Week 7: Index Fossils

Monday

Warm Up: Draw a picture of your favorite winter activity!

LT: I can explain what an index fossil is and how they are used to age rock layers.

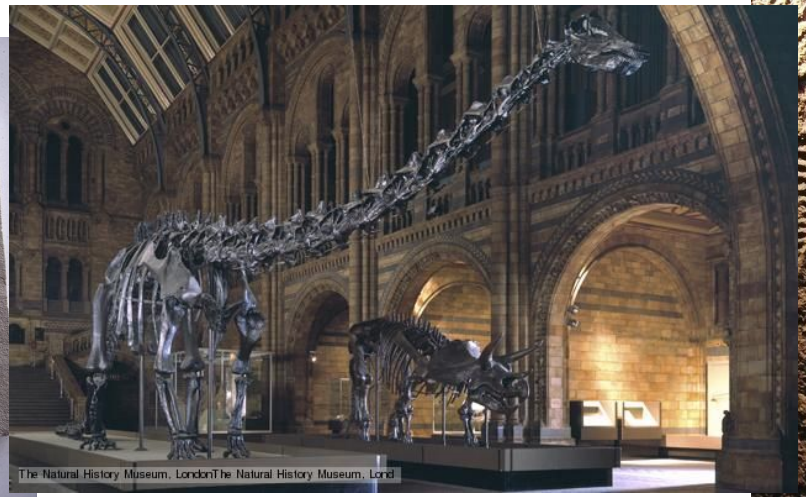
Fossils

Definition: Any remains, trace or imprint of a plant or animal that has been preserved in Earth's crust during prehistoric times.

Oldest fossils discovered:
stromatolites in Western Australia.
Approx. 3.5 billion years old.
"Cabbage-like algae"

Examples of fossils

- Bones
- Tracks
- Burrows
- Droppings

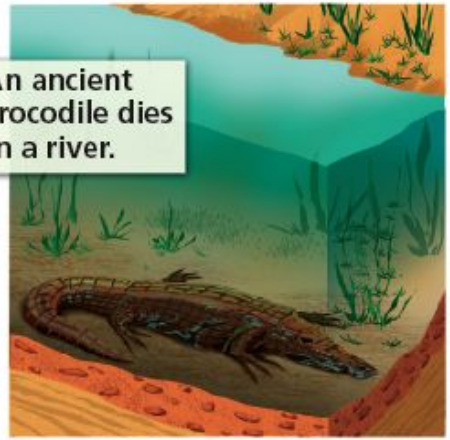


Conditions for fossilization

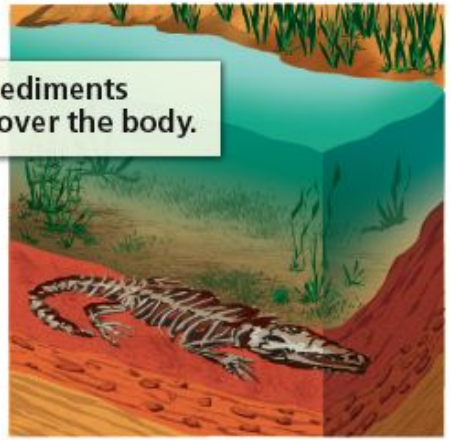
Conditions need to be just right for a fossil to be formed!

- Animal or plant remains buried quickly
- Bones, shells, and teeth usually become fossils because they are very hard and don't rot as quickly as softer parts
- Usually takes millions of years for fossils to form

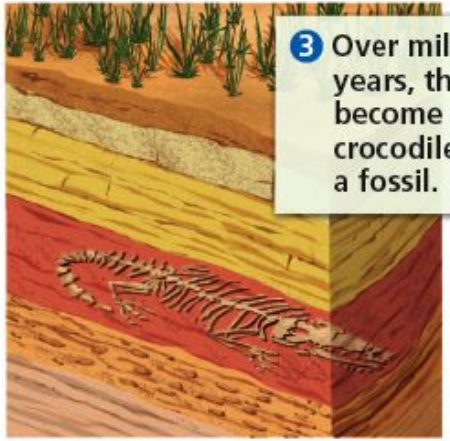
7.60 Fossil Formation



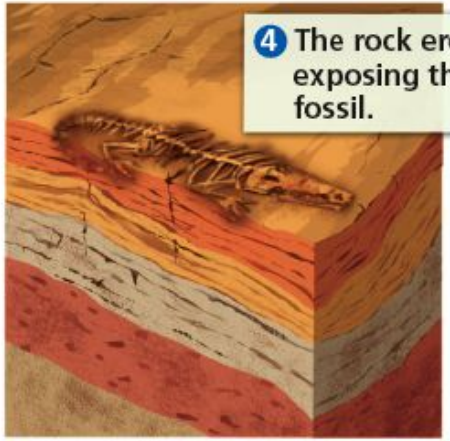
1 An ancient crocodile dies in a river.



2 Sediments cover the body.



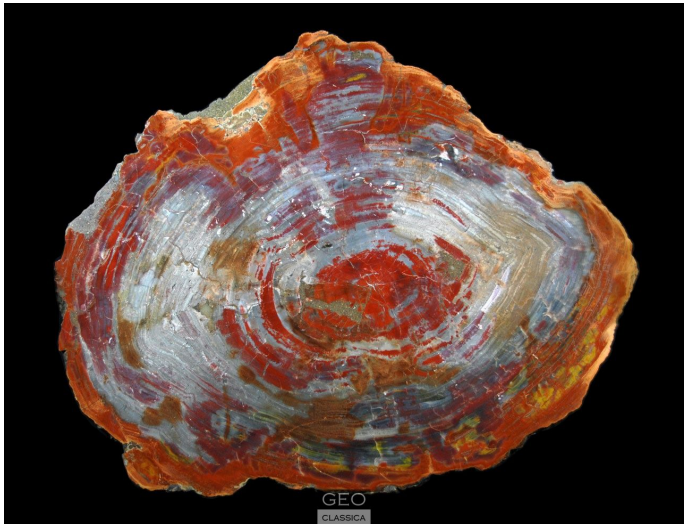
3 Over millions of years, the sediments become rock. The crocodile becomes a fossil.



4 The rock erodes, exposing the fossil.

Types of fossilization

- **Replacement**
  - Bones or shells of organism are eventually broken down, which leaves a mold of the original organism in the sediment
- **Petrification**
  - Mineralized water fills pores and cavities of trees, deposits minerals, turns organic material into rock slowly
  - Ex: petrified wood
- **Carbonization**
  - Overlying sediments flatten a plant and turn it into a thin, carbon film



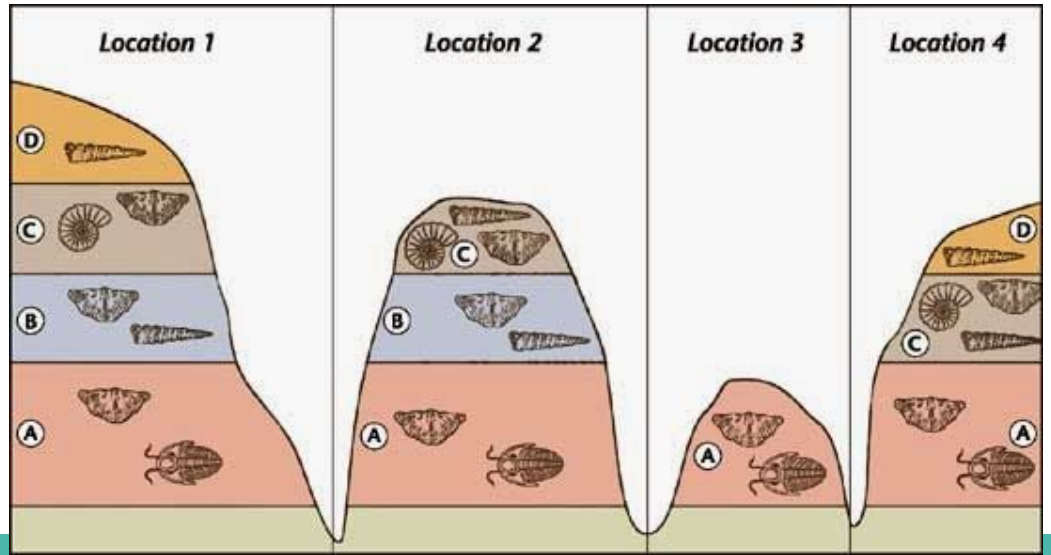
Major Fossil Groups

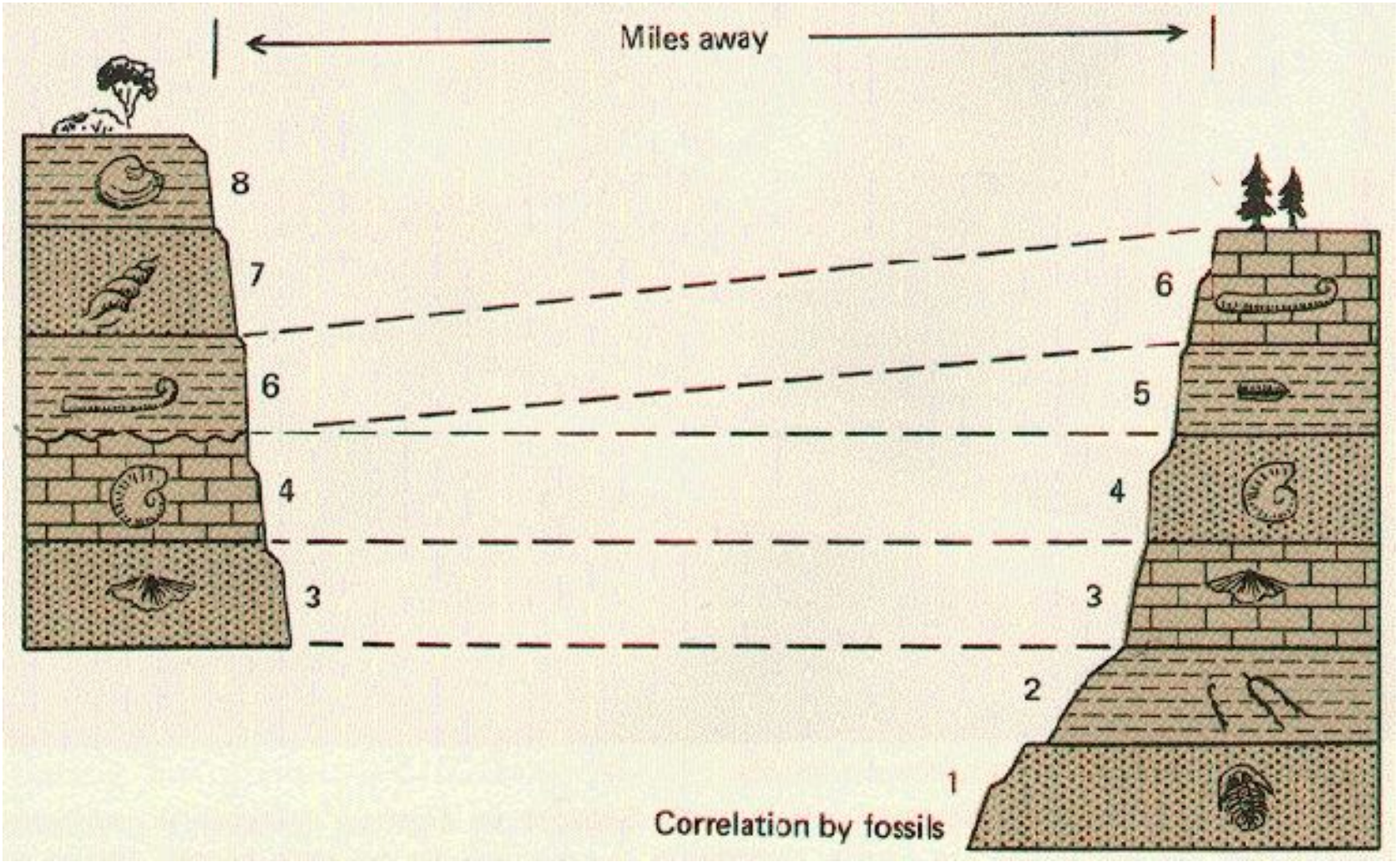
- Corals
- Bivalves
- Brachiopods
- Gastropods
- Cephalopods
- Trilobites
- Crinoids
- Plant Fossils

Index Fossils

- Provide information about the age of rock layers
- Must have lived for a relatively short period of time
- Lived in many places around the world
- NOT all fossils are index fossils

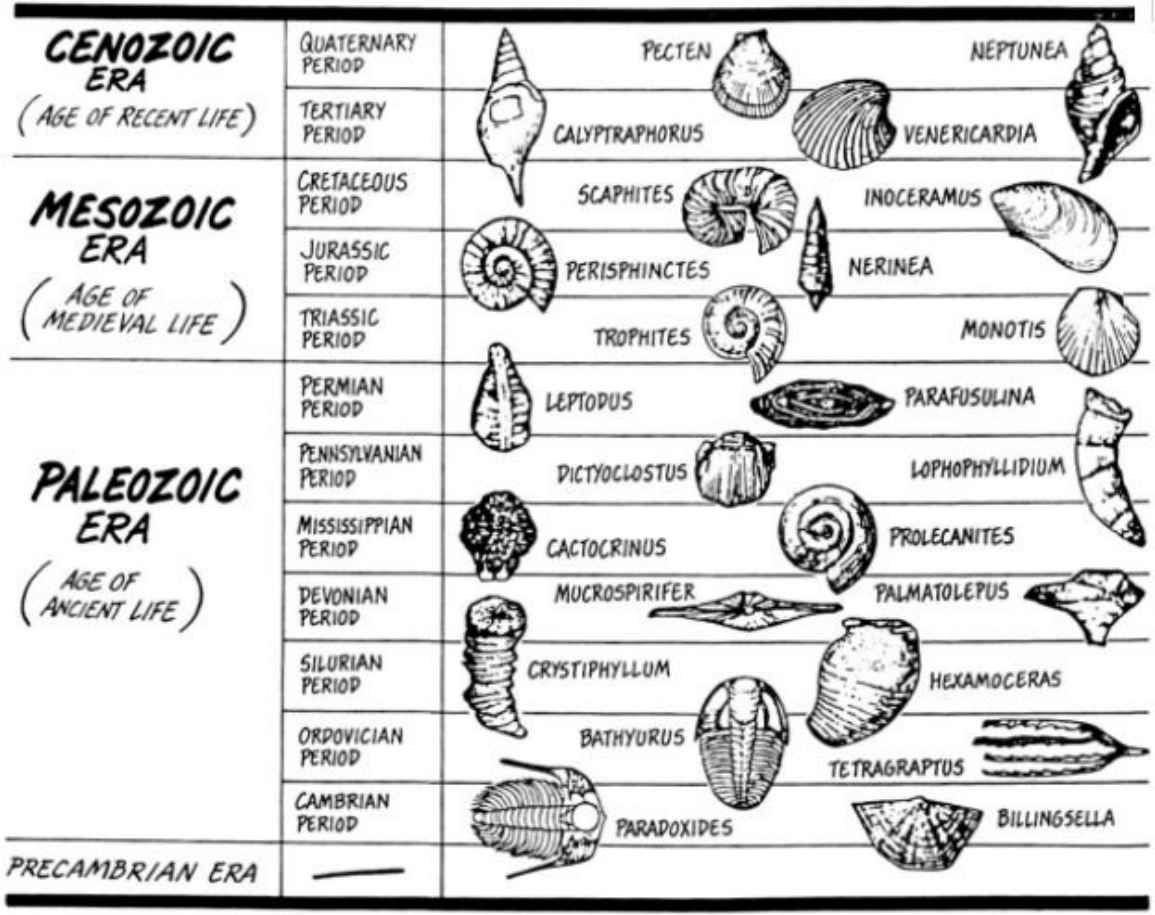
If geologists identify an index fossil in a rock layer, they can estimate when that rock layer was formed




Miles away
8
7
6
4
3
6
5
4
3
2
1
Correlation by fossils

INDEX FOSSILS

Walking out over the fields, you pick up an old bone. Can you date when the animal died? No, you cannot. Nearby you see a large tree. Without cutting it down, can you date when, many decades ago, it first sprouted? No. Yet evolutionists claim to approximately date to MILLIONS of years in the past—solely on the basis of certain ocean fossils! Here are some of those fossils:



Time to find some Index Fossils!

Using p. 41 - Index Fossil Key in your textbook, identify which Grand Canyon fossils are index fossils

Go over answers

Now do Bryce Canyon and Zion National Park! Work with a partner and record answers on bottom of WS or on scratch piece of paper

Discussion Questions

- Did you find any of the same index fossils in both the Grand Canyon and Zion?
- Did you find any of the same index fossils in Bryce and GC?
- What do these fossils tell you about the age of the layers where they were found?

Go over quizzes

Tuesday

Warm Up: What are index fossils? How are they different then normal fossils?

LT: I can correlate rocks from three different canyons using index fossils.

Review

- Fossils
- Index Fossils

GC, Zion, & Bryce Canyon Rock Correlation

- Putting it all together!

Go over answers as a class

Correlation Questions WS

Wednesday

Warm Up: How can index fossils be used to correlate rock layers from different canyons?

LT: I can work with a partner to put major events in earth's history in order.

Discussion Questions

Answer these questions with your group...be prepared to share your answers!

1. Imagine an organism from the past is now extinct. It did not leave any fossils. How would we know that it ever existed?
2. How do we know what organisms and environments existed in the past?

Sequence Card Challenge!

- Work with a partner to put the event cards in the CORRECT order

1. Cut out cards...don't lose any!
2. Put cards in order
3. Answer questions

Discussion Questions

- What were some of the easiest cards to put in the sequence?
- Which cards were the easiest to sequence?
- Which cards caused the most disagreement in your pair?
- What other information would have been helpful when sequencing the cards?

Answer reveal!

Place cards/events on timeline in correct order!

- Write/draw events in onto your timeline

Exit Ticket

Answer these questions on a piece of notebook paper...use complete sentences!

1. What surprised you about the correct sequence of event cards
2. What have you learned from making your timeline and sequencing the events on it about the appearance of different life forms on earth?

Thursday

Warm Up: What were some major events in earth history you learned yesterday?

Friday

TURN IN LT AND WARM UP SHEET

CER Day!

- Observe the tracks...
- Write COMPLETE CER about the tracks (where they came from, what they are showing etc...)
- Make sure this is your best work! Take your time!

CER Self-Assessment

Complete FRONT side of half sheet

CER Partner Grade

Give your half sheet and CER to your partner…

Write YOUR name in the “graded by” space provided. Complete back side of your partner’s half sheet…when you are done return BOTH to your partner

Staple half sheet and CER together and turn them in.