

Rock Layers and Common Ancestry Test

8.LS4.2) Construct an explanation addressing similarities and differences of the anatomical structures and genetic information between extinct and extant organisms using evidence of common ancestry and patterns between taxa.

8.LS4.1) Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.

Write 2 facts from the following slides.

OR

If there are questions on the slides answer the questions.

Secondly, watch the Rock Layers and Common Ancestry video link and write five facts from the video.

Common Ancestry

- Common ancestor: An ancestor which is shared by multiple descendants
- Many different species originated from one species
- This process takes thousands of years.
- Evidence to support common ancestry:
 1. Similar characteristic/traits
 2. Embryotic Development
 3. DNA similarities
 5. Homologous Structures
 4. Comparing extinct fossilized remains to extant species

Similar Traits/characteristics

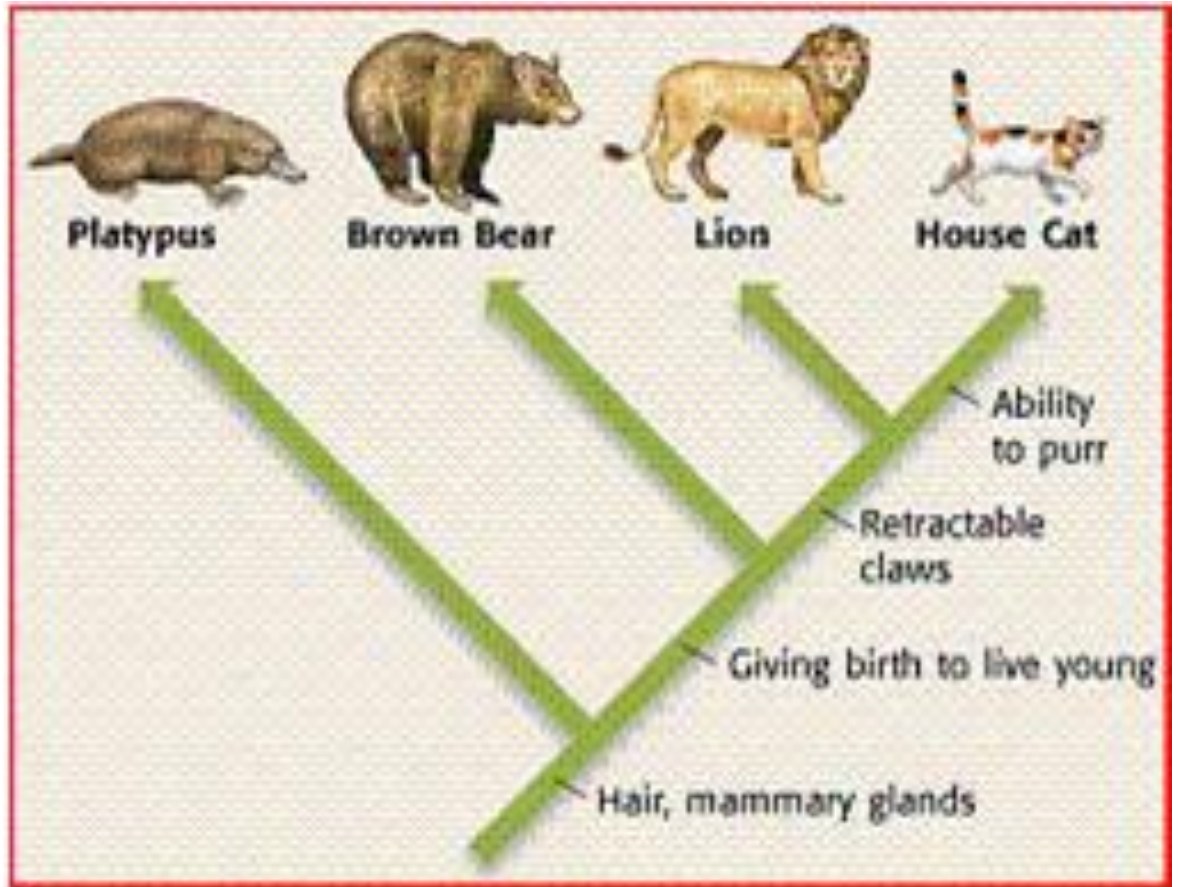
- observable properties of an organism which can be physical properties; appearance, development, and behavior
- The traits an organism displays are inherited from its ancestors
- Over millions of years species can evolve into new species due to changes in environments, mutations, etc.

Cladograms

- A cladogram shows similarities between organisms
- Traits are listed across the bottom to show how organisms are related.

- How is the lion related to the house cat?

- Which organism only shares one trait in common with the cat?



Embryonic Development



- Each embryo shown above will develop into a different species.
- Compare the similarities:
 1. Tails
 2. Slits near throat
 3. Eyes
 4. Head shape
- The similar features may be due to a shared common ancestor.

DNA comparison

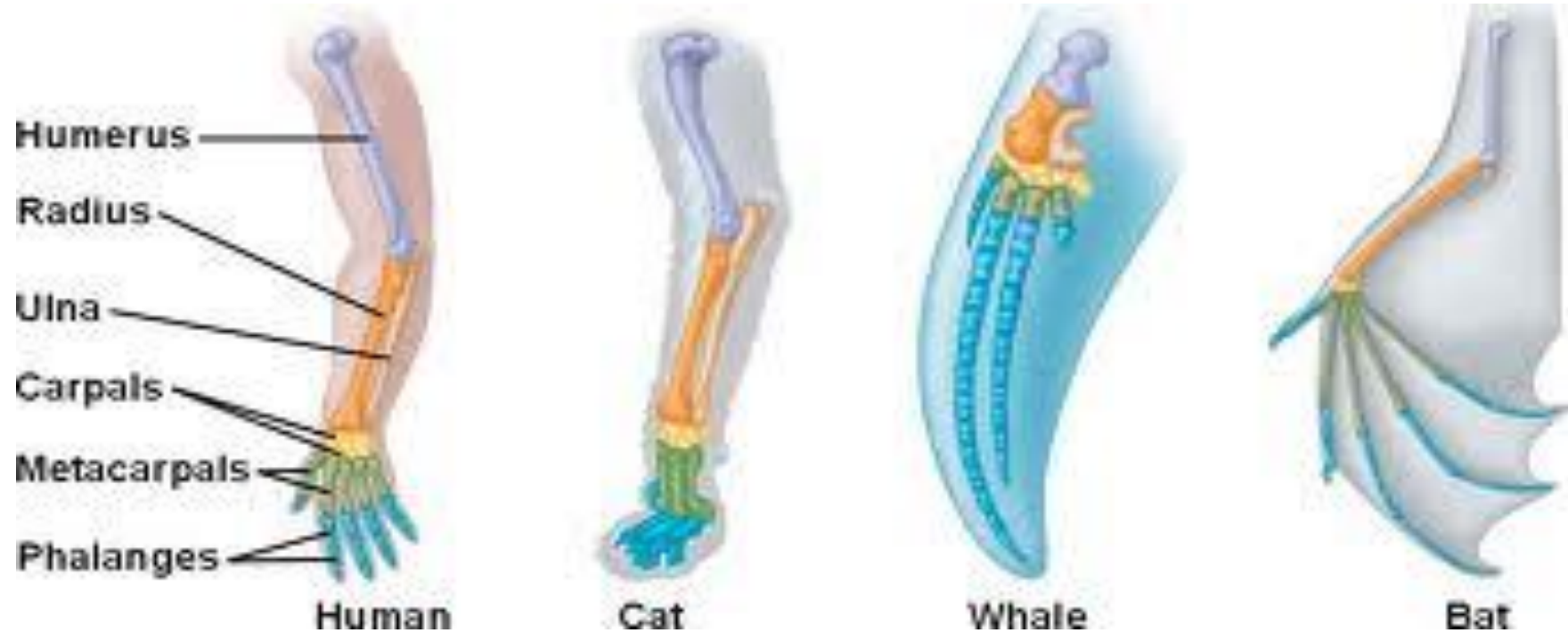
- Every living organism contains a specific sequence of DNA and chromosomes
- DNA is responsible for the specific traits that make up the organism
- Phylogenetic trees show how organisms are related based on their DNA

Extinct compared to Extant species

- Species still alive today (extant) inherited their traits from previous extinct organisms
- By comparing the fossils of extinct organisms to the skeletal structures of extant organisms we can see similar traits.

Homologous Structures

- Similar structures that related species have inherited from a common ancestor.



1. What is similar about each arm structure?

2. Why are each of the arm structures similar?

Rock Layers

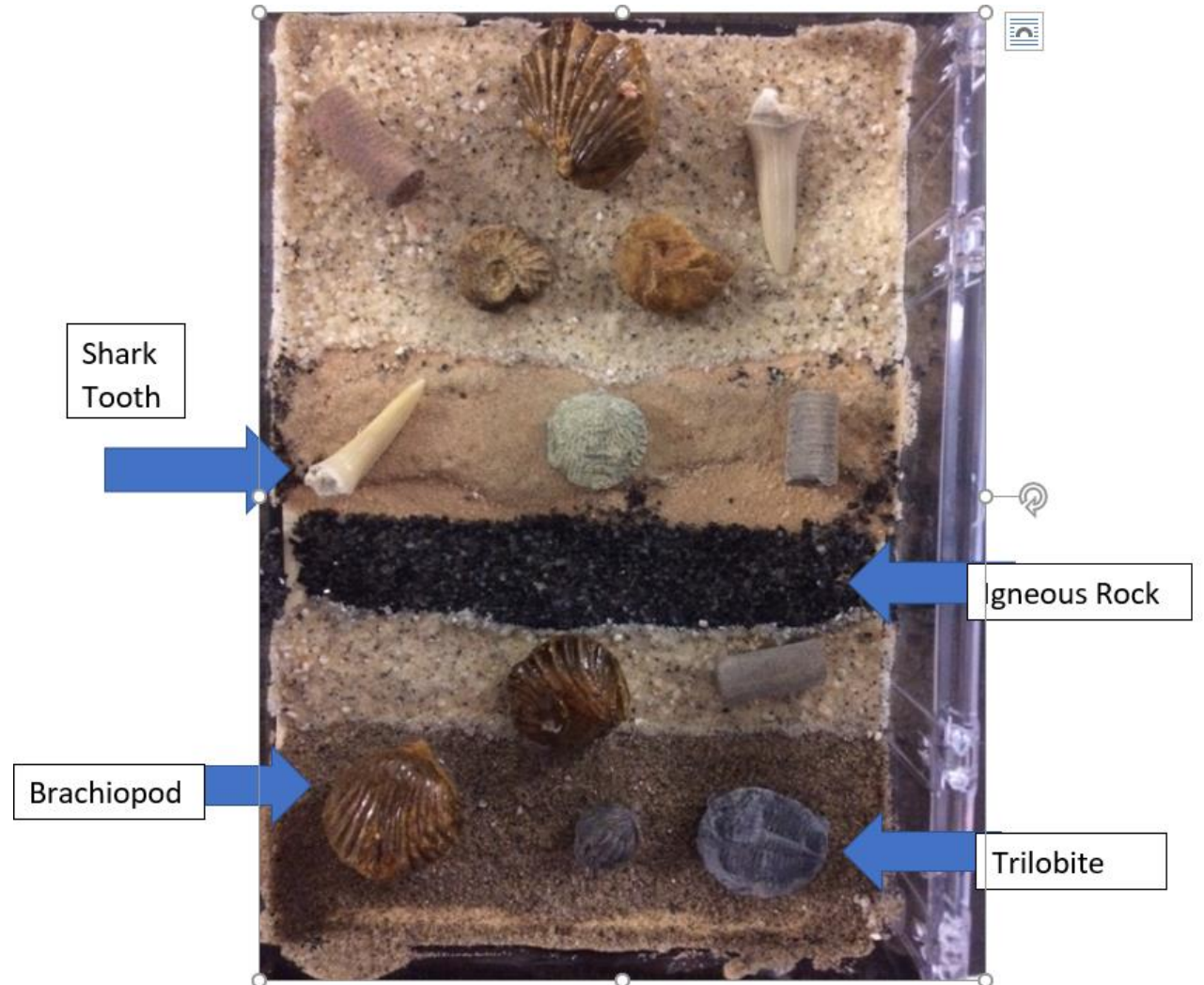
- Law of super position states the older rock layers and fossils will be found farther down and away from the surface.
- The type of fossils found in a rock layer and give clues about the past environment.
- If fossils of marine species are found in a rock layer that means the area was covered in water during the time the layer and fossils were deposited.

Index Fossils

- Index fossils must meet two requirements:
 - The species lived a short amount of time
 - The species lived all over the planet
- Index fossils are used to relatively date the rock layer and other fossils found in the same layer
- Relative date means determining an approximate age for the rock and fossils surround the index fossil.

Rock Layer Questions

1. Where is the youngest rock layer found?
2. The trilobite is an index fossil that lived 540-490 million years ago. How old is the brachiopod fossil found in the same layer.



Rock Layers Questions

The fossils in the layers to the right are all marine fossils. These rock layers were found in Montana.

1. Describe the environment in Montana during the time period these fossil and rock layers were deposited.
2. Use the back ground and fossil type to match the layers. Which two layers are the same layer?

