Handout 1 pink Geologic History

Standard 2.5

Geologic History

Chapter 8 Section 1

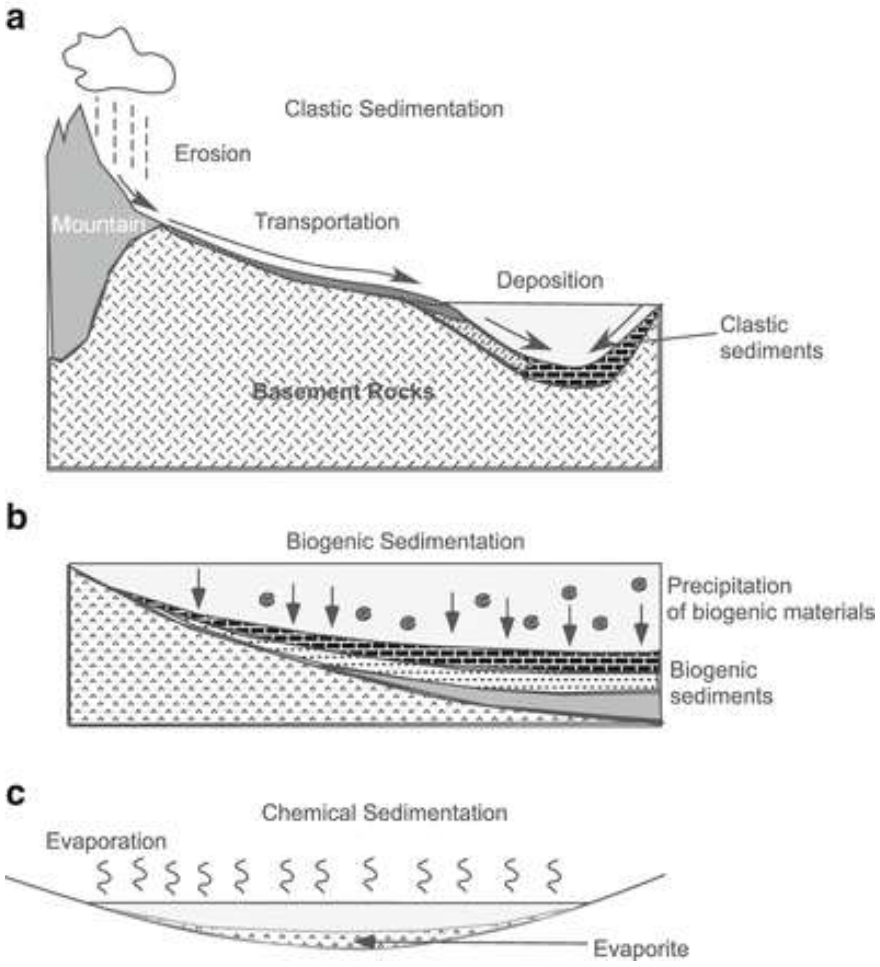
RELATIVE AGE

1. What type of rock is commonly used by scientists to determine the relative age of rocks?

- Sedimentary rocks.

2. When do sedimentary rocks form?

- When new sediments are deposited on top of old layers of sediments.

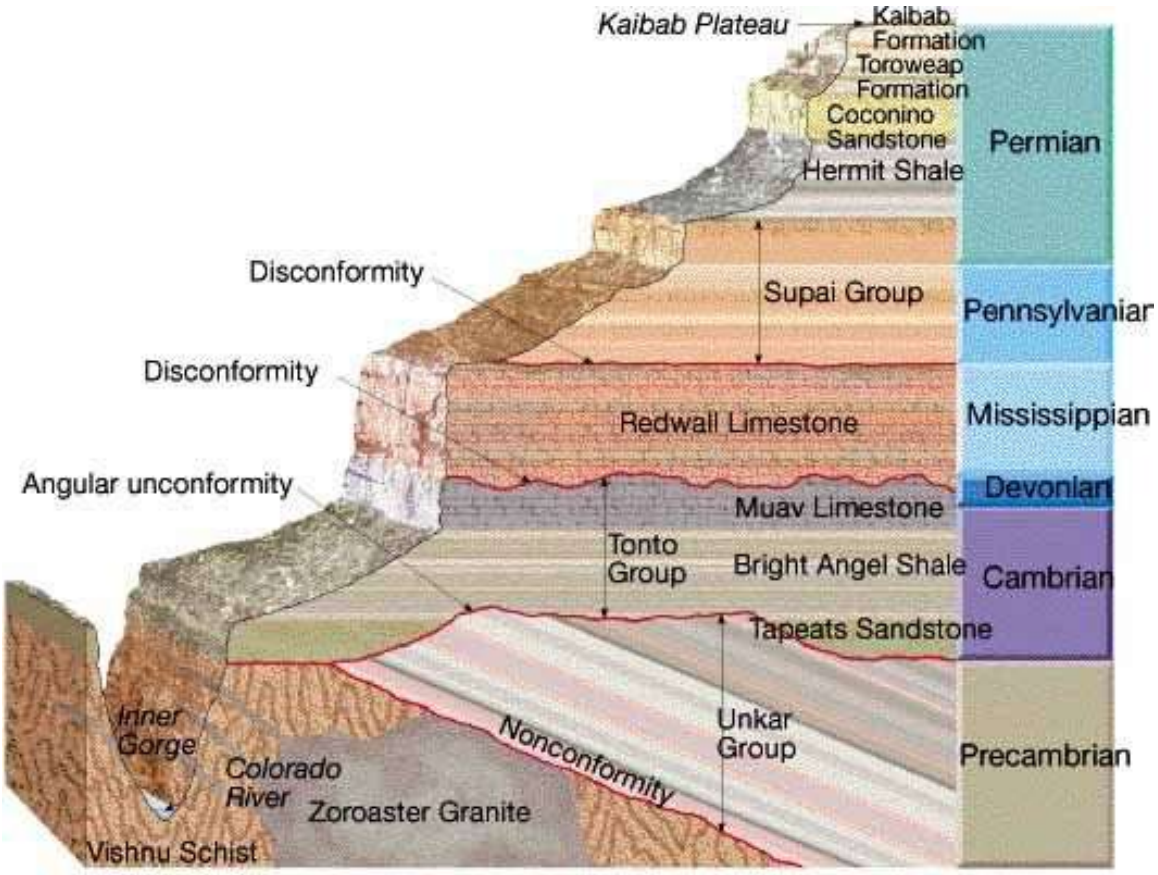


3. What does the law of superposition helps scientists determine?

- The relative age of a layer of sedimentary rock.

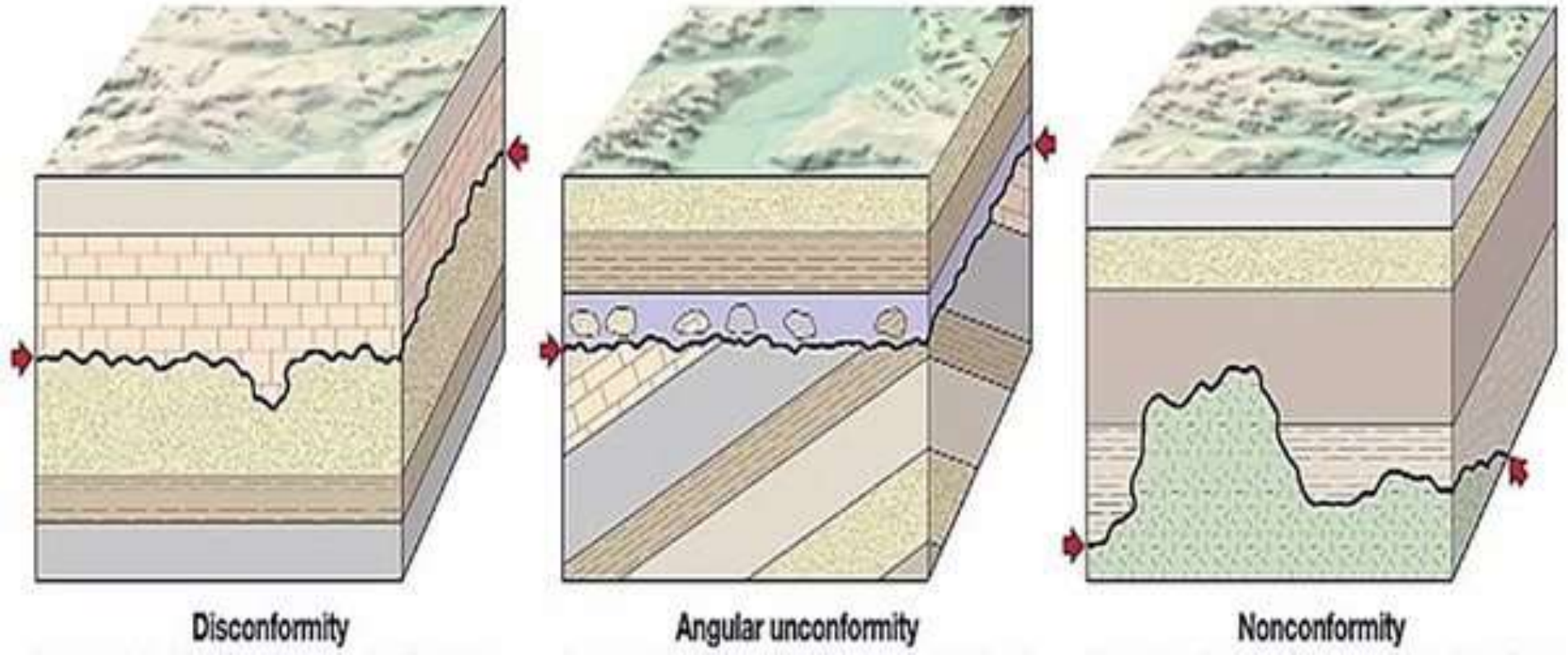
4. According to the law of superposition, what is the age relationship of rocks on either side of an unconformity?

- All rocks beneath an unconformity are older than the rocks a above the unconmormity.



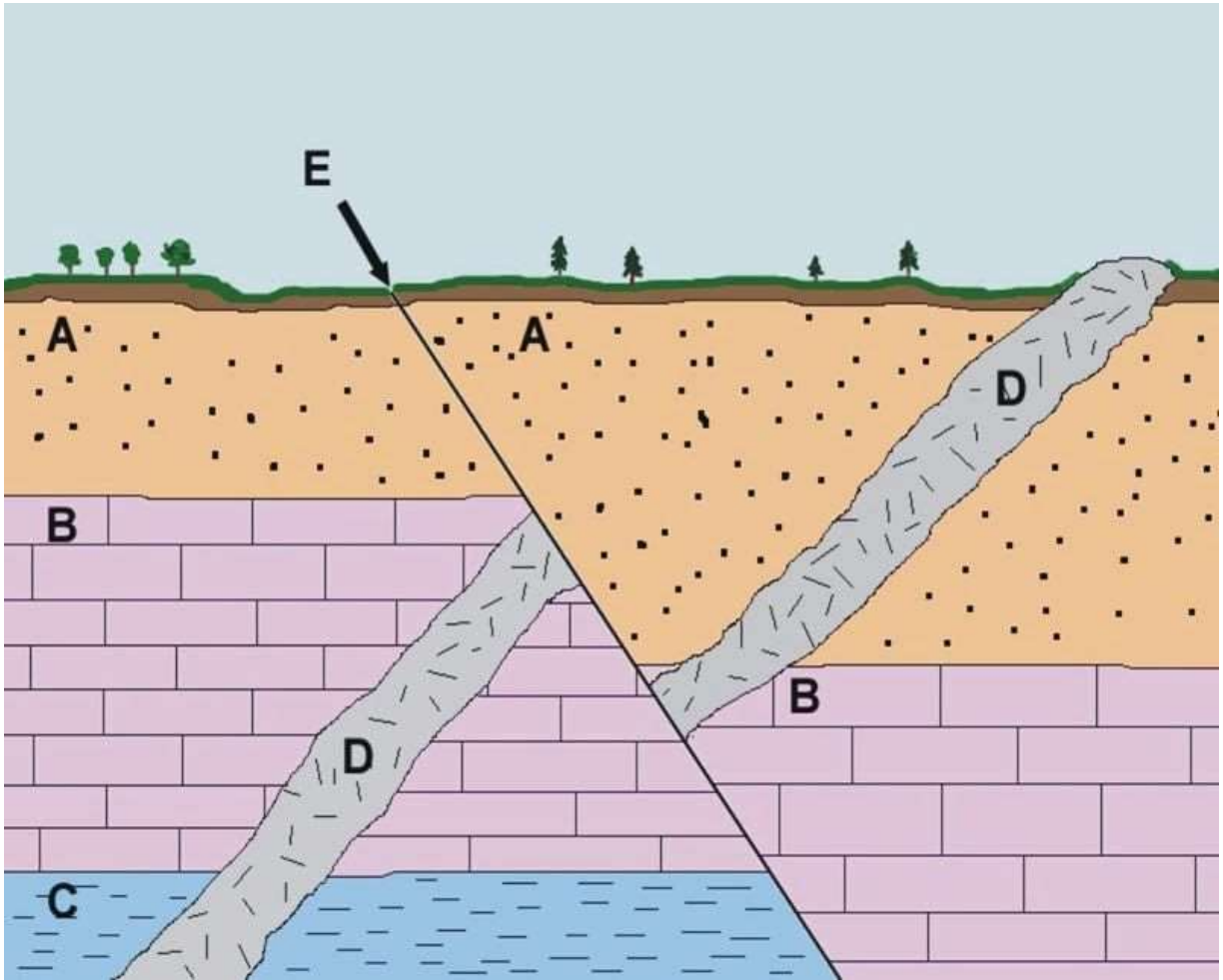
5. How does a nonconformity form?

- Stratified rock rests upon unstratified rock.



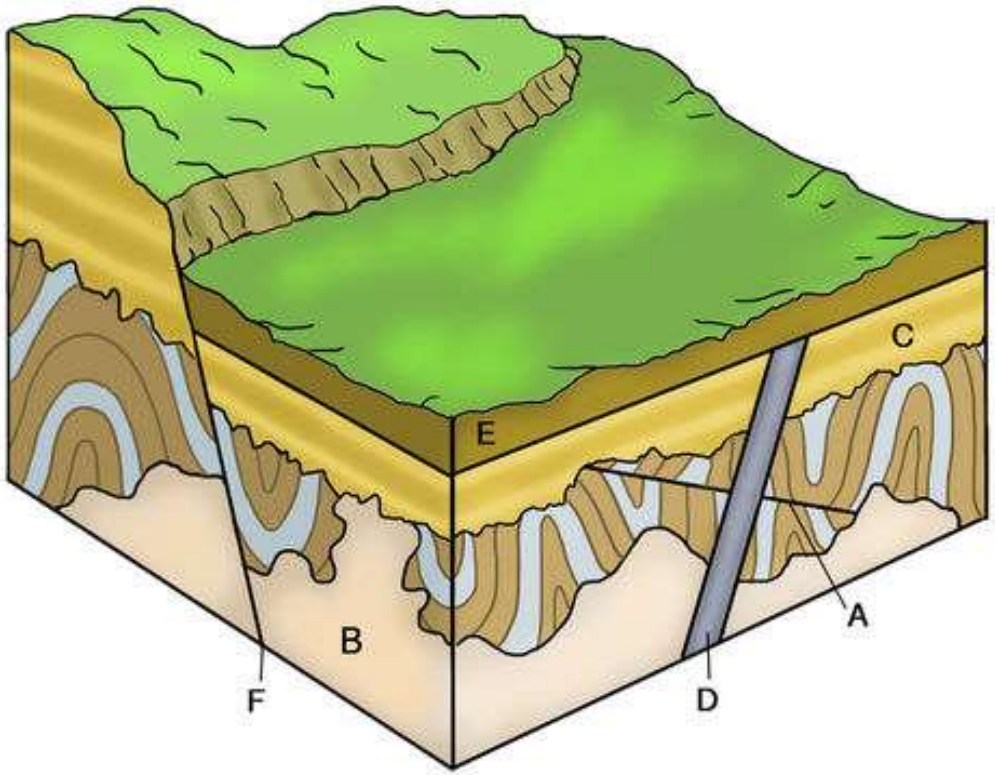
6. What law do scientists apply to determine relative ages of rock when they find faults or intrusions?

- Crosscutting relationships



7. What is the relative age of a fault or igneous intrusion that cuts through an unconformity?

- The fault or intrusion is younger than the rocks it cuts through above and below the unconformity.

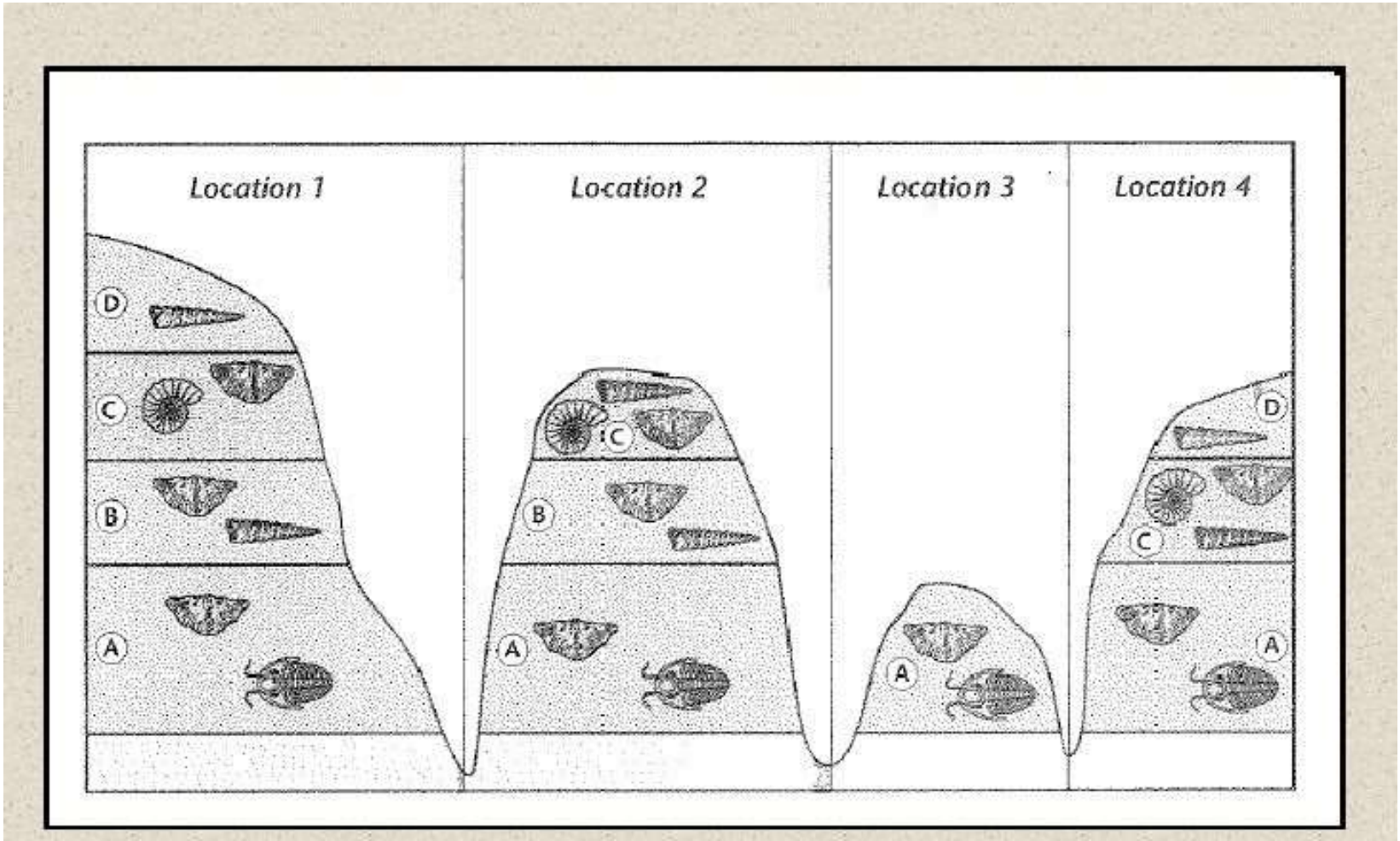


Chapter 8 Section 3

INDEX FOSSILS

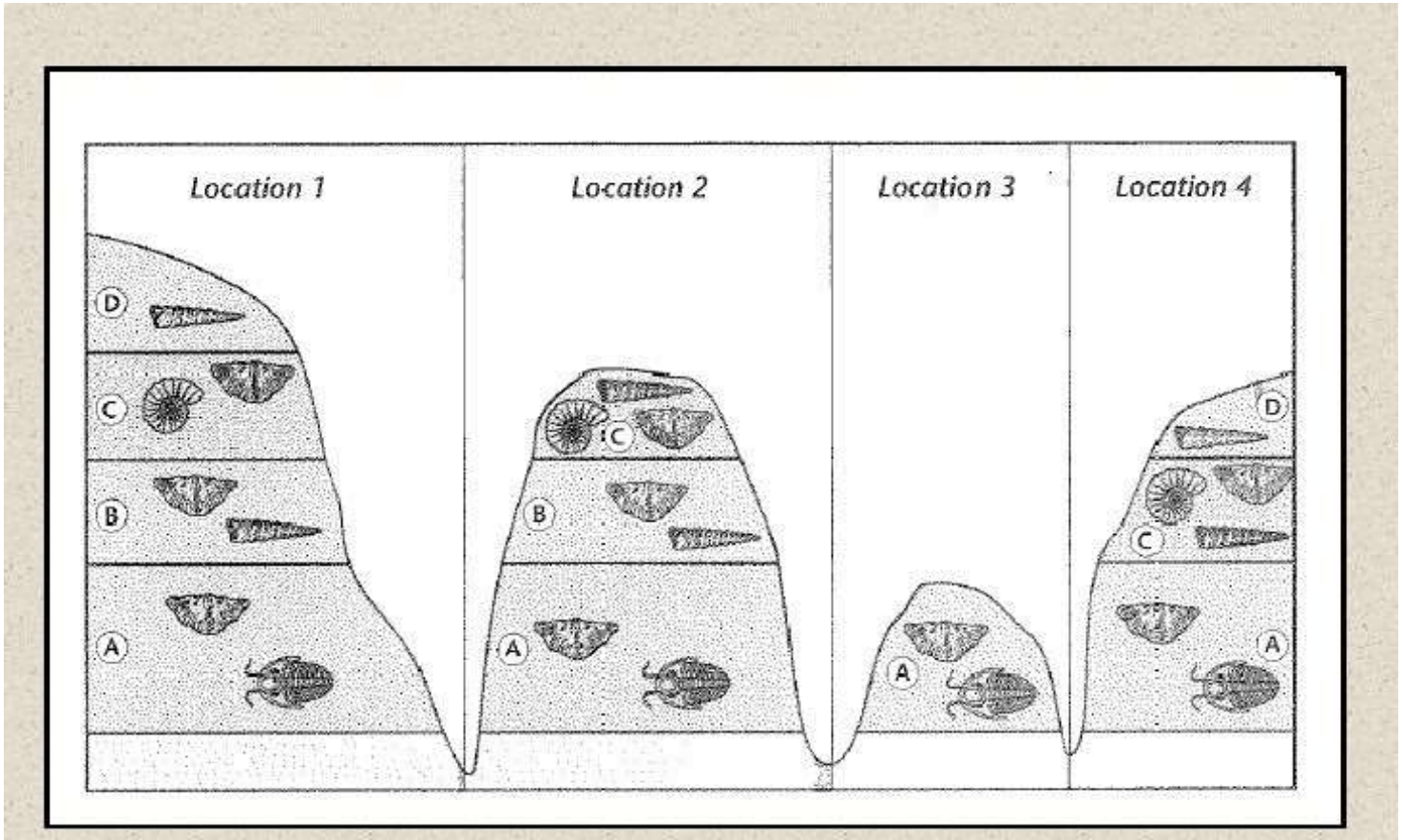
8. Fossils that are found only in the rock layers of a particular geologic period are called _____.

- Index fossils



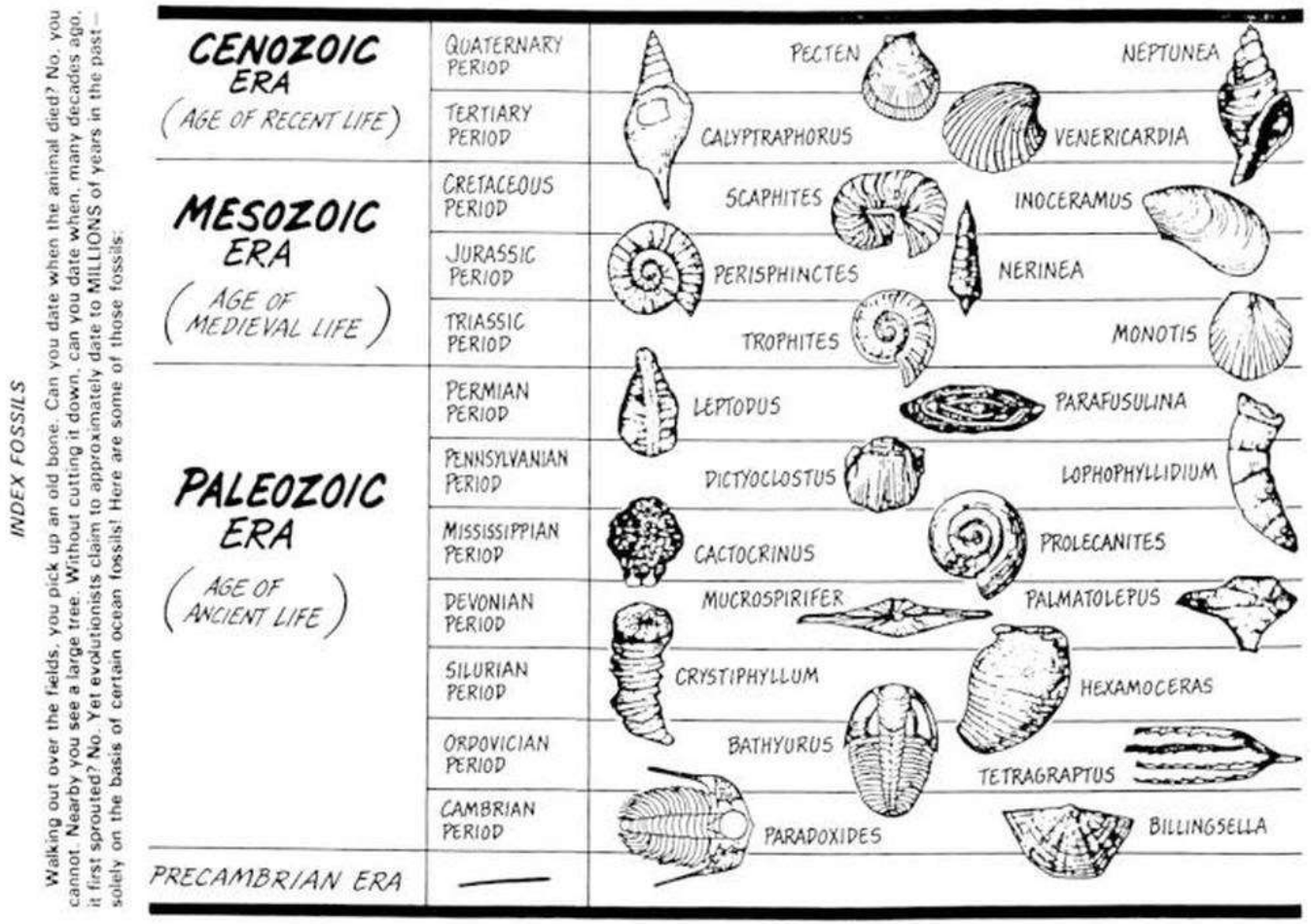
9. What is most important about the features of an index fossil?

- The index fossil must be present in rocks scattered over a large region.



10. The organisms that form index fossils lived

- During a short span of geologic time.

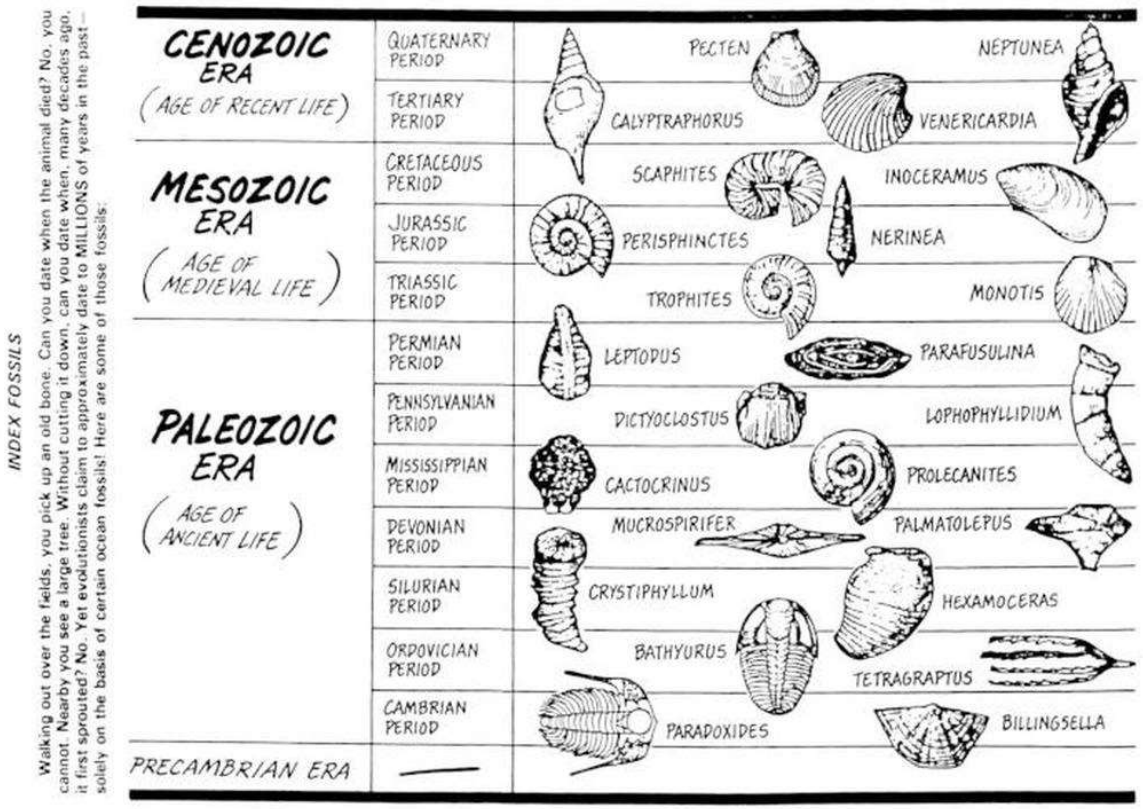


11. How commonly distributed must the fossil of an organism be in order to be considered an index fossil?

- The fossil must occur in fairly large numbers within a rock layer.

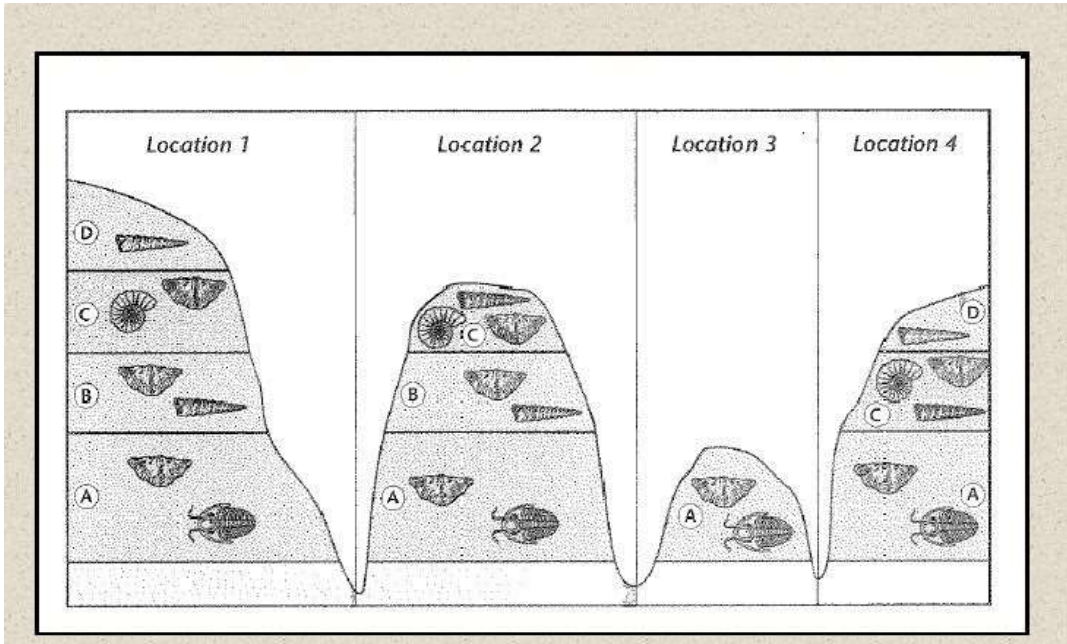
12. Rock layers in which index fossils have been found can be dated accurately because the organisms that formed the index fossils lived

- For a short span of geologic time.



13. How can scientists use index fossils to determine the absolute age of rock layers in different parts of the world?

- An index fossil discovered in rock layers in different areas of the world indicates that the rock layers in those areas formed during the same time period.

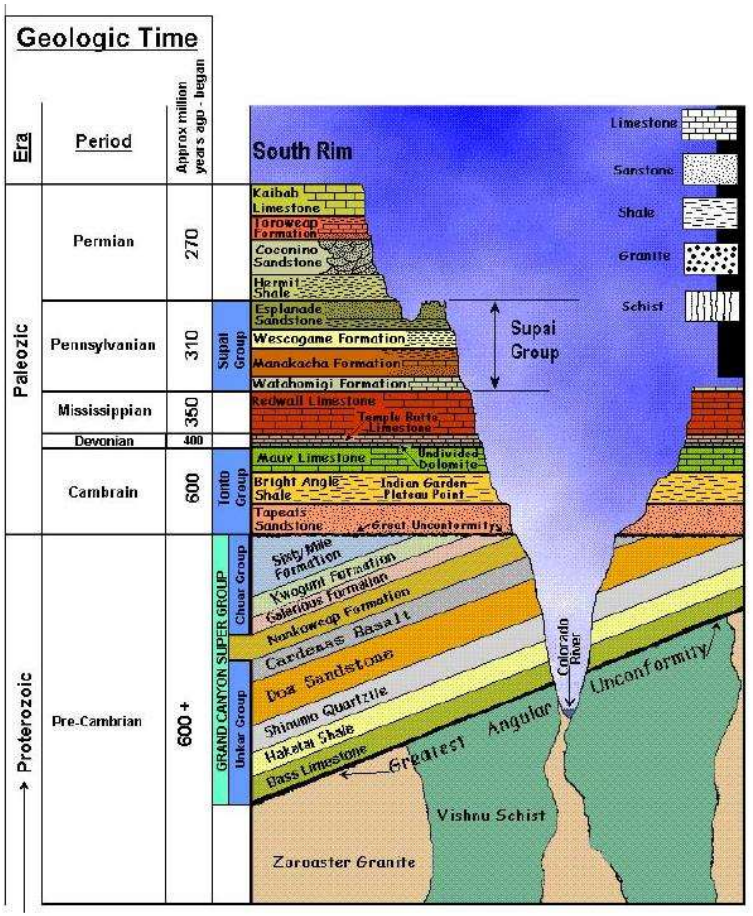


Chapter 9 Section 1

GEOLOGIC TIME

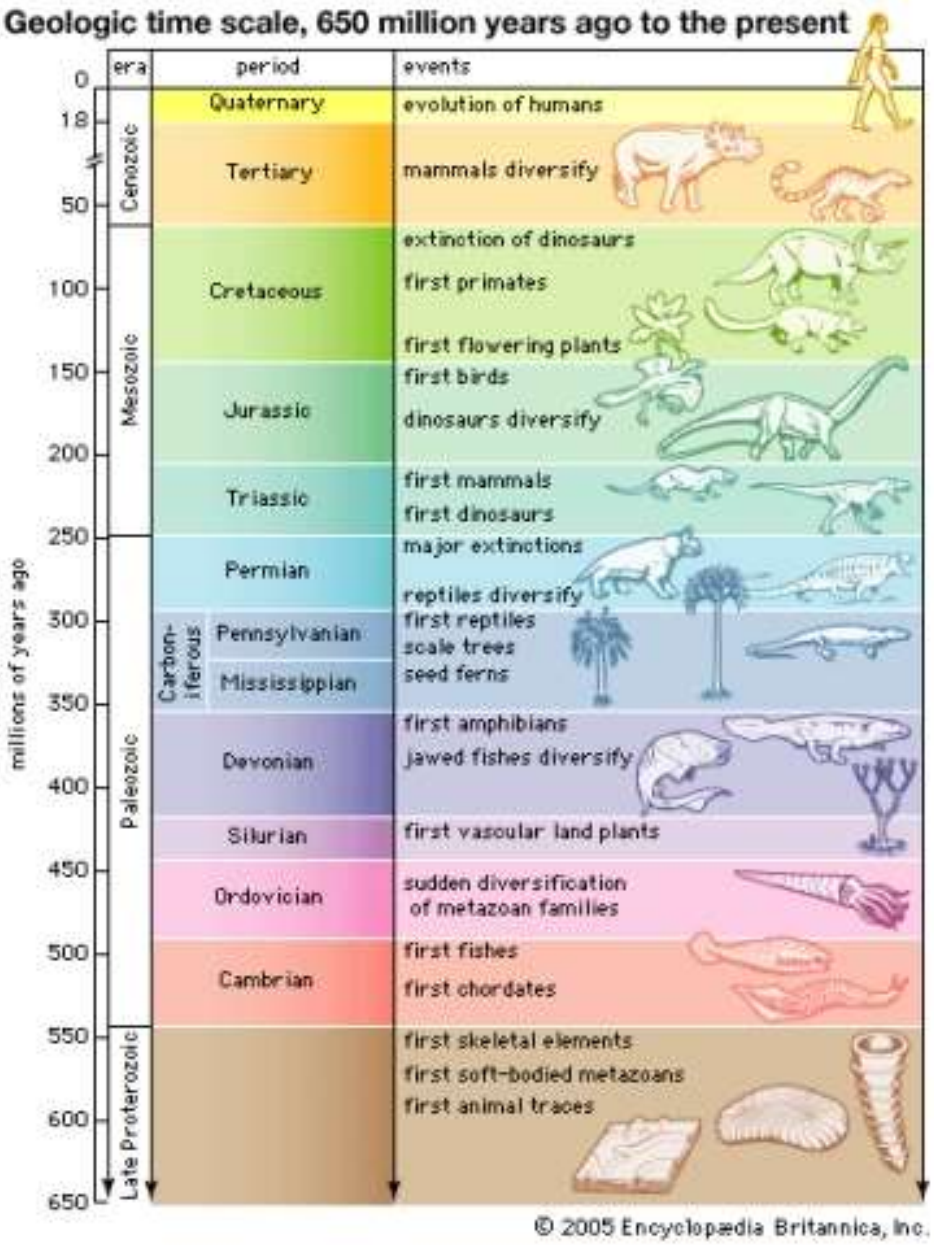
14. Where can we find evidence of changes in conditions on Earth's surface?

- Evidence of change is recorded in the rock layers of Earth's crust.



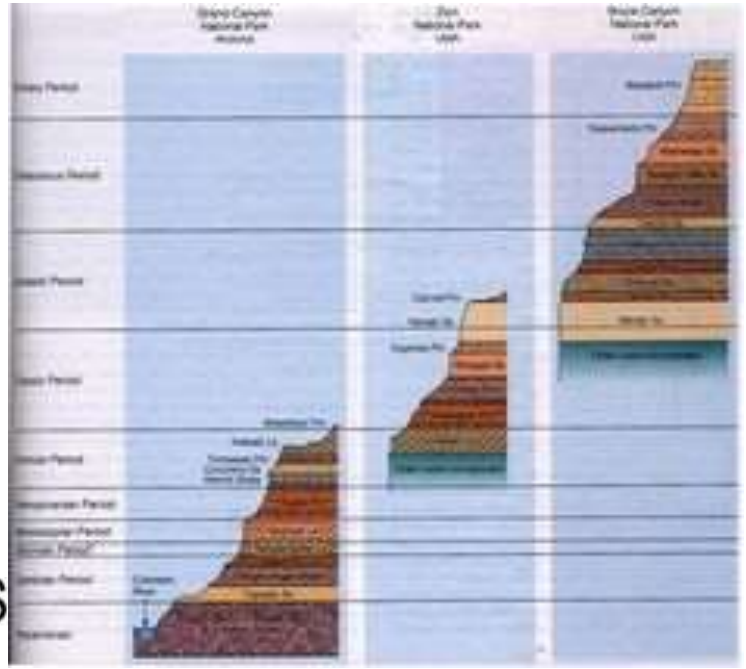
15. What is the purpose of the geologic time scale?

- To outline the development of Earth and life on Earth.



THE GEOLOGIC COLUMN

16. The ordered arrangement of rock layers is called a(n) <u>geologic column</u>.



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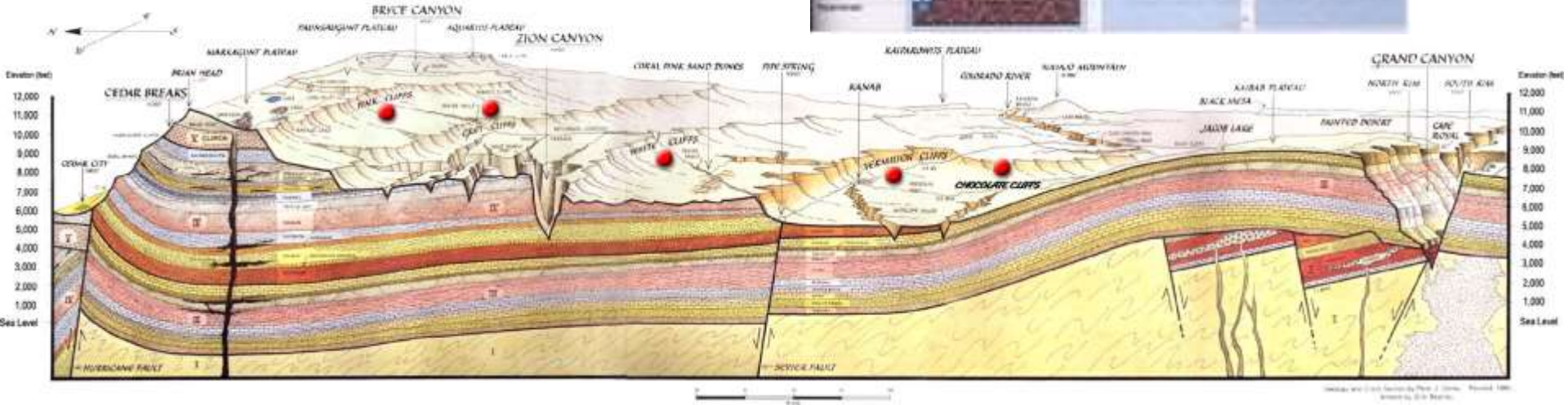
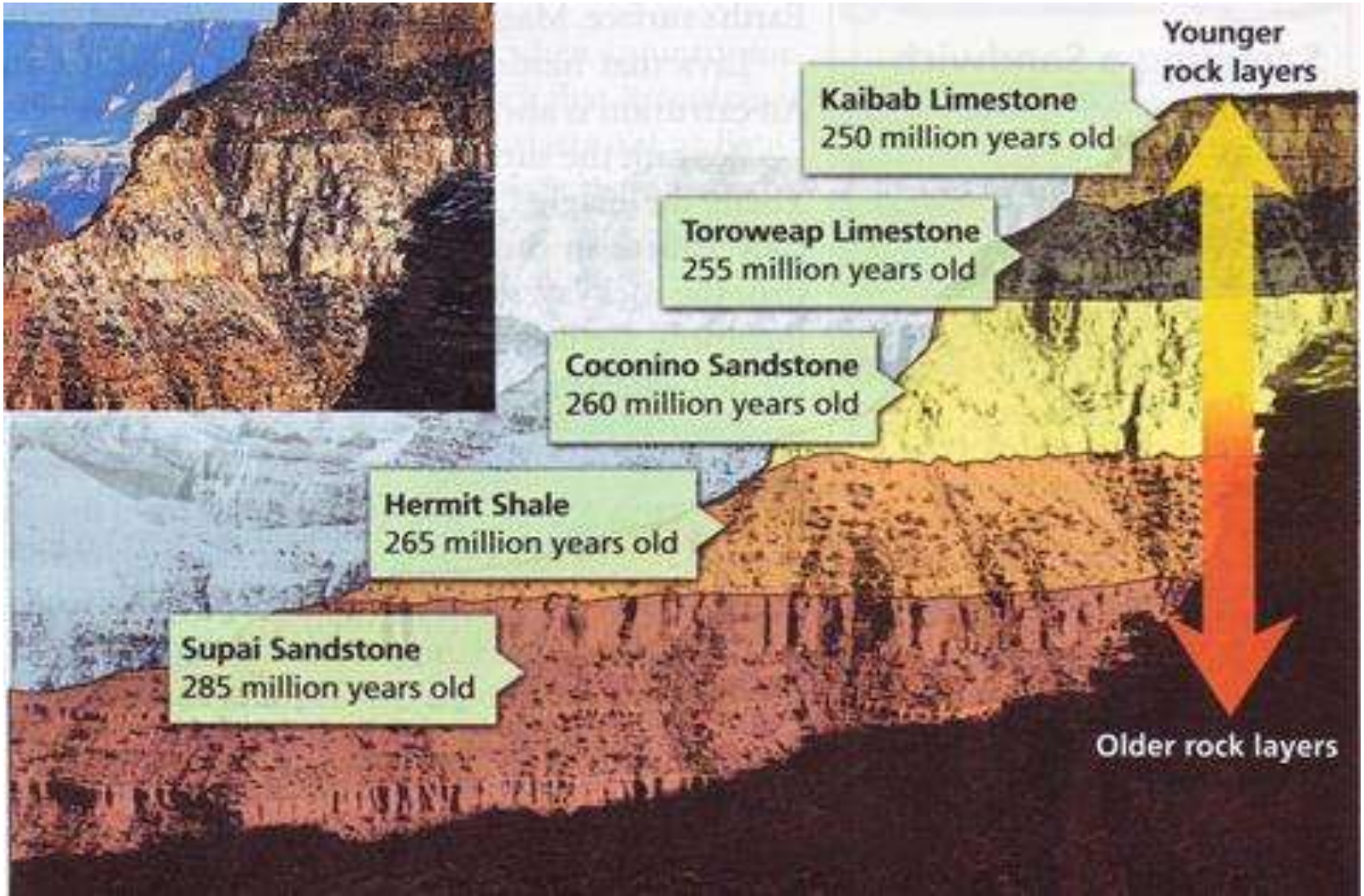
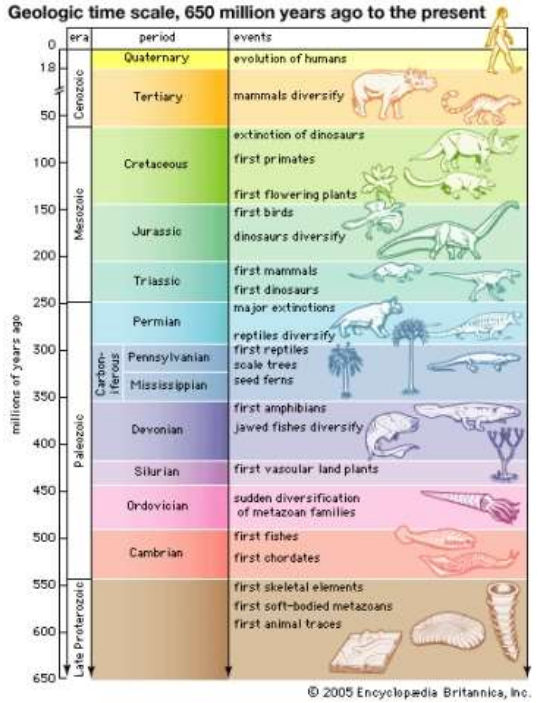


17. In a geologic column, the oldest rocks are located at the _____ of the column.

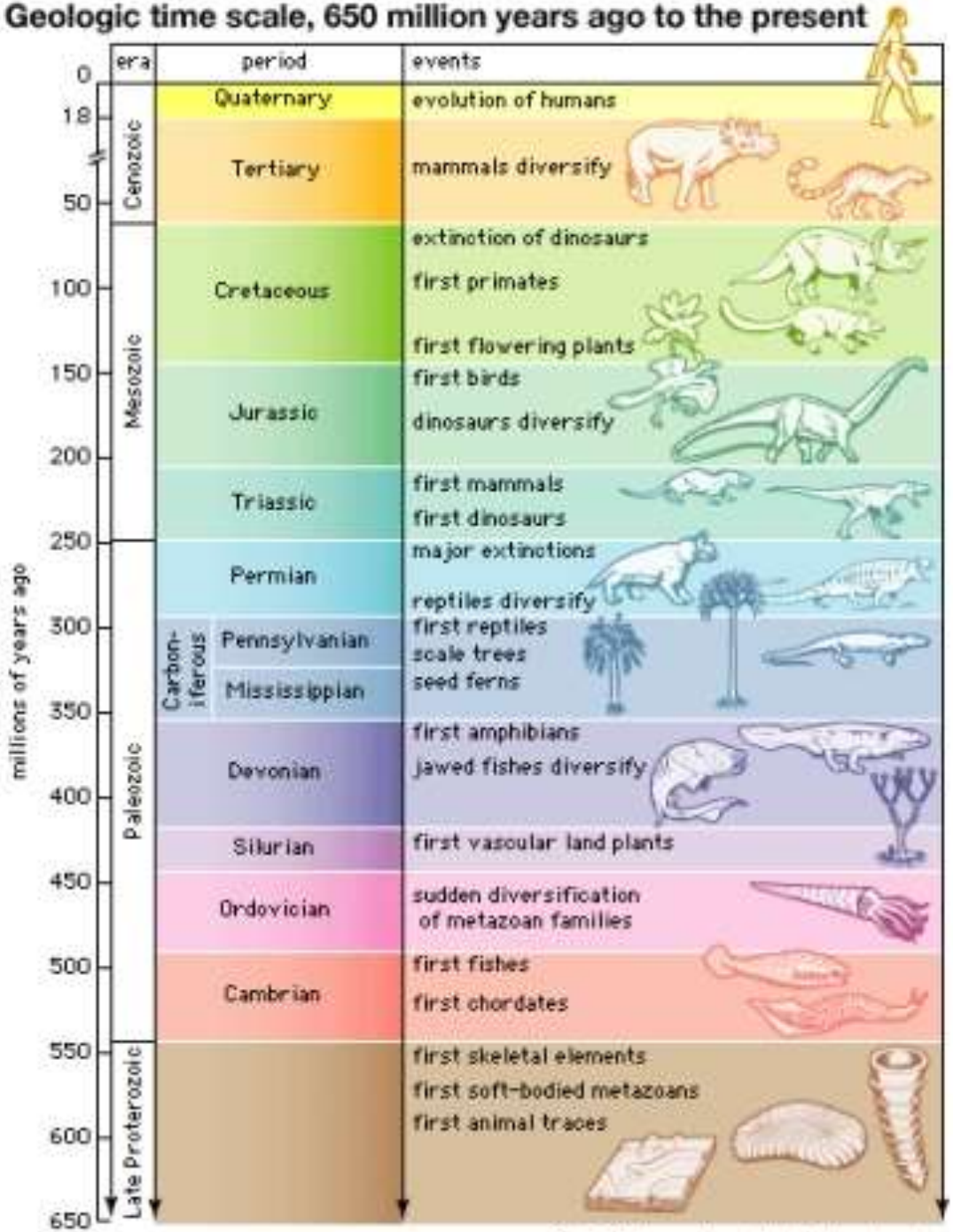


18. How do the fossils in the upper layers of a geologic column differ from those in the lower, older layers?

- Those in the upper layers resemble modern plants and animals, while those in the lower layers are of plants and animals different from those living today.

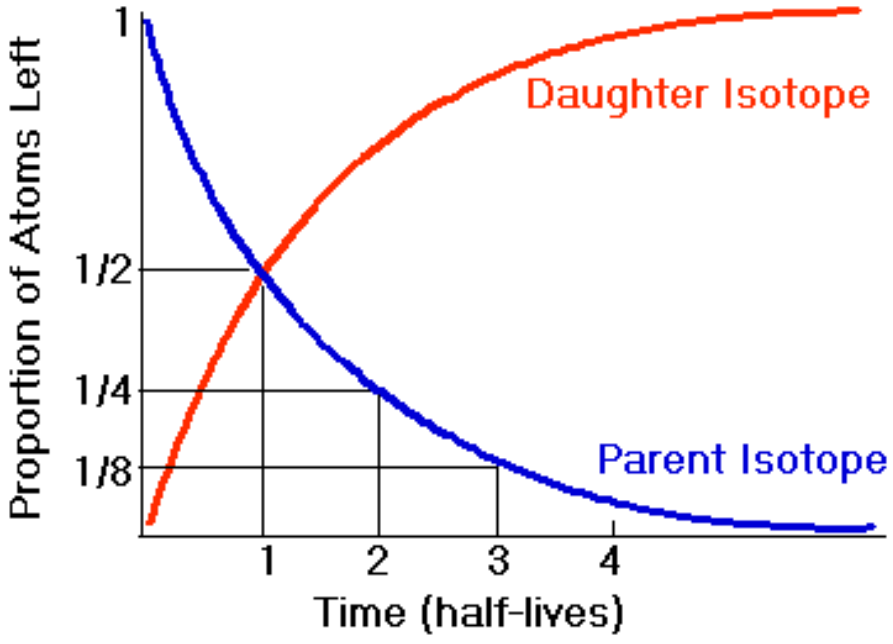


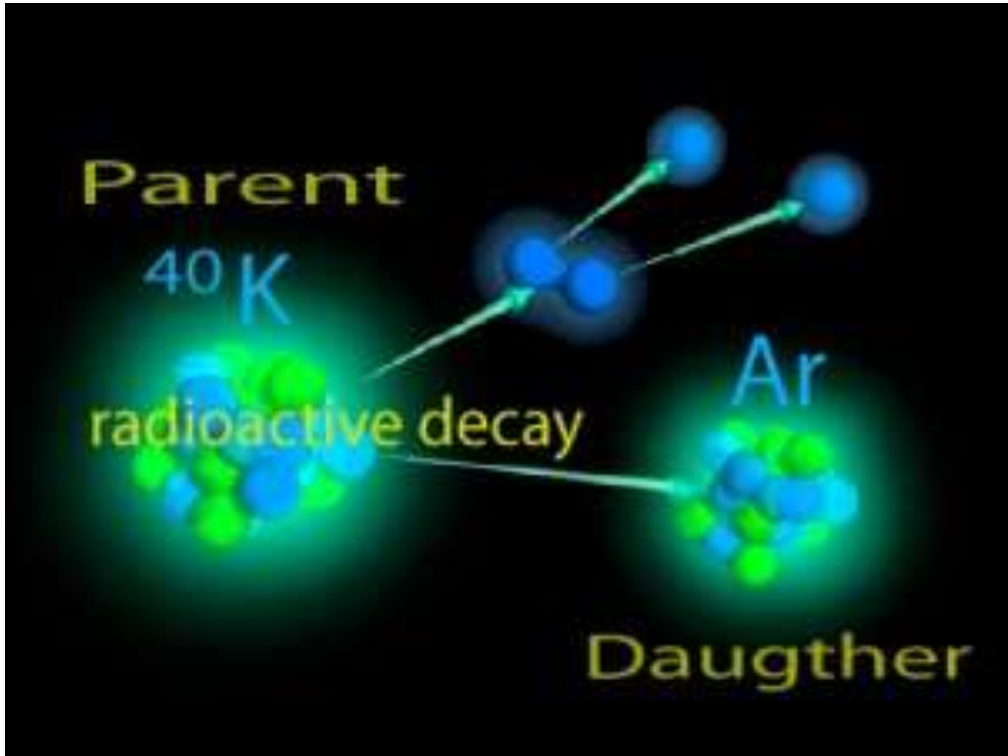
Geologic time scale, 650 million years ago to the present



19. What method has enabled scientists to determine the ages of rock layers more accurately?

- Radiometric dating

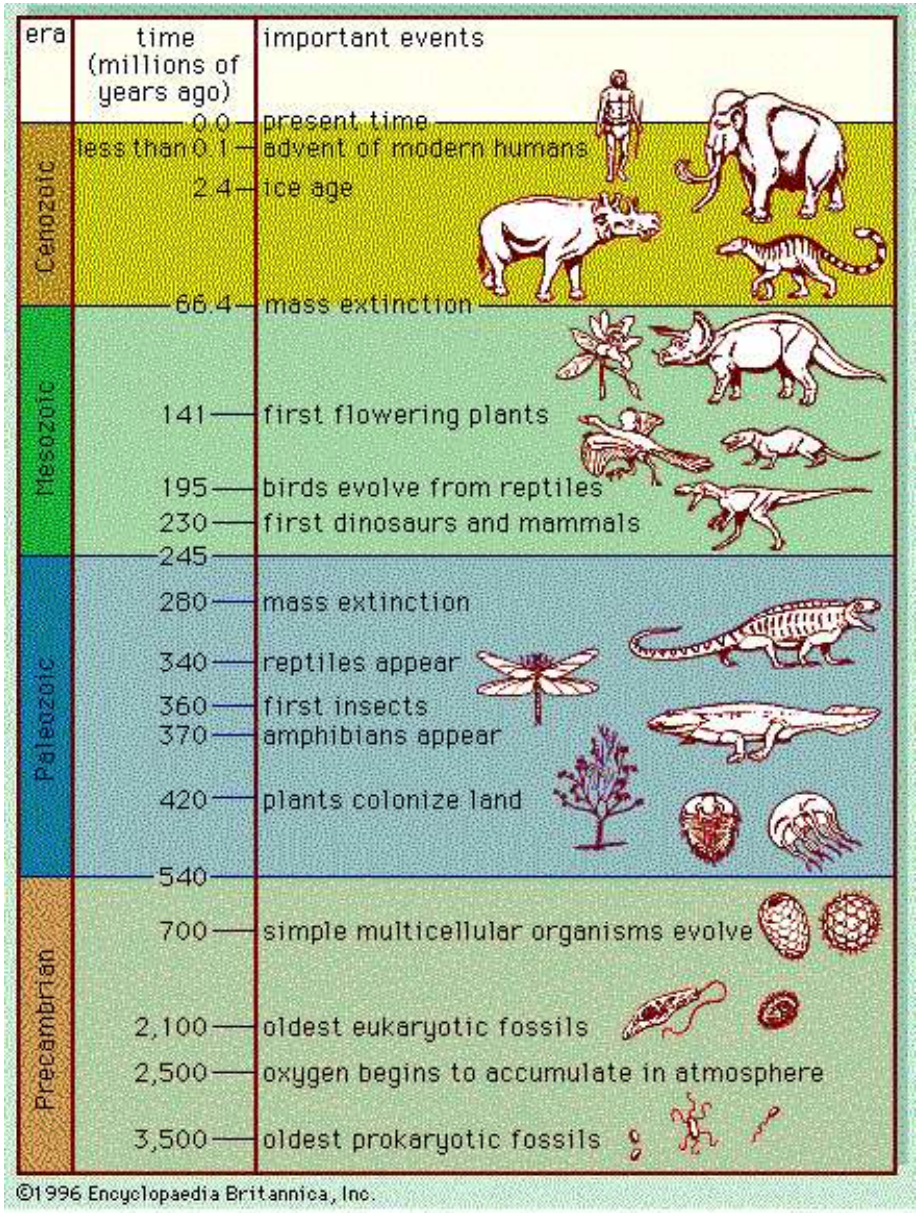




DIVISIONS OF GEOLOGIC TIME

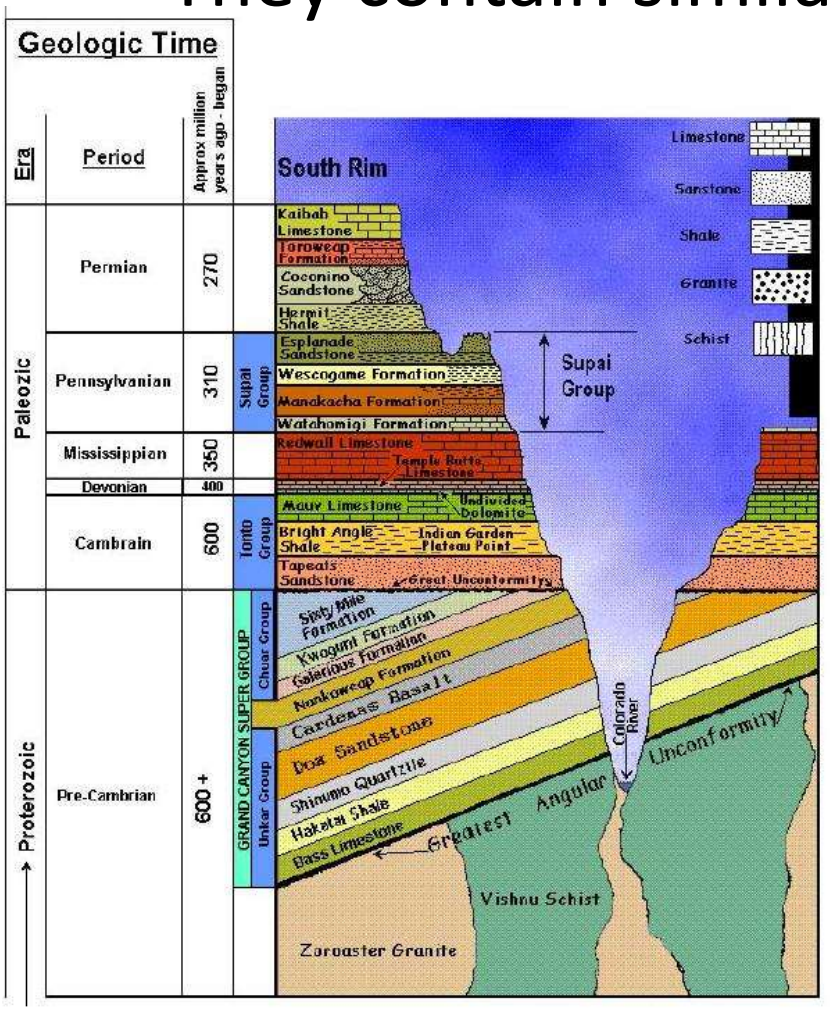
20. What three indicators do geologists use to divide the geologic time scale into smaller units?

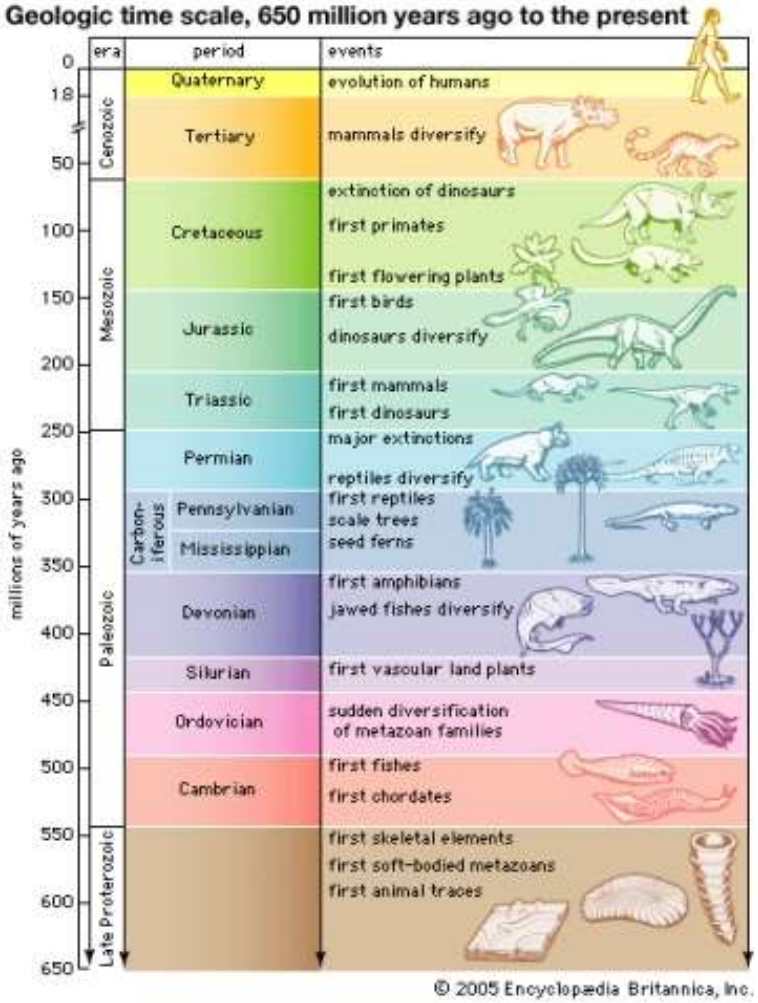
- changes in Earth's surface
- climate
- types of organisms



21. How are rocks grouped within each unit of geologic time similar?

- They contain similar fossils.





22. Identify the era, period, and epoch we are in today.

- See page 213
- Era: Cenozoic
- Period: Quaternary
- Epoch: Holocene

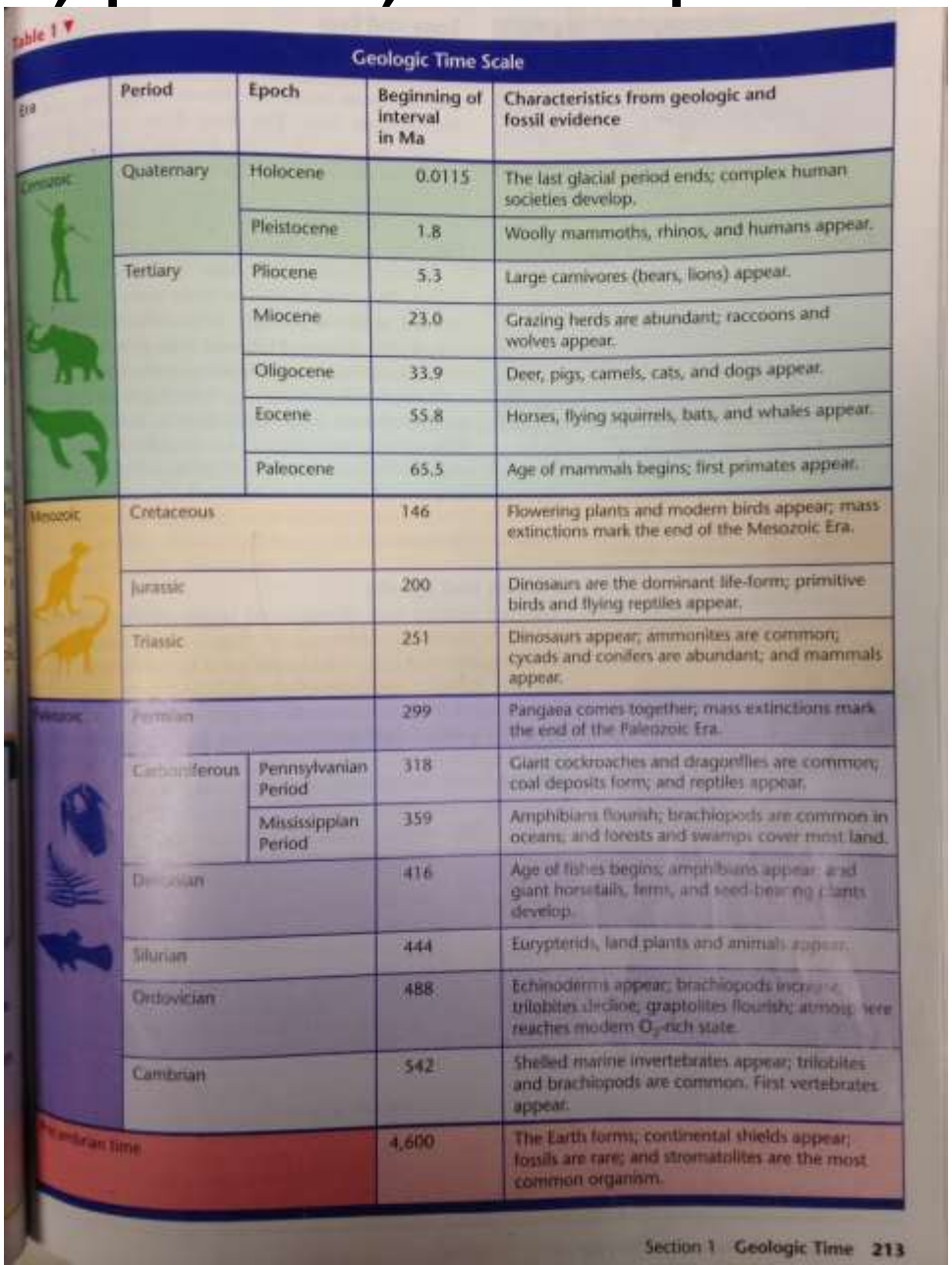


Table 1

Geologic Time Scale

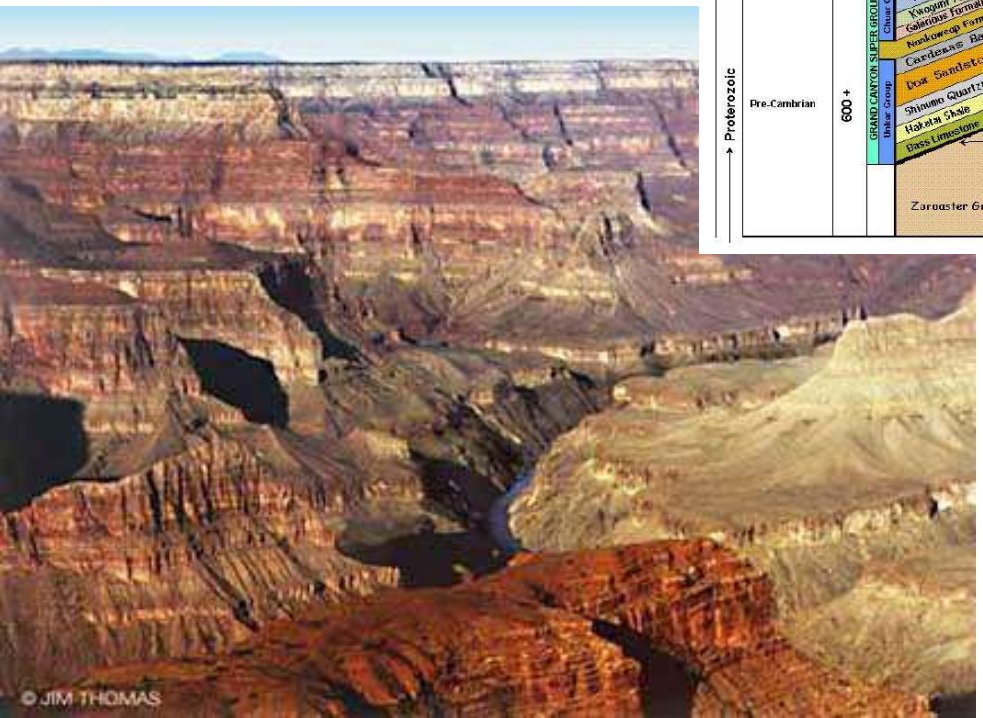
Era	Period	Epoch	Beginning of interval in Ma	Characteristics from geologic and fossil evidence
Cenozoic	Quaternary	Holocene	0.0115	The last glacial period ends; complex human societies develop.
		Pleistocene	1.8	Woolly mammoths, rhinos, and humans appear.
	Tertiary	Pliocene	5.3	Large carnivores (bears, lions) appear.
		Miocene	23.0	Grazing herds are abundant; raccoons and wolves appear.
		Oligocene	33.9	Deer, pigs, camels, cats, and dogs appear.
		Eocene	55.8	Horses, flying squirrels, bats, and whales appear.
		Paleocene	65.5	Age of mammals begins; first primates appear.
Mesozoic	Cretaceous		146	Flowering plants and modern birds appear; mass extinctions mark the end of the Mesozoic Era.
	Jurassic		200	Dinosaurs are the dominant life-form; primitive birds and flying reptiles appear.
	Triassic		251	Dinosaurs appear; ammonites are common; cycads and conifers are abundant; and mammals appear.
Paleozoic	Permian		299	Pangaea comes together; mass extinctions mark the end of the Paleozoic Era.
	Carboniferous	Pennsylvanian Period	318	Giant cockroaches and dragonflies are common; coal deposits form; and reptiles appear.
		Mississippian Period	359	Amphibians flourish; brachiopods are common in oceans; and forests and swamps cover most land.
	Devonian		416	Age of fishes begins; amphibians appear; and giant horsetails, ferns, and seed-bearing plants develop.
	Silurian		444	Eurypterids, land plants and animals appear.
	Ordovician		488	Echinoderms appear; brachiopods increase; trilobites decline; graptolites flourish; atmosphere reaches modern O_2-rich state.
	Cambrian		542	Shelled marine invertebrates appear; trilobites and brachiopods are common. First vertebrates appear.
Precambrian time			4,600	The Earth forms; continental shields appear; fossils are rare; and stromatolites are the most common organism.

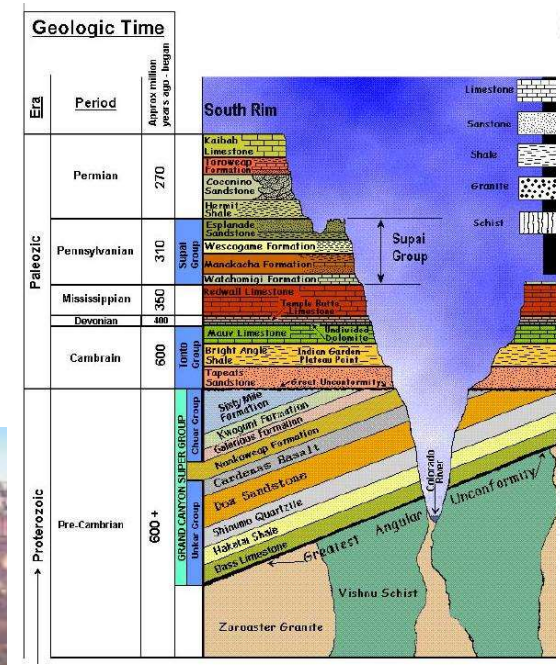
Chapter 9 Section 2

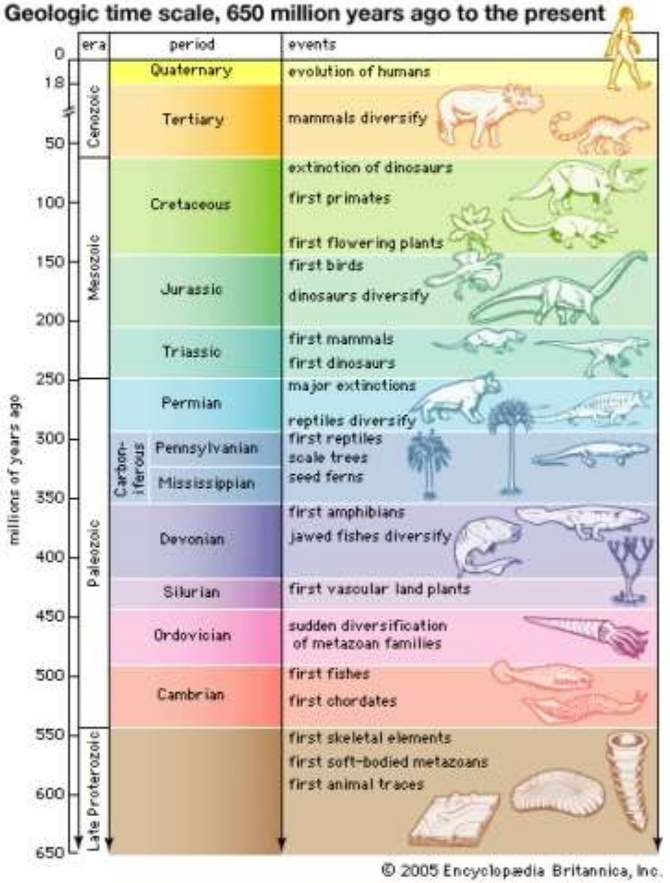
EVOLUTION

23. Where is the geologic history of Earth recorded?

- In rock layers

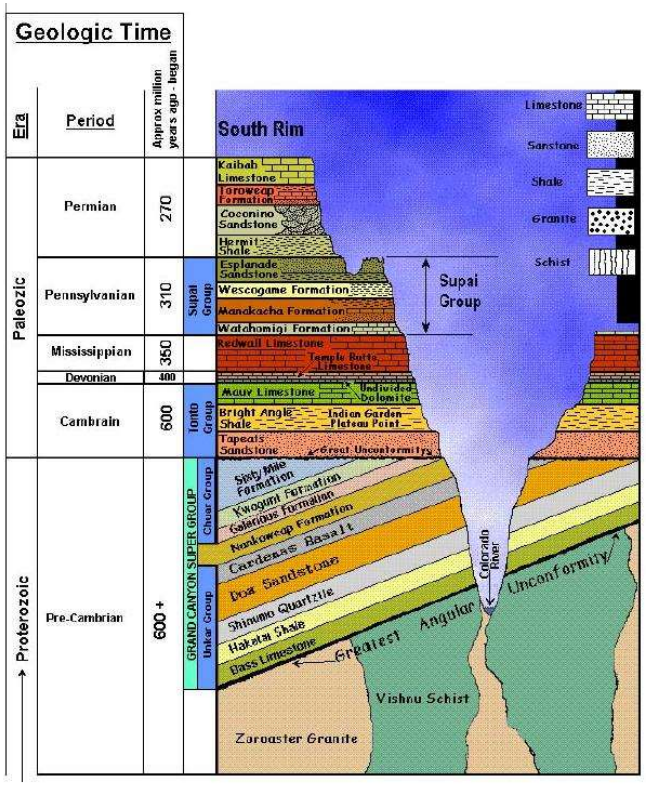


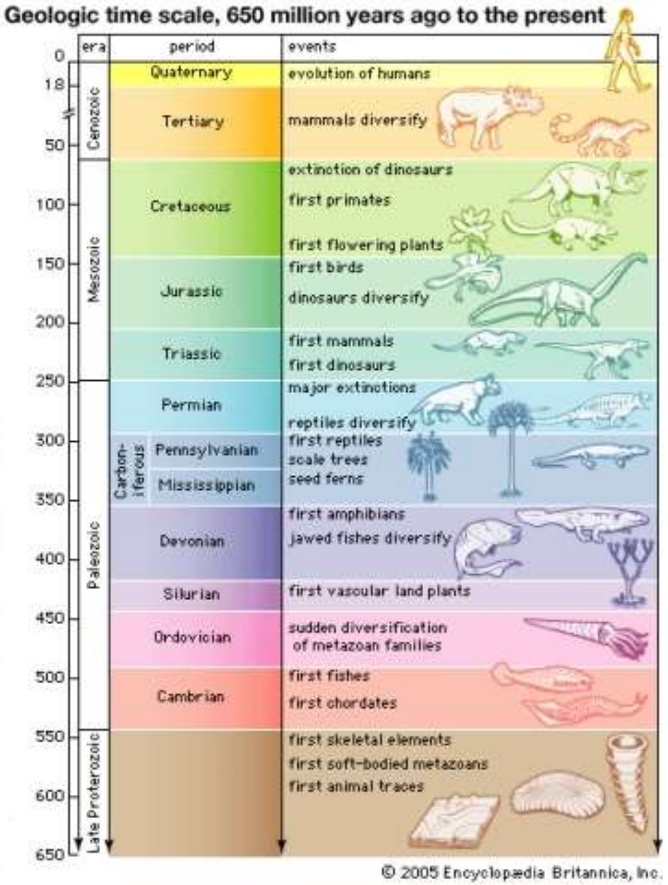




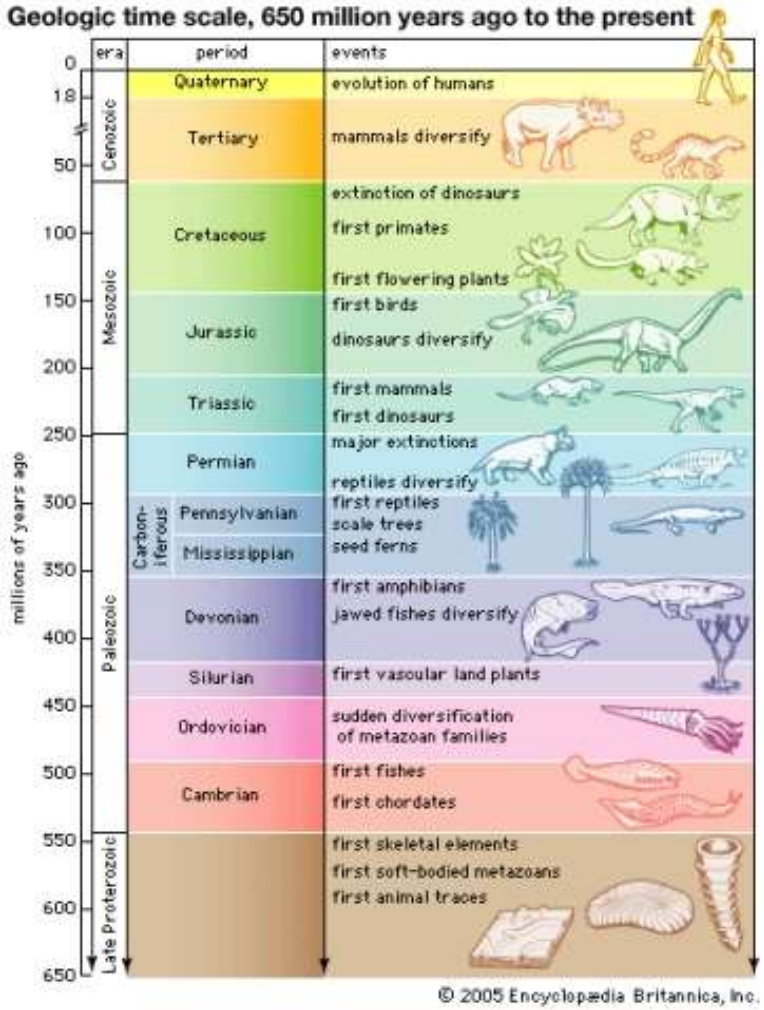
24. What kind of information can scientists get from the types of rock and the fossils in a rock layer?

- Information about the environment when the layer formed.



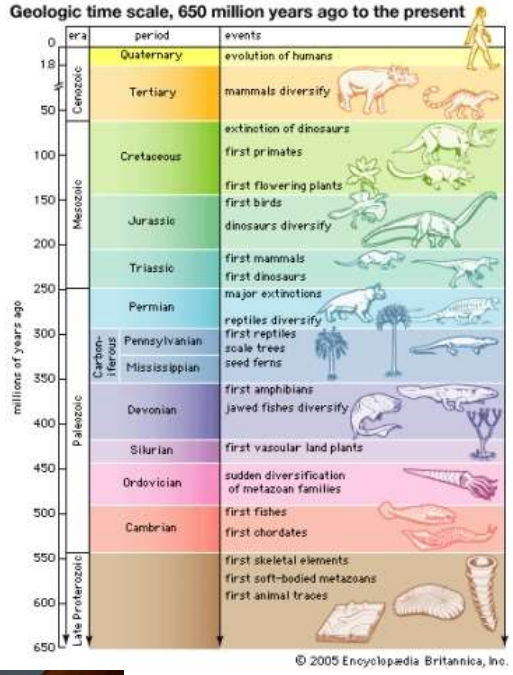


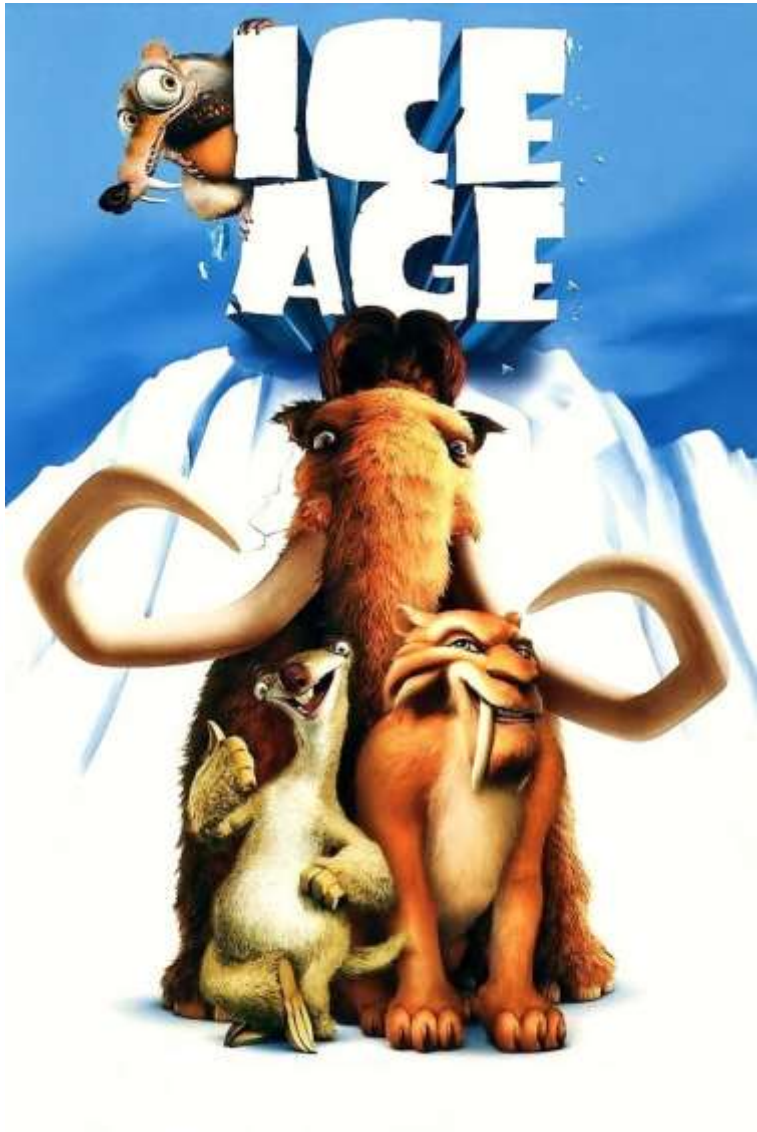
25. The gradual development of new organisms from other organisms since the beginning of life is called evolution.



26. Climatic and geologic changes could affect an organism's ability to _____ .

survive





27. What do scientists study to learn why some organisms survived over long periods and others became extinct?

- fossils

The End