

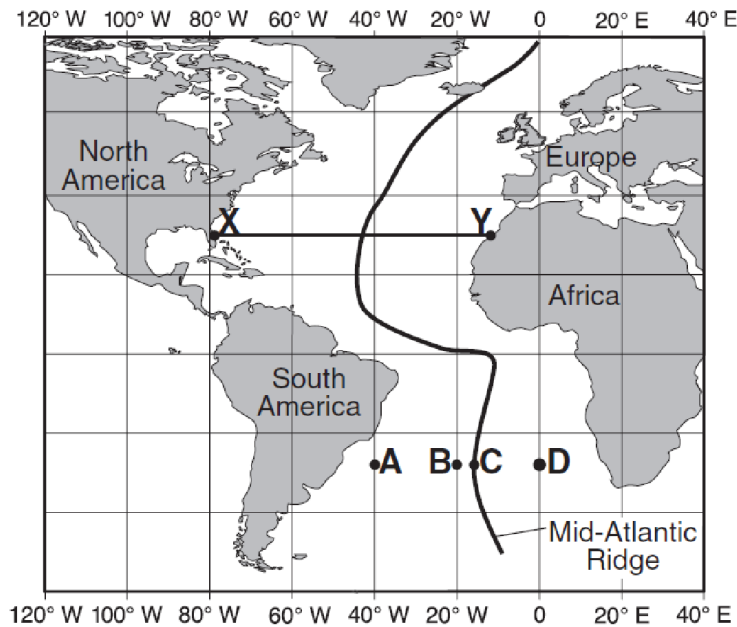
Name _____ Period _____

Time and Earth Systems Quiz

1. Convection currents transport heat energy generated in the _____. They rise and fall due to changes in _____.

- (A) Mantle | composition
- (B) Mantle | density
- (C) Core | composition
- (D) Core | density
- (E) Sun | radiation

Base your answers to the next question on the map of the Mid-Atlantic Ridge shown below. Points A through D are locations on the ocean floor. Line XY connects locations in North America and Africa.



2. Samples of ocean-floor bedrock were collected at points A, B, C, and D. Which sequence shows the correct order of the age of the bedrock from oldest to youngest?

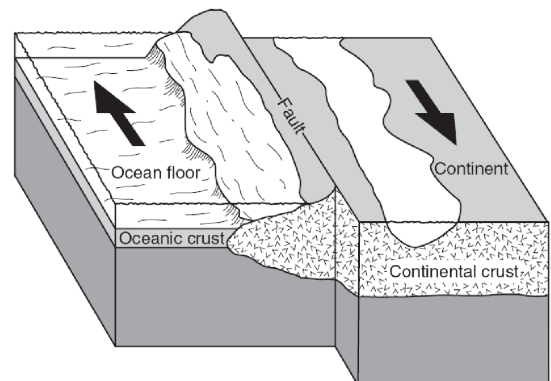
- (A) D → C → B → A
- (B) C → B → D → A
- (C) A → D → B → C
- (D) A → B → D → C
- (E) D → A → B → C

3. Which of the following is TRUE of divergent plate boundaries? (Mark all that apply)

- (A) They are commonly associated with island arcs.
- (B) They are boundaries where two plates slide past each other.
- (C) The density of the plates plays an important role in divergence.
- (D) They are areas where mid-ocean ridges develop.
- (E) They are areas where mountain ranges develop.

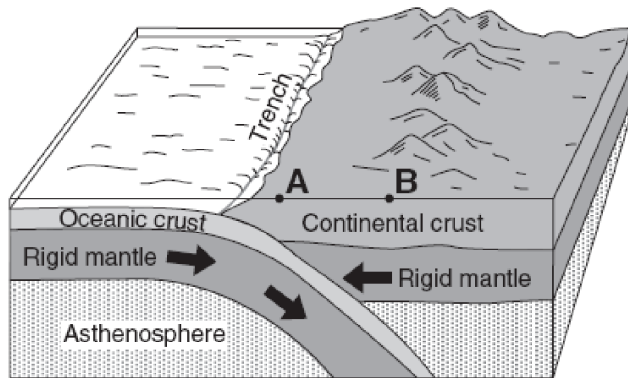
4. What type of plate boundary is shown to the right?

- (A) convergent
- (B) divergent
- (C) transform
- (D) stationary
- (E) reverse



(Not drawn to scale)

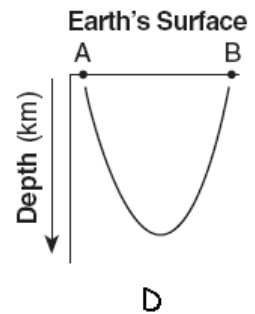
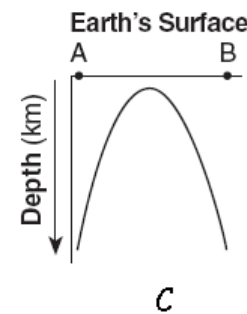
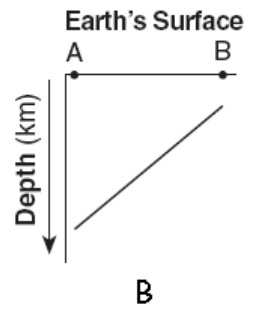
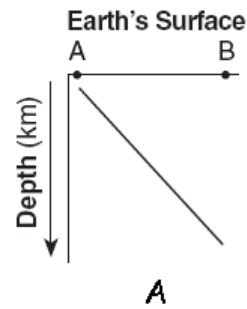
The block diagram below shows a tectonic plate boundary. Points A and B represent locations on Earth's surface.



(Not drawn to scale)

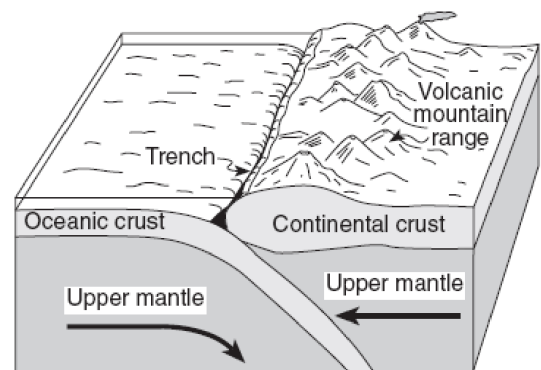
5. Which graph best shows the depths of most major earthquakes whose epicenters lie between A and B?

- (A) A
- (B) B
- (C) C
- (D) D
- (E) more than 1 of the graphs is correct



6. What type of plate boundary is shown to the right?

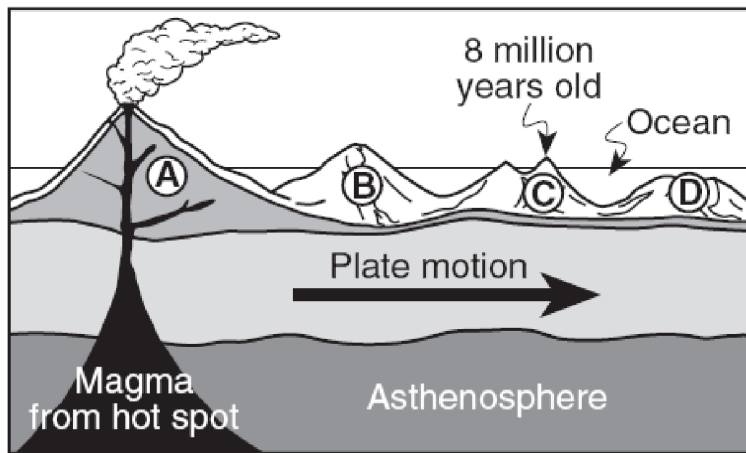
- (A) convergent
- (B) divergent
- (C) transform
- (D) stationary
- (E) strike-slip



(Not drawn to scale)

7. Which of the following categories represents the majority of rocks in the Earth's crust?

- (A) igneous
- (B) metamorphic
- (C) sedimentary
- (D) basalt
- (E) volcanic

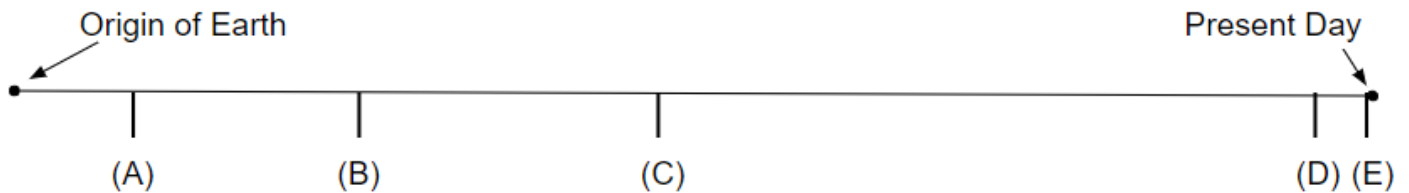


The cross section shows the direction of movement of an oceanic plate over a mantle hot spot, resulting in the formation of a chain of volcanoes labeled A, B, C, and D. The geologic age of volcano C is shown.

8. Which of the following best represents possible ages of volcanoes B and D?

- (A) B is 5 million years old and D is 12 million years old.
- (B) B is 2 million years old and D is 6 million years old.
- (C) B is 9 million years old and D is 9 million years old.
- (D) B is 10 million years old and D is 4 million years old.
- (E) Both Volcano B and D are 8 million years old.

The timeline below represents the entire geologic history of Earth.



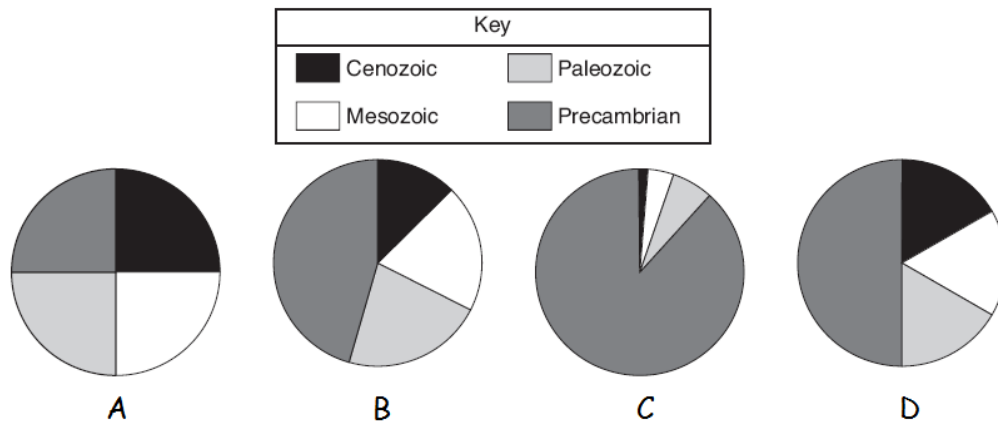
9. Which letter best represents the most likely first appearance of dinosaurs on Earth?

- (A) A
- (B) B
- (C) C
- (D) D
- (E) E

10. Fossils, formed from plant or animal remains, are found in

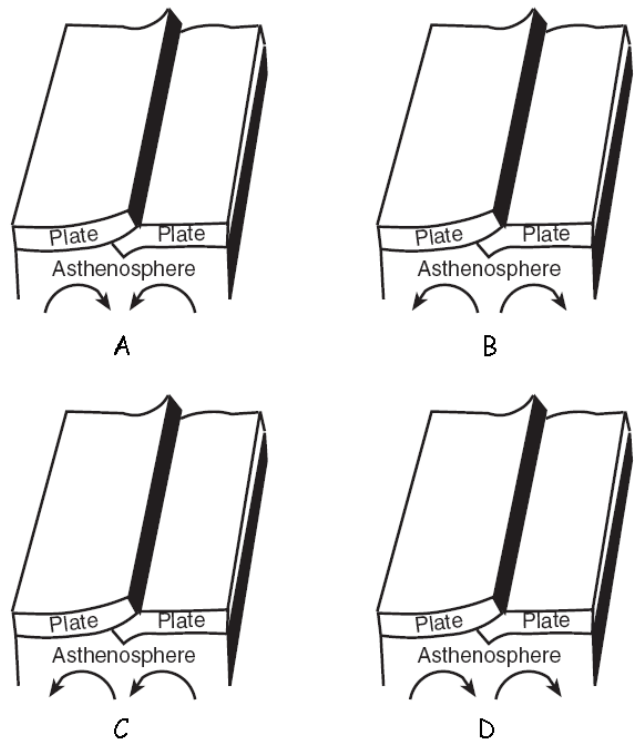
- I. sedimentary rock.
 - II. metamorphic rock.
 - III. igneous rock.
- (A) I only
 - (B) II only
 - (C) III only
 - (D) II and III
 - (E) I, II, and III

11. Which pie graph best represents the percentage of total time for the four major divisions of geologic time?



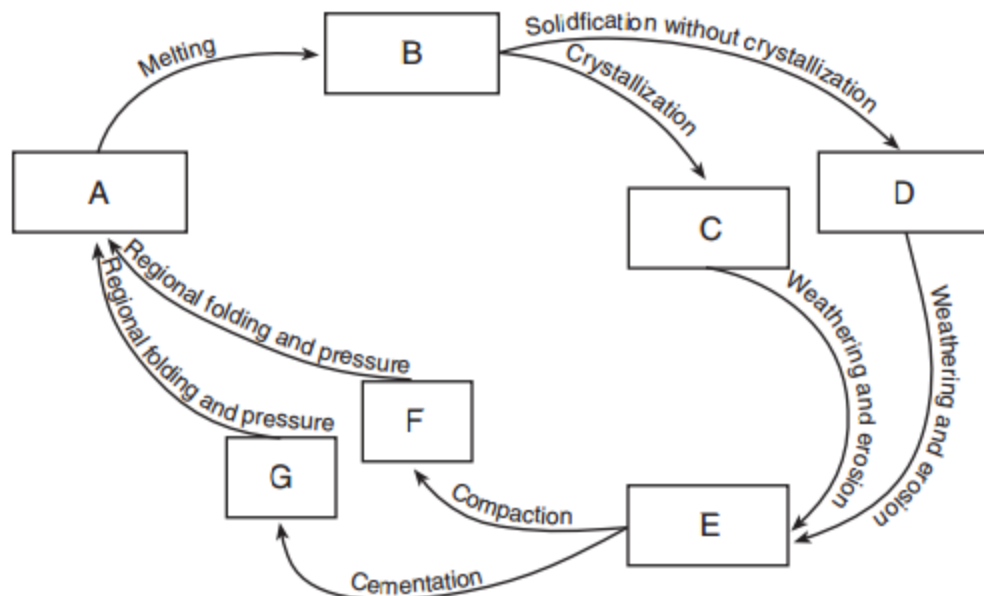
- (A) Diagram A
- (B) Diagram B
- (C) Diagram C
- (D) Diagram D
- (E) None of the Diagrams

12. Which diagram to the right correctly shows how mantle convection currents are most likely moving beneath colliding lithospheric plates?

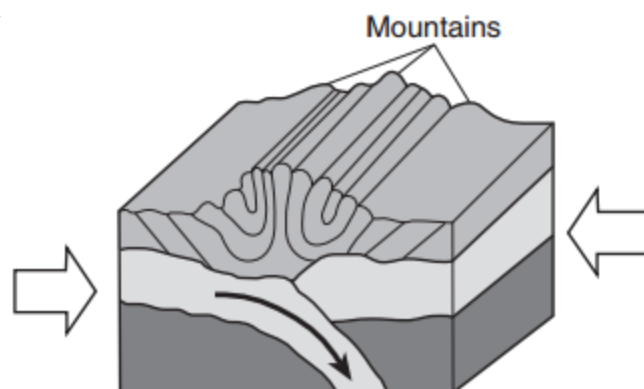


- (A) Diagram A
- (B) Diagram B
- (C) Diagram C
- (D) Diagram D
- (E) None of the Diagrams

The diagram below represents geological processes that act continuously on Earth to form different rock types. Use this diagram to answer the next question. The boxes labeled A through G represent rocks and rock materials. Arrows represent the processes of the rock cycle.



The arrows in the block diagram on the right represent forces forming mountains in a region of Earth's lithosphere.



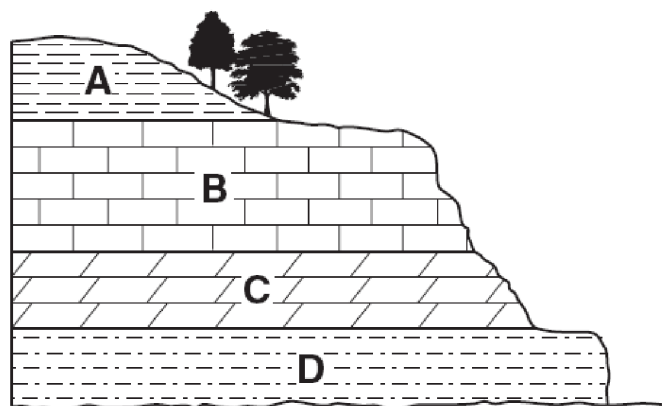
13. Metamorphic rocks that formed from these forces are represented by which lettered box in the flowchart?

- (A) A
- (B) B
- (C) C
- (D) D
- (E) E

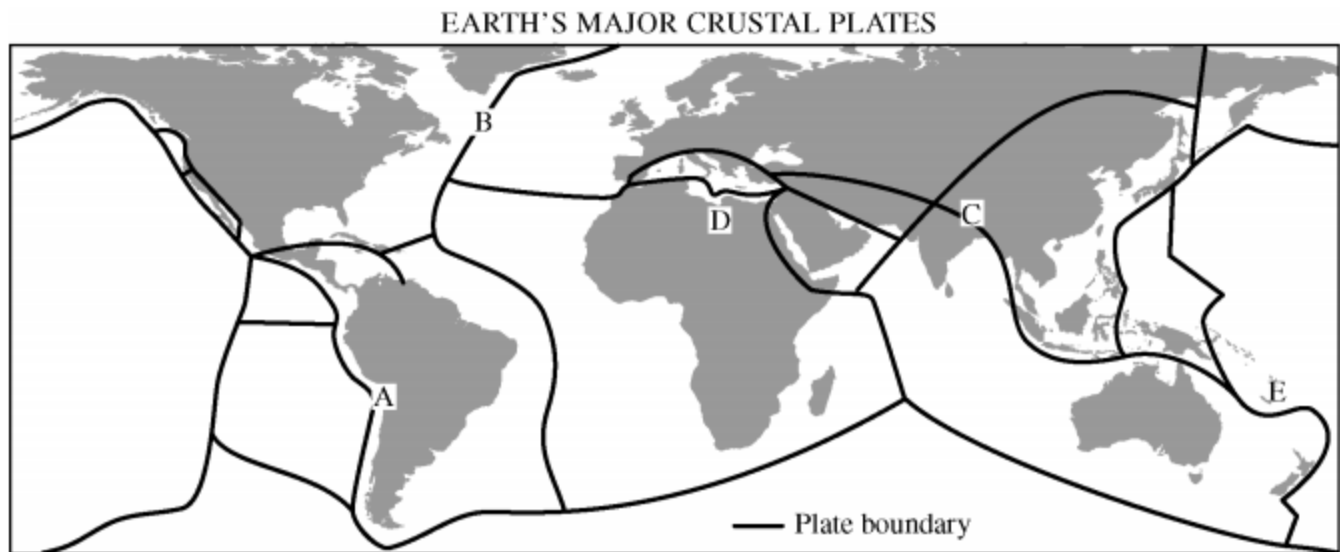
The cross section shows sedimentary bedrock layers A, B, C, and D exposed at Earth's surface. Assume that each layer was exposed to the same weather conditions.

14. Which layer appears to be the most resistant to weathering?

- (A) A
- (B) B
- (C) C
- (D) D
- (E) All are equally resistant.



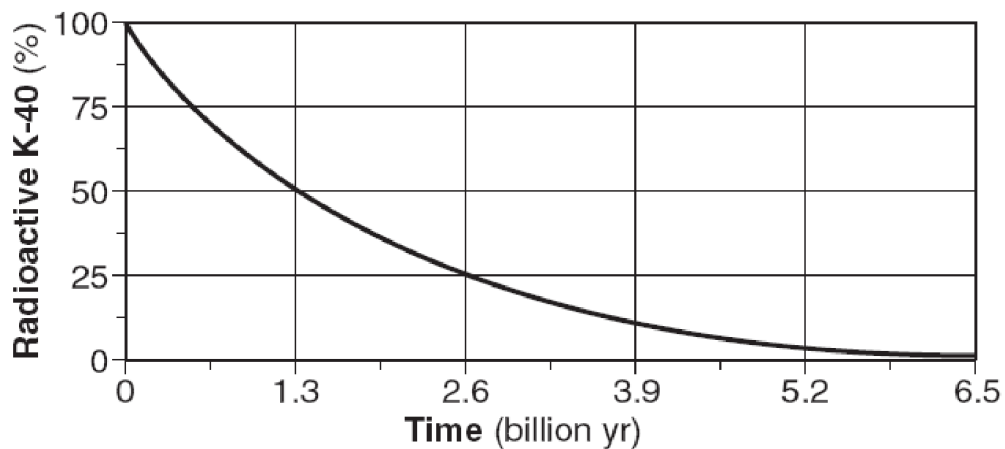
The next 2 questions refer to the diagram below.



15. Area that exhibits a growing non volcanic mountain chain due to uplift

16. Area where new crust is being created at a divergent plate boundary

The graph below shows the rate of decay of the radioactive isotope K-40 into the decay products Ar-40 and Ca-40.



17. Analysis of a basalt rock sample shows that 25% of its radioactive K-40 remained undecayed. How old is the basalt?

- (A) 1.3 billion years
- (B) 2.6 billion years
- (C) 3.9 billion years
- (D) 4.6 billion years
- (E) 5.2 billion years

The diagram below represents geological processes that act continuously on Earth to form different rock types. Use this diagram to answer the next question.

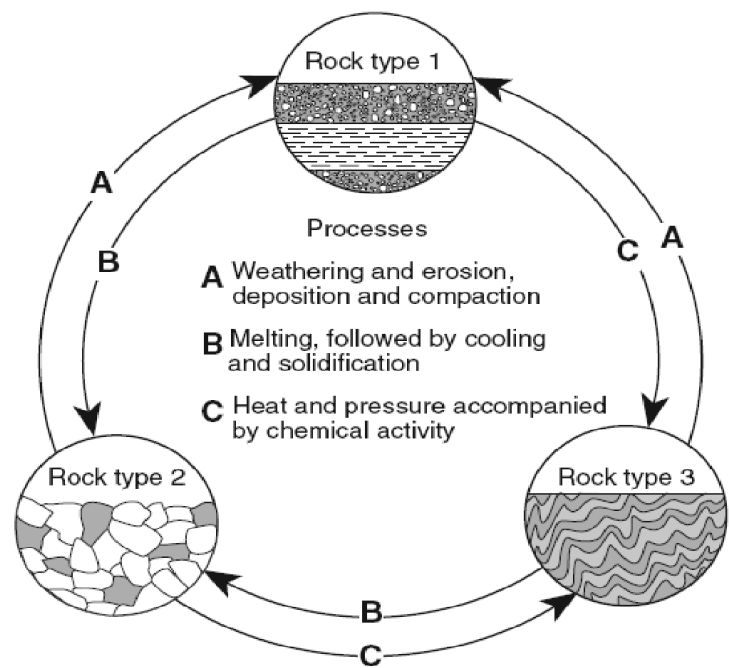
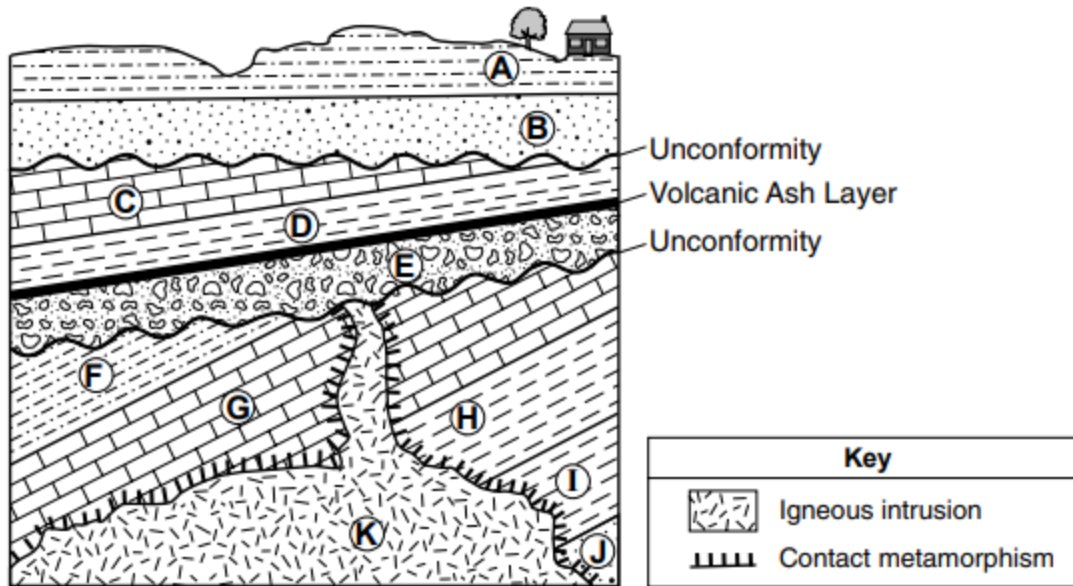


Table 1		Table 2		Table 3	
Rock Type	Classification	Rock Type	Classification	Rock Type	Classification
1	sedimentary	1	metamorphic	1	sedimentary
2	metamorphic	2	sedimentary	2	igneous
3	igneous	3	igneous	3	metamorphic

Table 4		Table 5	
Rock Type	Classification	Rock Type	Classification
1	igneous	1	igneous
2	sedimentary	2	metamorphic
3	metamorphic	3	sedimentary

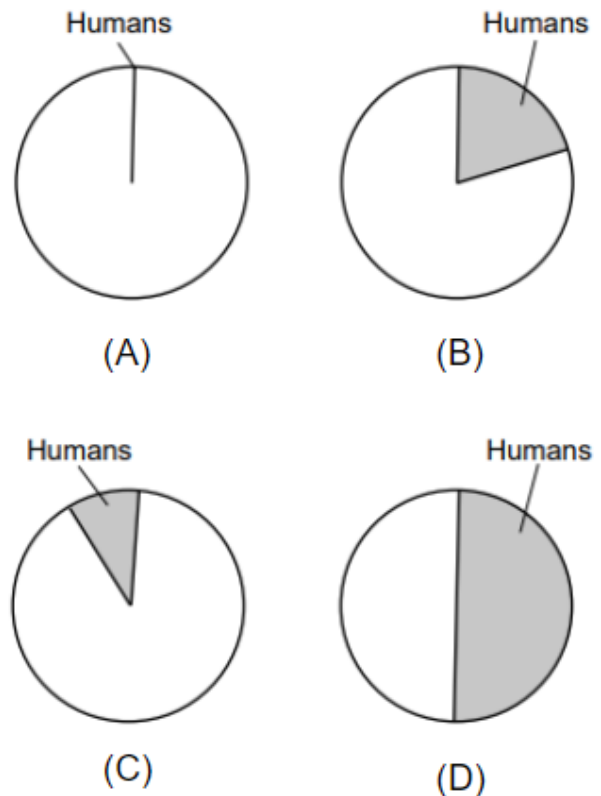
18. Which table correctly classifies each rock type?
- (A) Table 1
 - (B) Table 2
 - (C) Table 3
 - (D) Table 4
 - (E) Table 5

Base your answers to question 19 on the geologic cross section below and on your knowledge of Earth science. The cross section represents rock units, labeled A through K, that have not been overturned. Two unconformities and a volcanic ash layer are indicated.



19. Which of the following sequences represents the age of the rock units from youngest to oldest?

- (A) A → B → D → K → F
- (B) A → D → C → H → K
- (C) B → D → F → G → J
- (D) C → D → E → K → G
- (E) C → E → H → G → J



20. Which pie graph is shaded to best represent the approximate percentage of time that humans have existed during Earth's entire history? **(Mark E if none of the choices are correct.)**