

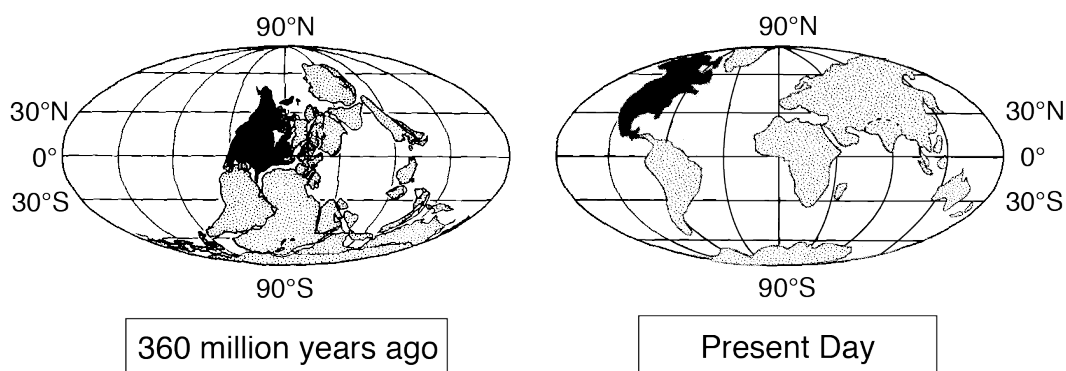
Base your answers to questions 1 through 5 on the information below and on your knowledge of science.

The map below shows the location of Penn Dixie Fossil Park and Thacher Park in New York State.



400 million years ago planet Earth was much different than it is today. Seas covered much of New York State. The environment at the time formed rock layers that included fossils of many tropical marine organisms such as brachiopod shells, corals, crinoids (sea lilies) and a form of sea sponges. The Penn Dixie Fossil Park, in western New York, and Thacher Park, located in eastern New York, both contain examples of this past ocean environment. The Penn Dixie Fossil Park has layers of shale that were deposited in deep water about 380 million years ago but are now exposed at Earth's surface. Thacher Park consists of sedimentary rock layers such as limestone, sandstone and shale, that began forming about 410 million years ago as a result of deposition of sediments at a time of changing sea levels. This area was eventually uplifted, exposing these layers and the fossils in them.

The maps below show the inferred location of the continent of North America, shaded in black, relative to other continents, 360 million years ago and the present day location of the continents.



- 1 Which piece of evidence could be used to support the claim that New York State was covered by water about 400 million years ago?
- A Both Penn Dixie Park and Thacher Park have eroded surfaces.
 - B Penn Dixie Park has rock layers similar in age to those in Thacher Park.
 - C Both Penn Dixie Park and Thacher Park contain marine fossils in the exposed rock layers.
 - D Both Penn Dixie Park and Thacher Park were located over the equator.

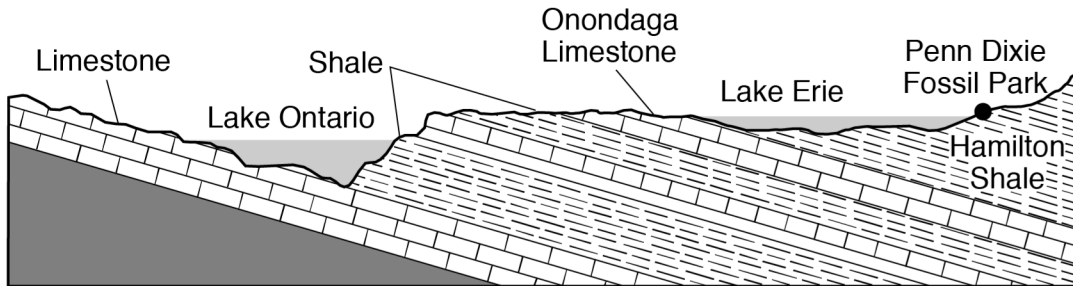
- 2 The continent of North America is inferred to have moved from its location 360 million years ago to its present-day location. Provide *one* piece of evidence that supports this past plate motion. [1]

Evidence: _____

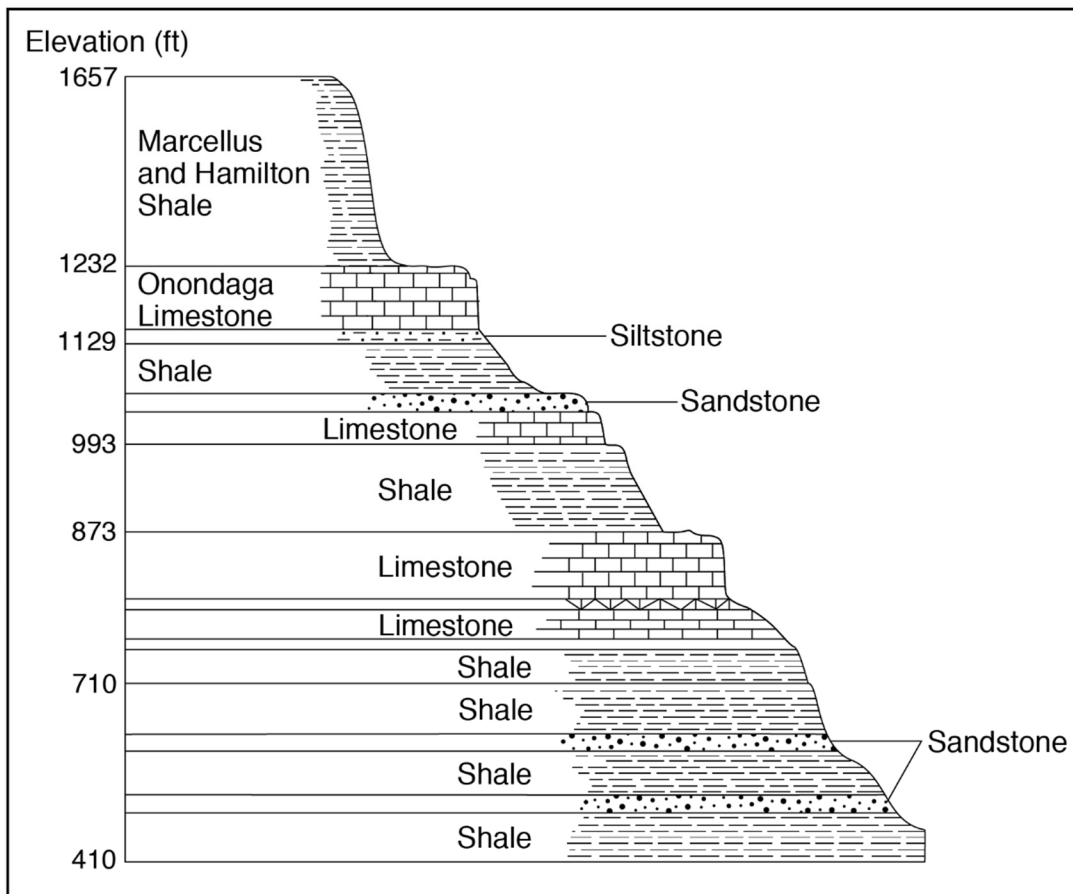
- 3 Penn Dixie Fossil Park and Thacher Park can be used to organize the geologic history of New York State. Which evidence can be used to support this claim?
- A Analysis of rock strata and fossils at Penn Dixie Park and Thacher Park.
 - B Analysis of the present day elevations of Penn Dixie Park and Thacher Park.
 - C The distance of Penn Dixie Park and Thacher Park from the equator.
 - D The distance of Penn Dixie Park and Thacher Park from Lake Erie and Lake Ontario.

The cross-sections below show the rock formations at Penn Dixie Fossil Park and Thacher Park. The names of some rock formations and types of rock are shown.

Penn Dixie Cross-Section



Thacher Park Cross-Section



- 4 Geoscience processes have changed Earth’s surface. Interpret the cross-sections of Penn Dixie Park and Thacher Park to identify *two* pieces of evidence from either cross-section that supports this statement. [1]

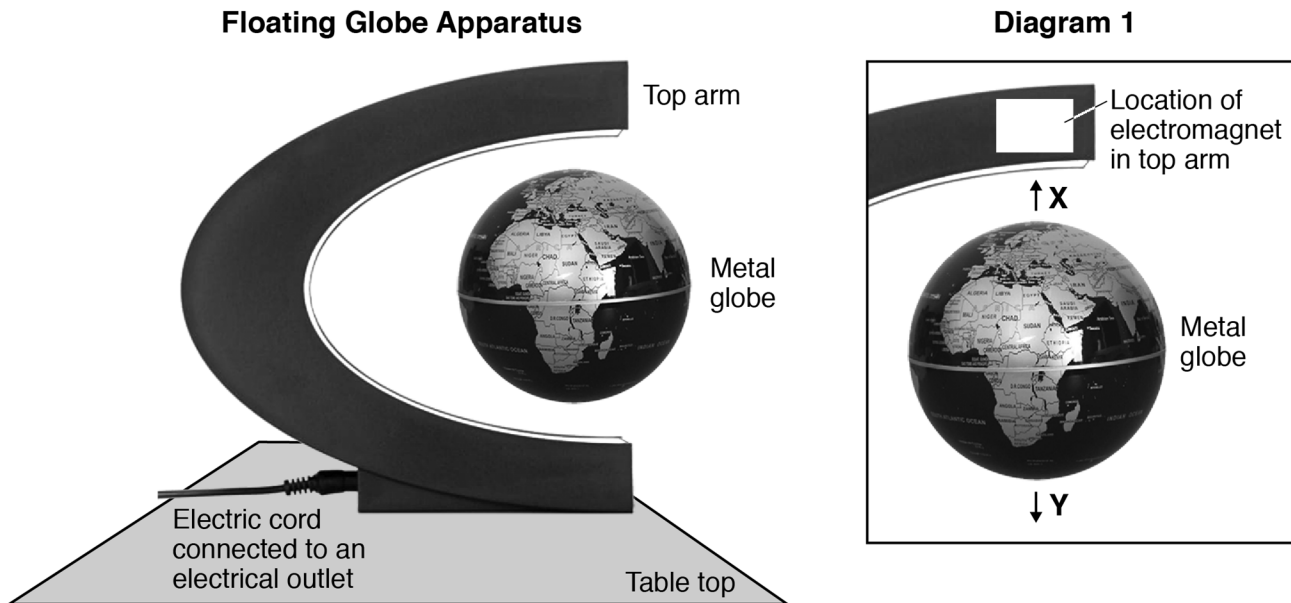
1) _____

2) _____

- 5 The surface bedrock at Penn Dixie Fossil Park and Thacher Park are approximately the same geologic age. Identify *one* piece of evidence shown in both cross-sections that supports this statement. [1]

Base your answers to questions 1 through 5 on the information below and on your knowledge of science.

The photograph below shows a floating globe apparatus. A metal globe is suspended in air at a fixed position a certain distance away from an electromagnet. Diagram 1 shows the location of the electromagnet in the top arm of the apparatus and the directions of two forces, labeled *X* and *Y*, that act on the globe to keep it in place.



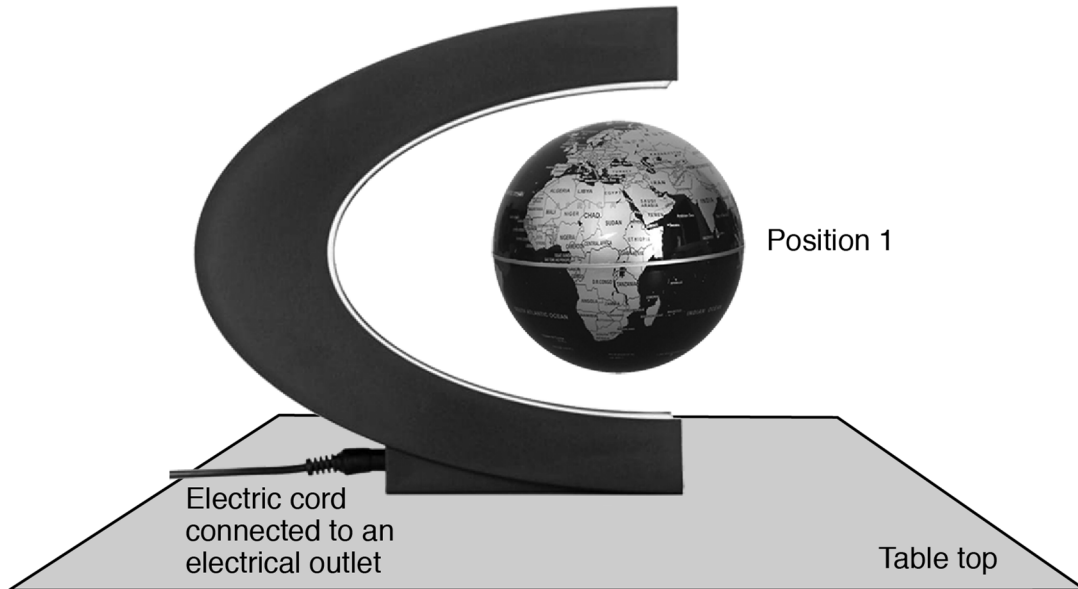
- 1 Which claim explains why the metal globe is suspended in air at a fixed position in the floating globe apparatus?
 - A Fields exist between objects that only attract each other.
 - B Fields exist between objects that are in contact with each other.
 - C Fields exist between objects that only repel each other.
 - D Fields exist between objects that are not in contact with each other.

- 2 In terms of force *X* and force *Y*, explain why the metal globe remains suspended in air at a fixed position. [1]

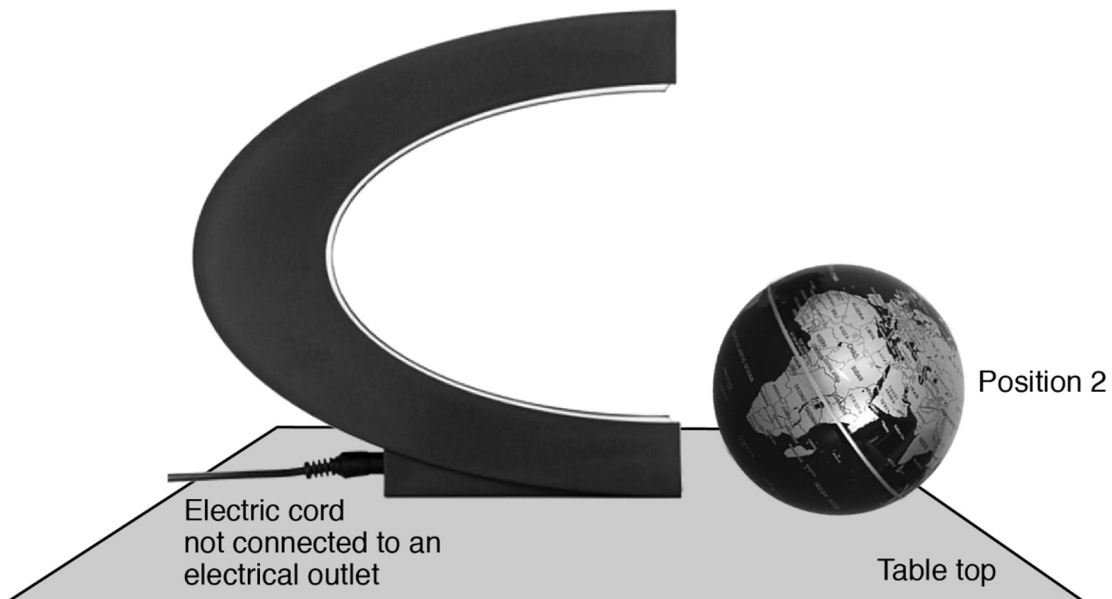
- 3 A student increases the current through the electromagnet causing the metal globe to move upwards, closer to the top arm of the apparatus. Which question was the student investigating?
- A How does the amount of current affect the size of the magnetic force on the globe?
 - B How does the amount of current affect the direction of the magnetic force on the globe?
 - C How does the amount of current affect the size of the gravitational force on the globe?
 - D How does the amount of current affect the direction of the gravitational force on the globe?
- 4 How did increasing the current through the electromagnet affect the strength of force X and force Y ?
- A Force X decreased and force Y was not affected.
 - B Force X increased and force Y was not affected.
 - C Force Y decreased and force X was not affected.
 - D Force Y increased and force X was not affected.

The models below show the floating globe apparatus with current going to the electromagnet and after the current was stopped from going to the electromagnet.

Current Going to Electromagnet



After Current Was Stopped



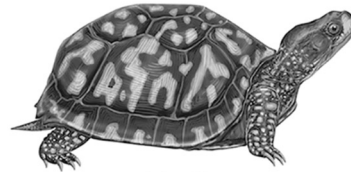
- 5 Using evidence from the models, describe how the amount of potential energy in the metal globe changes as the globe moves from position 1 to position 2.

Base your answers to questions 1 through 5 on the information below and on your knowledge of science.

The five organisms below all have different observable characteristics. Anatomical and embryological similarities and differences can be used to determine common evolutionary descent.



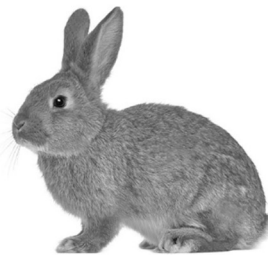
Fish



Turtle



Chicken



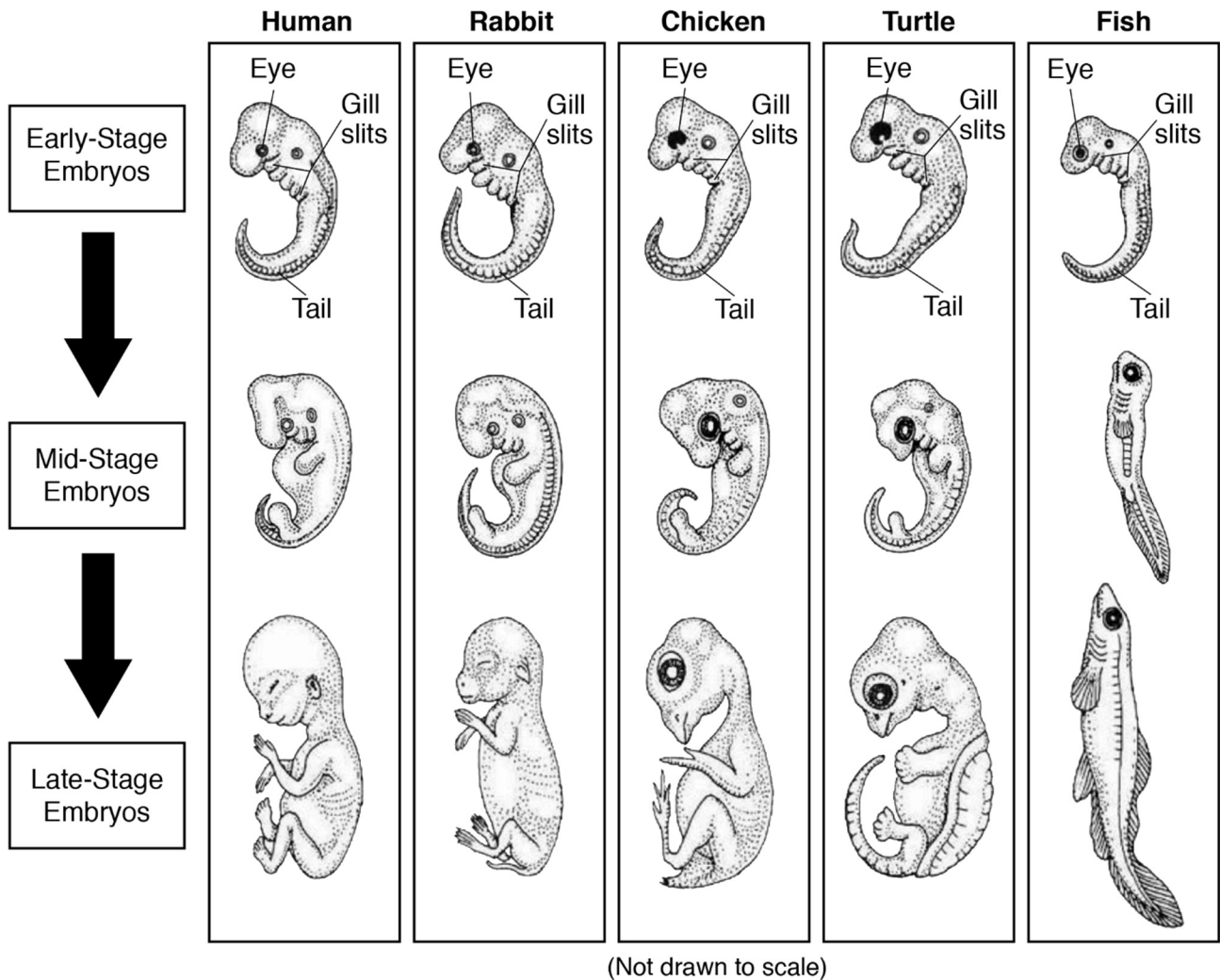
Rabbit



Human

(Not drawn to scale)

Embryonic Development



- 1 What is the one structure that is found in the early embryonic stages of both the rabbit and the turtle that is not found in their adult forms?

A shell
 B tail
 C eye
 D gill slits

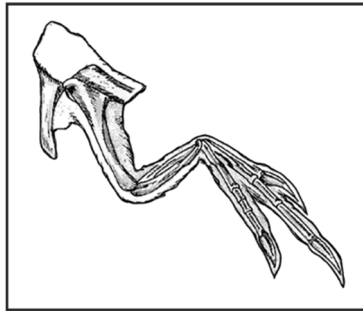
- 2 Provide two pieces of evidence to support the claim that the chicken is more closely related to the rabbit than it is to the fish. [1]

1) _____

2) _____

The model below represents the bones in the arm of an extinct dinosaur called *Velociraptor*.

Velociraptor



The models below represent the bones in the arms of four organisms currently alive today.

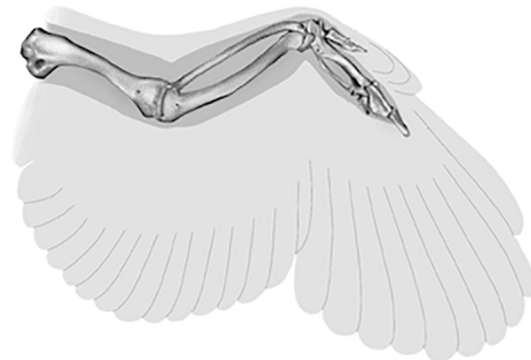
Bat wing



Human arm



Bird wing



Dolphin flipper



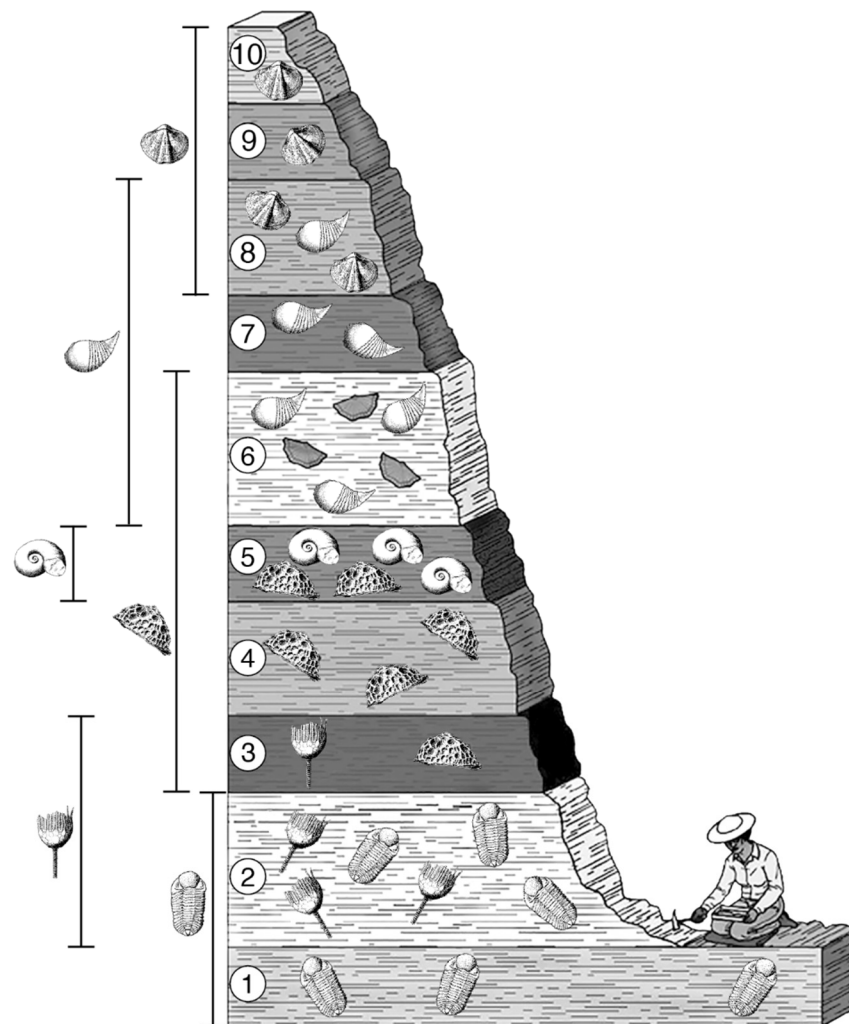
- 3 Identify the organism alive today that is most closely related to the *Velociraptor*. Use evidence from the models to support your choice. [1]

Organism: _____

Evidence: _____

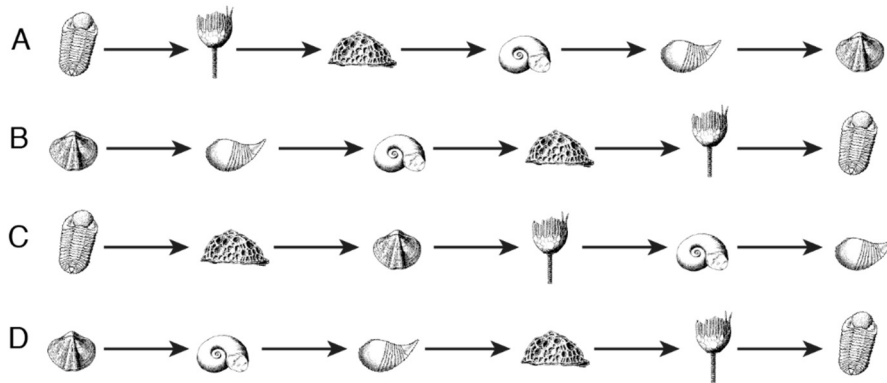
The sequence of rock layers below show evidence of six different life forms, now fossils, that existed during a specific time period in Earth's history.

**Range of Layers
Fossil is Found**



(Not drawn to scale)

- 4 Which sequence of fossils shows the correct chronological order of fossil appearance from oldest to youngest?



- 5 Which claim is best supported by the evidence shown in the sequence of rock layers?

- A Rock layer 4 shows evidence of diversity in one period of Earth's history.
B Three organisms became extinct before rock layer 6 formed.
C All six organisms currently exist on Earth.
D There has been no change in life forms throughout Earth's history.