering Florida's Fossil Past: Determining Fossil Ages

Congratulations! You have just found your first fossil! Read the following message which you just received from a Florida Museum of Natural History Paleontologist (a scientist who studies ancient life).

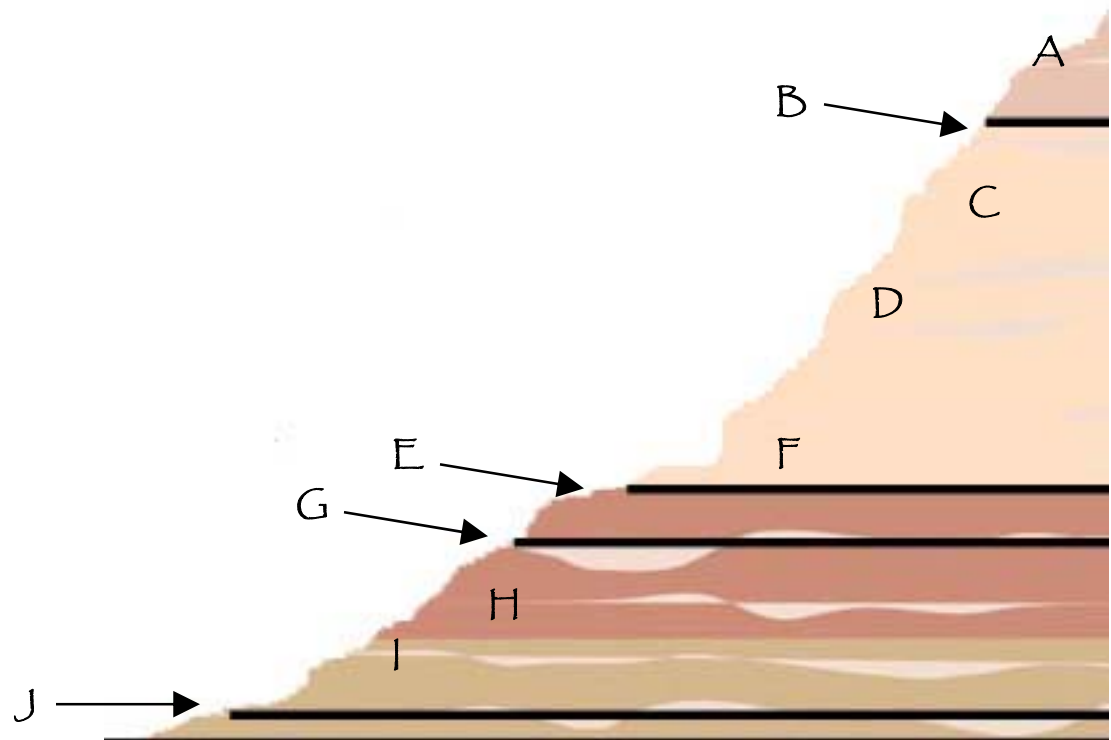
Thank you for all of your hard work in helping to discover the fossil skull. Since you were digging in Florida we know this fossil is not a dinosaur fossil because Florida was under water during the time of the dinosaurs. Therefore, this fossil is of an animal that lived in Florida after the time of the dinosaurs when Florida was no longer underwater. I need your help to determine the relative and absolute age of this fossil. Use the law of superposition (the younger rock layers are laid down on top of older rock layers) to help determine the age of the fossil. I have left a series of facts and lab reports from my field journal. As a team you will be able to put them all together to figure out the age of the fossil. Remember, if you can't determine the exact age, make sure you tell me an age range (for example, the fossil is between 4 and 5 million years old) and how old the fossil is in comparison to the other fossils we have found in Florida at similar sites. Well, I've got to run but I know I am in good hands. Remember, work as a team and use all of the facts. I have no doubt that you'll help make this new discovery. Good luck!



Paleontologist, Larisa Grawe

Use the attached worksheet and the clues handed out by your teacher to determine the age of your fossil.

## The Answer is in the Rocks: Stratigraphy will answer the Mystery!



Each of the letters represents either fossils or volcanic ash layers (B, E, G, and J). Using all of the clues from your group members, make any necessary notes on the diagram and begin to estimate the age of your fossil. (Hint: Lay out the clues like rock layers with the older fossil and volcanic ash layers on the bottom and the younger fossils and volcanic ash layers on top.)

### Questions:

1. What letter represents the location where your fossil was found? \_\_\_\_\_
2. Using the law of superposition what can you infer about the age of your fossil? Compare your fossil to the surrounding fossils. Which fossils are younger than your fossil and which fossils are older than your fossil?
3. How does the absolute age data from the volcanic ash layers help you figure out how old your fossil is? Provide an absolute age estimate for your fossil?
4. Can you answer the question, "What is the exact age of your fossil?" Why or why not?

Clue #1: When volcanic ash is formed the K/Ar (Potassium/Argon Ratio) is “reset”; therefore, scientists measure how K/Ar ratios decay over time and can determine how old the volcanic ash is. The volcanic ash layer at location **B** is determined to be **5 million years old**.

Clue #2: When volcanic ash is formed the K/Ar (Potassium/Argon Ratio) is “reset”; therefore, scientists measure how K/Ar ratios decay over time and can determine how old the volcanic ash is. The volcanic ash layer at location **E** is determined to be **24 million years old**.

Clue #3: When volcanic ash is formed the K/Ar (Potassium/Argon Ratio) is “reset”; therefore, scientists measure how K/Ar ratios decay over time and can determine how old the volcanic ash is. The volcanic ash layer at location **G** is determined to be **27.5 million years old**.

Clue #4: When volcanic ash is formed the K/Ar (Potassium/Argon Ratio) is “reset”; therefore, scientists measure how K/Ar ratios decay over time and can determine how old the volcanic ash is. The volcanic ash layer at location **J** is determined to be **48 million years old**.

Clue #5: A fossil of *Equus* (modern horse) was previously found at site **A**. It was present 5 million years ago and has decedents that are living today.

Clue #6: A fossil of *Dinohippus* (powerful horse) was found at site **C**. *Dinohippus* was present from 13 million years ago to 5 million years ago.

Clue #7: A fossil of *Merychippus* (ruminant horse) was found at site **D**. *Merychippus* was present from 17 million years ago to 11 million years ago.

Clue #8: A fossil of *Miohippus* (little horse) was found at site **H**. *Miohippus* was present from 32 million years ago to 25 million years ago.

Clue #9: A fossil of *Hyracotherium* (hyrax-like beast) was found at site **I**. *Hyracotherium* is known to have lived during the Eocene Epoch. The Eocene Epoch occurred between 34 million years ago and 55 million years ago.

Clue #10: Your fossil was found in sedimentary rock that is **older** than the sedimentary rock that *Merychippus* is found in, but **younger** than the sedimentary rock in which *Miohippus* is found.