

Geologic History Review

- The climate that existed in an area during the early Paleozoic Era can best be determined by studying
 - (1) the present climate of the area
 - (2) recorded climate data of the area since 1700
 - (3) present landscape surface features found in the area
 - (4) the sedimentary rocks deposited in the area during the Cambrian and Ordovician Periods

- What is the estimated length of time of the Mesozoic Era?
 - (1) 65 million years
 - (2) 186 million years
 - (3) 225 million years
 - (4) 345 million years

- Which event occurred at the start of the Mesozoic Era?
 - (1) the extinction of the armored fishes
 - (2) the extinction of the mastodont
 - (3) the appearance of the reptile
 - (4) the appearance of the dinosaur

- Which event occurred at the time of the Alleghenian Orogeny?
 - (1) the extinction of many kinds of marine animals
 - (2) the extinction of many kinds of land animals
 - (3) the development of primitive aquatic plants
 - (4) the development of birds and mammals

- Approximately how many years ago did the Palisades Sill form?
 - (1) 200 million
 - (2) 2 million
 - (3) 570 million
 - (4) 1,650 million

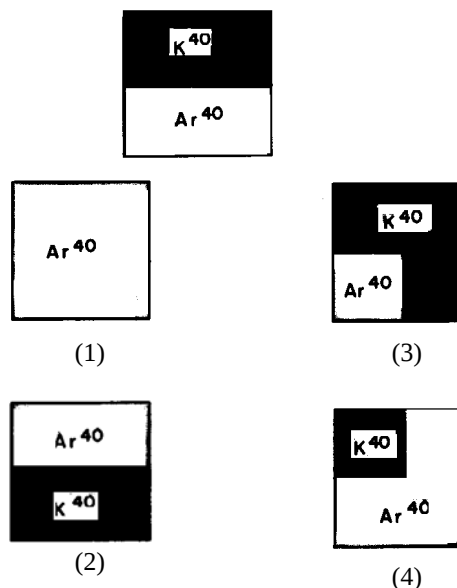
- The fossil record provides evidence that primitive humans were alive on Earth at the same time as the
 - (1) dinosaurs
 - (2) armored fish
 - (3) earliest birds
 - (4) mammoths

- Which radioactive element would a scientist most likely have used to date the age of a fossil that is 10,000 years old?
 - (1) potassium-40
 - (2) carbon-14
 - (3) uranium-238
 - (4) rubidium-87

- A rock sample containing the radioactive isotope potassium-40 is calculated to be 5.2×10^9 years old. How much of the original potassium-40 would be left in this rock sample?
 - (1) 0
 - (2) 1/8
 - (3) 1/4
 - (4) 1/2

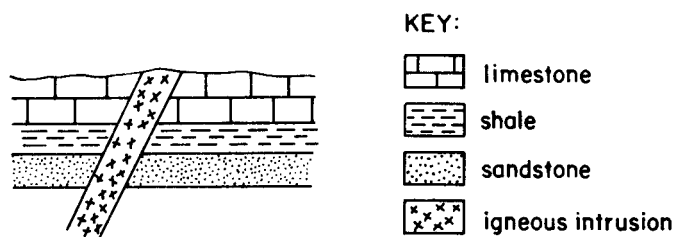
- Which radioactive substance has the longest half-life?
 - (1) carbon-14
 - (2) potassium-40
 - (3) rubidium-87
 - (4) uranium-238

- The element K^{40} radioactively decays to Ar^{40} . The diagram below shows a model of the relative amounts of K^{40} and Ar^{40} remaining after one half-life. Which diagram best illustrates the relative amounts of K^{40} and Ar^{40} remaining after two half-lives?



- Which conclusion can be made based on existing fossil evidence?
 - (1) Present life forms have always existed.
 - (2) The Earth's environment has always been the same.
 - (3) Many life forms have become extinct.
 - (4) All life forms will remain the same in the future.

- The diagram below represents a cross-sectional view of a portion of the Earth's crust.

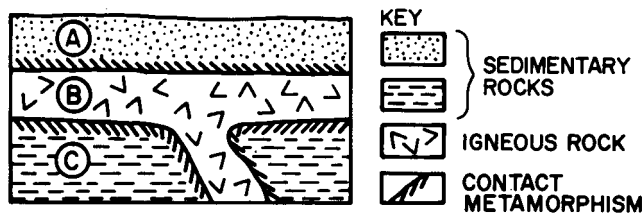


Compared to the age of the sedimentary rock layers, the age of the igneous intrusion is

- (1) younger
 - (2) older
 - (3) the same
- The age of an igneous intrusion is 50 million years. What is the most probable age of the rock immediately surrounding the intrusion?
 - (1) 10 million years
 - (2) 25 million years
 - (3) 40 million years
 - (4) 60 million years

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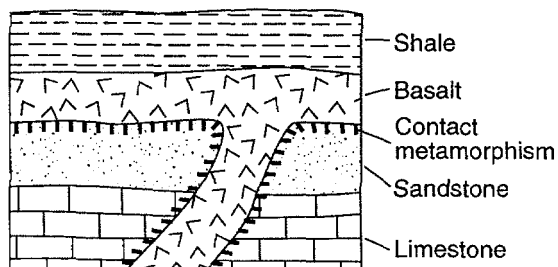
14. The diagram below represents layers of rock.



Rock layer A is inferred to be older than intrusion B because

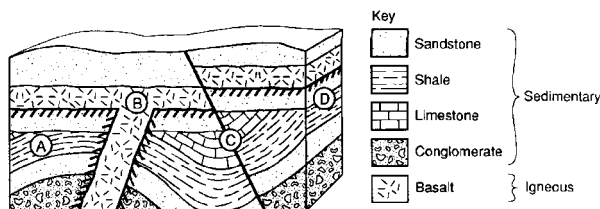
- (1) layer A is composed of sedimentary rocks
- (2) parts of layer A were altered by intrusion B
- (3) layer B is located between layer A and layer C
- (4) parts of layer C were altered by intrusion B

15. Which statement correctly describes an age relationship in the geologic cross section below?



- (1) The sandstone is younger than the basalt.
- (2) The shale is younger than the basalt.
- (3) The limestone is younger than the shale.
- (4) The limestone is younger than the basalt.

16. Base your answer on the geologic cross section below.



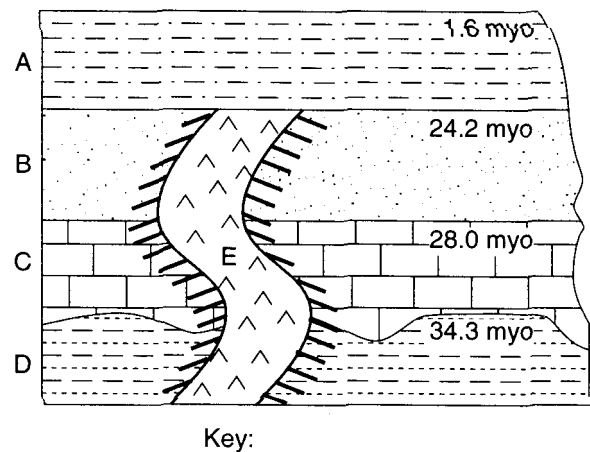
Which geologic event occurred most recently?

- (1) folding at A
- (2) the intrusion at B
- (3) faulting at C
- (4) the unconformity at D

17. Shark and coral fossils are found in the rock record of certain land areas. What does the presence of these fossils indicate about those areas?

- (1) They have undergone glacial deposition.
- (2) They were once covered by thick vegetation.
- (3) They have undergone intense metamorphism.
- (4) They were once covered by shallow seas.

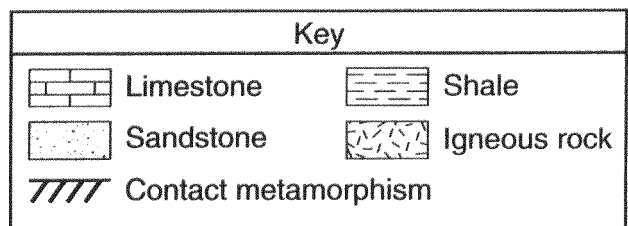
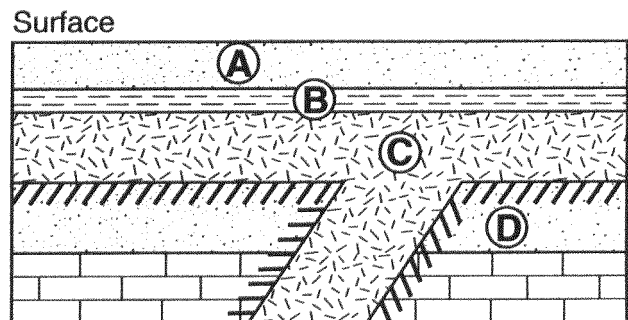
18. The geologic cross section below represents a cliff outcrop. Some bedrock layers are labeled as millions of years old (myo). Letters A through E represent different rock types.



What is a possible age of igneous rock E?

- (1) 1.5 million years old
- (2) 12 million years old
- (3) 28 million years old
- (4) 40 million years old

19. The diagram below shows a geologic cross section. Letters A through D represent different rock units.

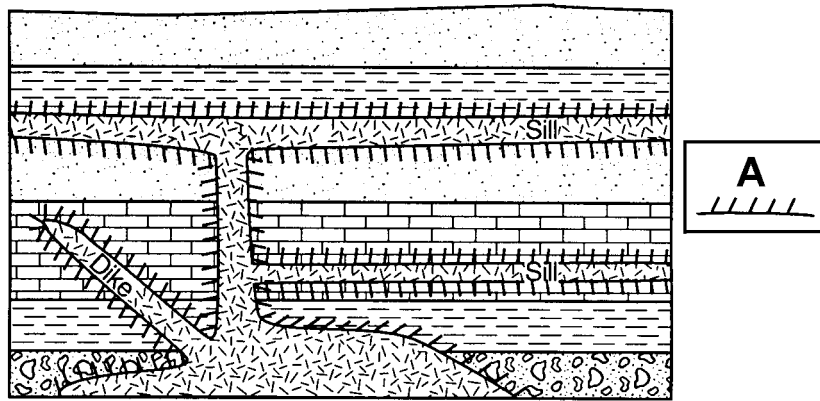


Which sequence correctly shows the age of the lettered rock units, from oldest to youngest?

- (1) A → B → C → D
- (2) C → D → A → B
- (3) D → B → A → C
- (4) D → C → B → A

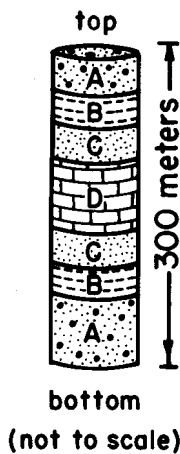
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20. Base your answer to the following question on the geologic cross section below. Overturning has not occurred. The dike and sills shown in the cross section are igneous intrusions.



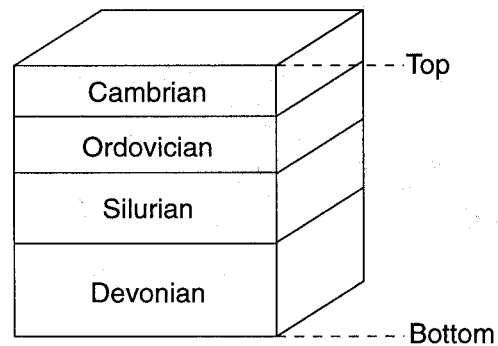
Which feature is represented by symbol A along the edges of the dike and sills?

- (1) contact metamorphic rock (2) an unconformity (3) a glacial moraine (4) index fossils
21. The diagram at the right represents a core drilling in a region consisting of only four sedimentary rock layers, A, B, C, and D. Which geologic event could explain the order of the rock layers in the core drilling?



- (1) Volcanic activity caused rapid deposition of the sedimentary layers.
 (2) Large-scale erosion caused a gap in the time record.
 (3) Extensive folding caused the rock layers to overturn.
 (4) Intrusion of igneous material occurred sometime between the deposition of layer A and layer D.
22. Which characteristics of a fossil would make it useful as an index fossil in determining the relative age of widely separated rock layers?
- (1) a wide time range and a narrow geographic range
 (2) a wide time range and a wide geographic range
 (3) a narrow time range and a wide geographic range
 (4) a narrow time range and a narrow geographic range

23. The diagram below represents a cross section of a series of rock layers of different geologic ages.

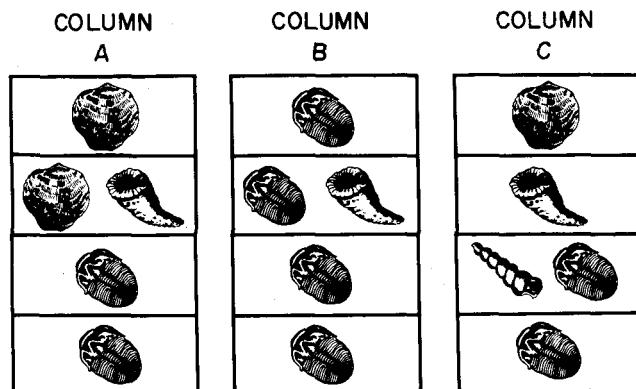


Which statement provides the best explanation for the order of these rock layers?

- (1) The oldest layer is on the bottom.
 (2) A buried erosional surface exists between layers.
 (3) The layers have been overturned.
 (4) The Permian layer has been totally eroded.
24. What is the best interpretation of the two statements below?
- Corals are marine animals that live in warm ocean water.
 - Fossil corals are found in surface bedrock in areas of New York State.
- (1) Corals once lived on land.
 (2) Corals have migrated northward.
 (3) Parts of New York State are now covered by warm ocean water.
 (4) Parts of New York State were once covered by warm ocean water.

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25. The geologic columns A, B, and C in the diagrams below represent widely spaced outcrops of sedimentary rocks. Symbols are used to indicate fossils found within each rock layer. Each rock layer represents the fossil record of a different geologic time period.



According to the diagrams for all three columns, which would be the best index fossil?



26. Sedimentary rock units several hundred kilometers apart could best be correlated by comparing the

- (1) color and thickness of each rock unit
- (2) fossils found in each rock unit
- (3) types of soil located above each rock unit
- (4) degree of weathering and erosion of each rock unit

27. In order for an organism to be used as an index fossil, the organism must have been geographically widespread and must have

- (1) lived on land
- (2) lived in shallow water
- (3) been preserved by volcanic ash
- (4) existed for a geologically short time

28. Pleistocene deposits of gravel are found lying directly on Precambrian bedrock. The interface between the gravel and the bedrock indicates

- (1) a zone of contact metamorphism
- (2) an area of volcanic activity that resulted in extruded gravels
- (3) a period of continuous deposition
- (4) a major time gap in the geologic record

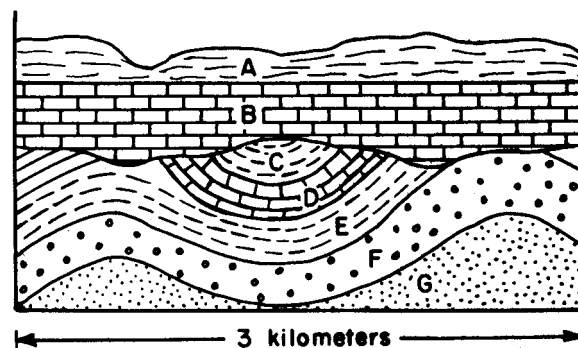
29. The chart below shows index fossils found in rocks of various ages.

BEDROCK AGE	INDEX FOSSIL
MISSISSIPPIAN	SPIRIFER
DEVONIAN	MUCROSPIRIFER
SILURIAN	EOSPIRIFER
ORDOVICIAN	MICHELINOCERAS

Which fossil could be found in the same rock as fossils of the first corals?

- (1) *Spirifer*
- (2) *Mucrospirifer*
- (3) *Eospirifer*
- (4) *Michelinoceras*

30. The diagram below shows a geologic cross section of a region where no faulting has occurred.

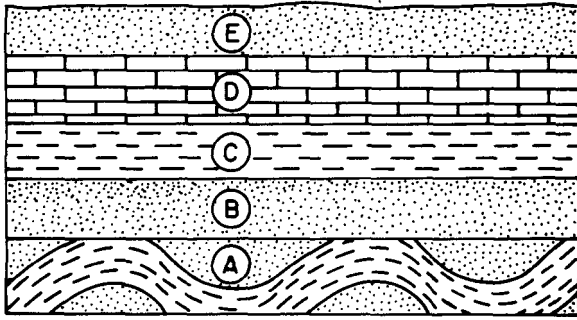


Which statement about the geologic history of the area is best supported by the evidence in the diagram?

- (1) The rocks at A formed before those at B.
- (2) The rocks at D folded after the deposition of rock layer B.
- (3) A long period of erosion took place before the deposition of rock layer B.
- (4) The major agent of erosion acting on the present surface is ice.

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31. In the geologic cross section shown below, between which two layers is part of the rock record most likely missing?



- (1) A and B (3) C and D
(2) B and C (4) D and E
32. Unconformities (buried erosional surfaces) provide evidence that
- (1) many life-forms have become extinct
(2) faults are older than the rock in which they are found
(3) part of the geologic record has been destroyed
(4) metamorphic rocks have formed from sedimentary rocks
33. At which location in New York State would one least expect to find fossils in the surface bedrock?
- (1) 42° N. 79° W. (3) 44° N. 74° W.
(2) 43° N. 76° W. (4) 42° N. 75° W.
34. Which area of New York State has the youngest bedrock?
- (1) the area south of the Finger Lakes
(2) the area around Mt. Marcy
(3) the area between Syracuse and Rochester
(4) the area east of Albany

35. What great orogeny (mountain-building episode) occurred in New York State during the Devonian time period?
- (1) Taconian Orogeny (3) Alleghenyan Orogeny
(2) Grenvillian Orogeny (4) Acadian Orogeny
36. During which period of geologic history was the surface bedrock of the Catskills deposited?
- (1) Cambrian (3) Devonian
(2) Pleistocene (4) Triassic
37. Which New York landscape region is composed primarily of Cretaceous through Pleistocene unconsolidated sediments?
- (1) Interior Lowlands
(2) Erie-Ontario Lowlands
(3) Hudson-Mohawk Lowlands
(4) Atlantic Coastal Plain
38. Approximately how many years ago did the last continental ice sheet retreat from New York State?
- (1) less than 1 million years (3) 1 billion years
(2) 2.5 million years (4) 10 billion years
39. During which geologic period would fossils in the exposed bedrock of New York State at 43° N, 77° W most likely have been deposited?
- (1) Cambrian (3) Silurian
(2) Ordovician (4) Devonian
40. The surface bedrock of the Tug Hill Plateau landscape region is mostly composed of
- (1) igneous rock of Silurian age
(2) sediments of Permian Age age
(3) metamorphic rock of Precambrian age
(4) sedimentary rock of Ordovician age