

1. Geologists have subdivided geologic time into units based on
 - 1) rock type
 - 2) fossil evidence
 - 3) erosion rates
 - 4) landscape development

2. Approximately how long ago did the solar system originate?
 - 1) 570,000,000 years
 - 2) 1,000,000,000 years
 - 3) 4,500,000,000 years
 - 4) 10,000,000,000 years

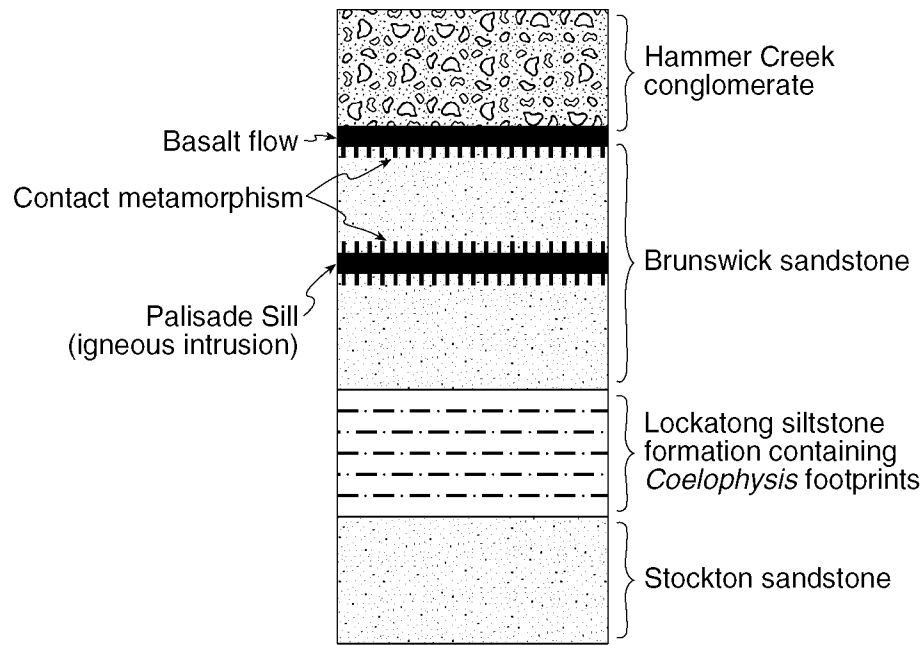
3. When did the Jurassic Period end?
 - 1) 66 million years ago
 - 2) 146 million years ago
 - 3) 163 million years ago
 - 4) 190 million years ago

4. 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

5. One half of the radioactive potassium-40 (K^{40}) in an igneous rock has decayed to argon-40 (Ar^{40}). About how many years ago was this rock formed?
 - 1) 1.4×10^9
 - 2) 2.8×10^9
 - 3) 4.2×10^9
 - 4) 9.8×10^9

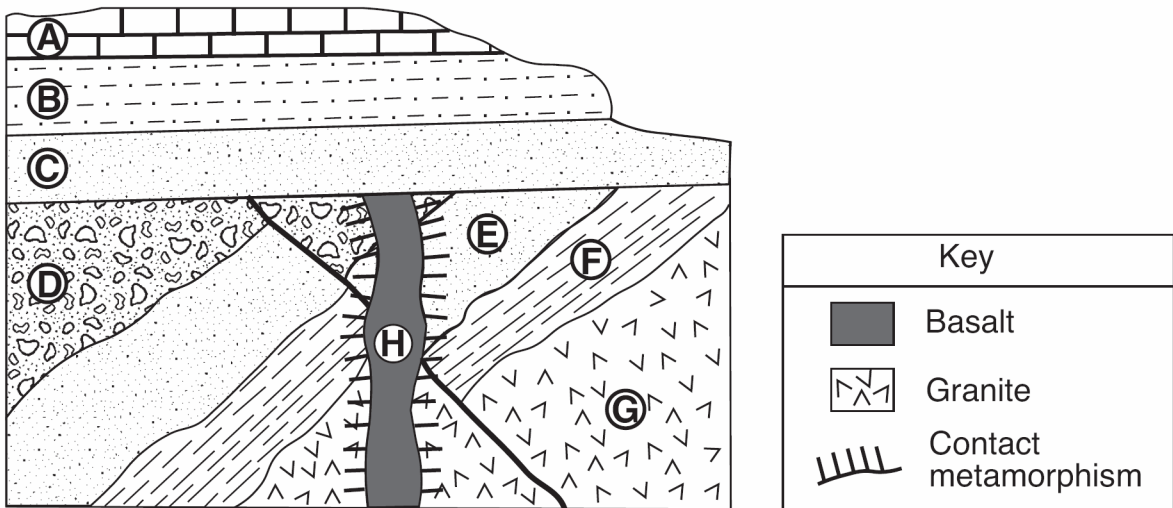
6. The fossil record indicates that most of the plants and animals that lived on Earth in the past
 - 1) appeared during the Cambrian Period
 - 2) became index fossils
 - 3) have become extinct
 - 4) lived on land

7. Base your answer to the following question on The cross section below, which shows several rock formations found in New York State. The rock layers have not been overturned.



How does this cross section indicate that the Stockton sandstone is the oldest rock layer?

8. Base your answer to the following question on the cross section below. Letters *A* through *H* represent rock units in which overturning has not occurred.



Two inferences about the cross section are listed below.

Inference 1: Rock unit *G* is older than the fault.

Inference 2: Rock unit *A* is younger than rock unit *C*.

Explain how *each* inference is supported by evidence in the cross section.

Reference Tables

Radioactive Decay Data

RADIOACTIVE ISOTOPE	DISINTEGRATION	HALF-LIFE (years)
Carbon-14	$C^{14} \rightarrow N^{14}$	$5.7 \cdot 10^3$
Potassium-40	$K^{40} \rightarrow \begin{matrix} Ar^{40} \\ Ca^{40} \end{matrix}$	$1.3 \cdot 10^9$
Uranium-238	$U^{238} \rightarrow Pb^{206}$	$4.5 \cdot 10^9$
Rubidium-87	$Rb^{87} \rightarrow Sr^{87}$	$4.9 \cdot 10^{10}$

Answer Key
[New Exam]

1. 2

2. 3

3. 2

4. 2

5. 1

6. 3

7. – Stockton sandstone is on the bottom; – Law of Superposition

8. Evidence for inference 1: – A fault is younger than any rock through which it cuts. – Rock unit *G* had to be in place before it was cut by the fault. – law of crosscutting relationships
Evidence for inference 2: – Rock unit *C* is below rock unit *A*. – Younger sedimentary rock is deposited on top of older sedimentary rock. – law of superposition
