

Name: [Answer Key](#)
Earth Science

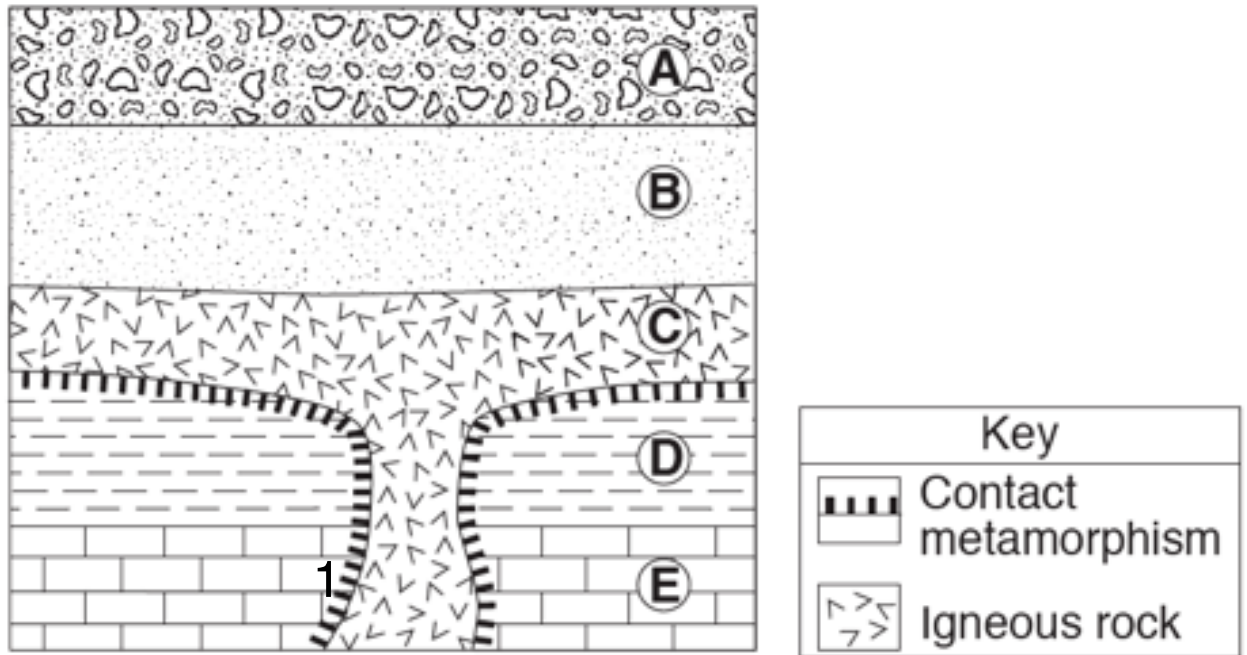
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Earth Science Regents Review Workbook

Part 8: Geologic History

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Sequence of Events






1. Which layer of rock is the oldest? E
2. Which layer of rock was deposited most recently? A
3. Which is older, the shale layer or the igneous rock layer? Shale
4. Name the rock found at point 1. Marble
5. Put the above sequence in order from oldest to youngest.
 - a. E
 - b. D
 - c. C
 - d. B
 - e. A

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Index Fossils

1. Use your ESRT to fill in the table below for the three index fossils pictured.

			
Fossil Name	Coelophysis	Phacops	Eospirifer
Identification Letter	L	C	Y
Eon	Phanerozoic	Phanerozoic	Phanerozoic
Era	Mesozoic	Paleozoic	Paleozoic
Period	Triassic	Devonian	Silurian
Epoch	Late	Middle	Early
Important Geologic Event at this Time	Pangaea begins to break up	Catskill delta forms Erosion of Acadian Mountains	Salt and gypsum deposited in evaporite basins
NYS Landscape Region They May Be Found	Newark Lowlands	Alleghany Plateau	Erie-Ontario Lowlands

2. What are two characteristics of index fossils that make it important in determining the age of rocks?

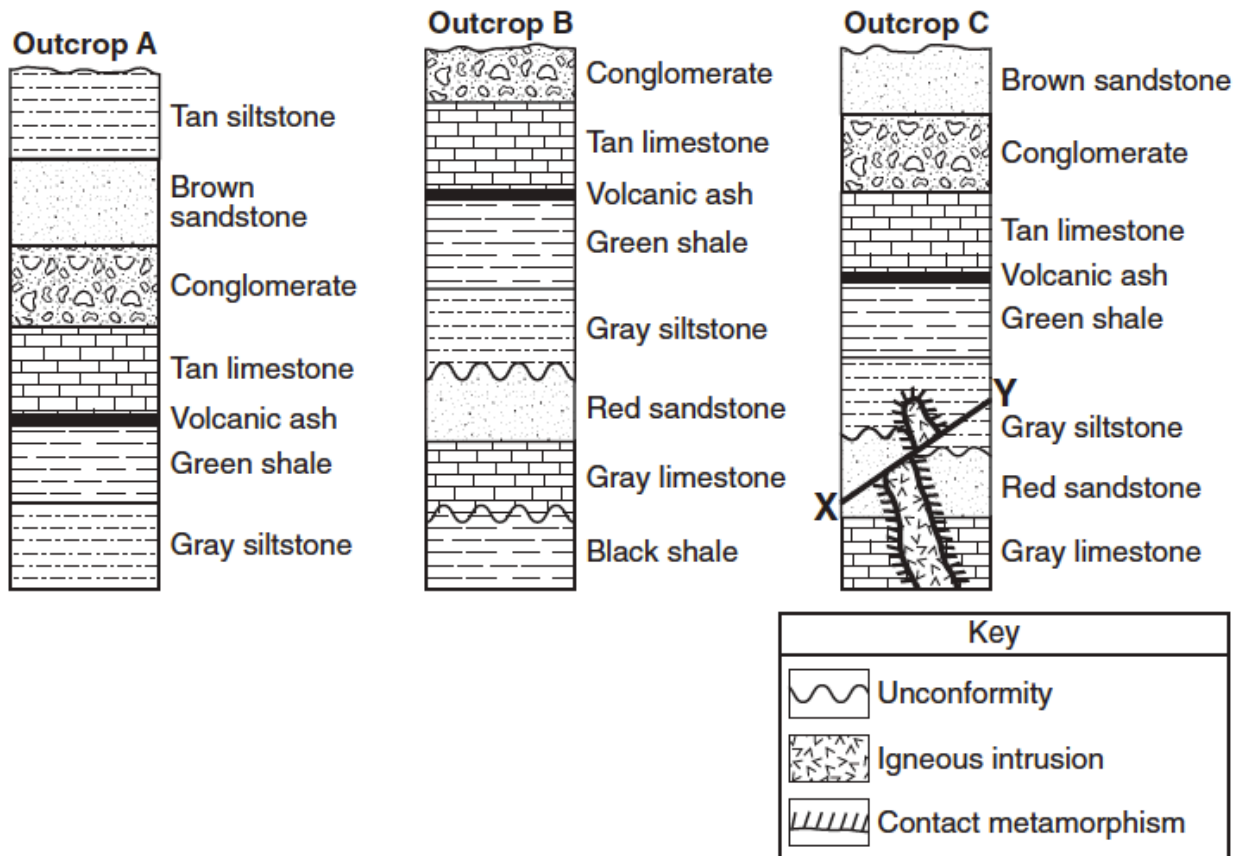
Lived for a short period of time but over a wide geographic area.

3. What was another method discussed in class (very similar to index fossils) that helps geologists determine the age of rocks?

Volcanic ash deposits

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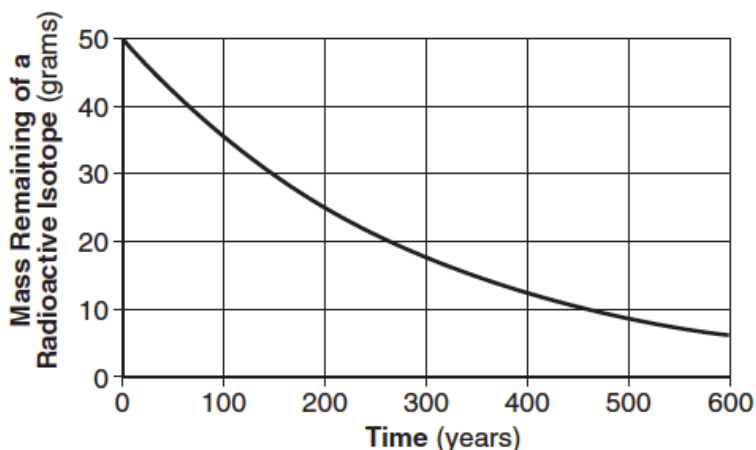
Correlation



- Which rock layer is the oldest? Black shale
- Which rock layer is the youngest? Tan siltstone
- What is represented by Line XY in Outcrop C? Faulting
- Which rock would form due to the contact metamorphism of the gray limestone? Marble
- Which rock would form due to the contact metamorphism of the red sandstone? Quartzite
- Which processes occurred to form the unconformity shown in Outcrops B and C?
Weathering and erosion
- Why is volcanic ash considered a good time marker for correlating rocks?
It was deposited over a short period of time but over a wide geographic area.
- Which processes were primarily responsible for the formation of the sedimentary rock layers shown?
Deposition, burial, compaction, cementation
- How does the age of the igneous intrusion compare to the gray siltstone in Outcrop C?
The igneous intrusion is younger than the gray siltstone.

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Radioactive Dating



1. What is the difference between relative and absolute age?

Relative age indicates a broad time period of an event.

Absolute age indicates the age of an event in years.

2. What is the half-life of potassium-40? 1.3 x 10⁹ years

3. A rock sample was found to have 25% of K-40 remaining. How old is the rock? 2.6 x 10⁹ years

4. If you wanted to date a fossil from the Holocene epoch, which radioactive isotope should you use and why?

Carbon-14 because it has a short-half life and is used for dating recent organic materials.

5. Which radioactive isotope would best be used to date a rock that formed when the solar system formed? Uranium-238

6. Write the half-life for rubidium-87 in standard form. 49,000,000,000 years

7. Use the graph above to answer the following questions.

a. What is the half-life of the isotope? 200 years

b. If a rock sample had 10 grams of the radioactive isotope remaining, what is the age of the rock? 450 years

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