

## Evidence

## Law of Superposition

## Plate Tectonics and Continental Drift

## Plate Boundaries

## Evidence of Evolution

## Natural Selection


## Adaptations

## Fitness

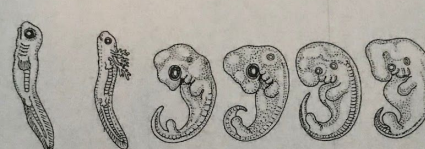
**STATION 1- COMMON EMBRYOLOGICAL FEATURES**

Answer the questions in complete sentences.

**A**



**B**



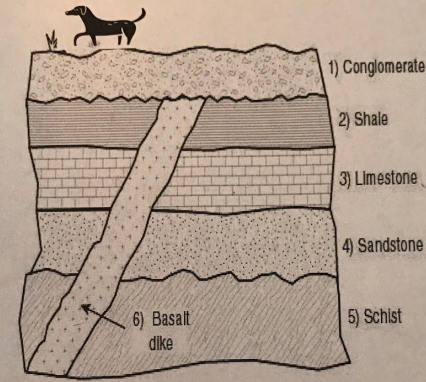
**C**

Fish Salamander Tortoise Chick Rabbit Human

1. Make observations of commonalities (similarities) between the embryos of the human (far right) and the rabbit (next one in).
2. Look at row A. What common features do all of the embryos share?
3. What do these similarities imply in regards to the evolution of these species?
4. How can these embryos be used as evidence for a common ancestor?

**STATION 2- LAW OF SUPERPOSITION**

Answer the questions in complete sentences.



1. Using the Law of Superposition, identify the oldest rock formation in the above cross-section.
2. If a prehistoric wolf bone is located in the sandstone level and another prehistoric wolf bone is located in the limestone level, which creature is more SIMILAR to the dog at the top? Explain why.
3. What is the basalt dike and example of? Can we accurate age items that are in that section? Why or why not?
4. What kind of fossil aging is used when scientists use the Law of Superposition? Explain.

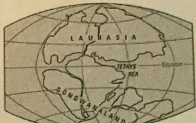
*The Bottom layer is the*

### STATION 3- PANGAEA AND CONTINENTAL DRIFT

Answer the questions in complete sentences.



PERMIAN  
225 million years ago



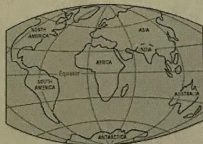
TRIASSIC  
200 million years ago



JURASSIC  
135 million years ago



CRETACEOUS  
65 million years ago



PRESENT DAY

Image by  
USGS.org

1. Describe the movement of the continents from the Permian to present day.

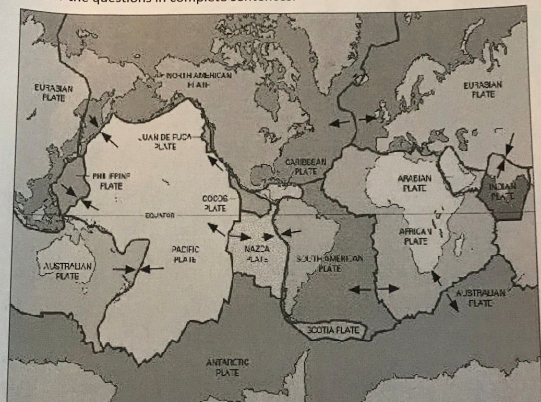
2. What caused this movement to occur?

3. How can ocean fossils be in modern day deserts?

4. What is some other evidence that Pangaea existed?

### STATION 4- BOUNDARY MOVEMENTS

Answer the questions in complete sentences.



1. What are convergent boundaries? Using the map above, find an example of where a convergence occurs.
2. What are divergent boundaries? Using the map above, find an example of where a convergence occurs.
3. Describe the movement of transform boundaries. Is there an example on the map? If so where?
4. How do these boundaries create different landforms?

## STATION 5- EVIDENCE OF EVOLUTION

Answer the questions in complete sentences.

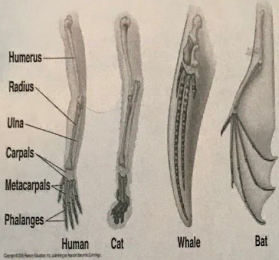


Table 22.1 Molecular Data and the Evolutionary Relationships of Vertebrates

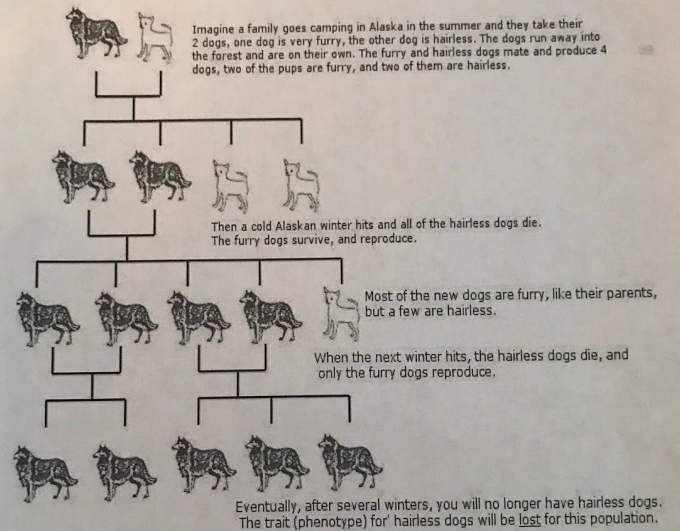
Species	Number of Amino Acids That Differ from a Human Hemoglobin Polypeptide (Total Chain Length = 146 Amino Acids)
Human	0
Rhesus monkey	8
Mouse	27
Chicken	45
Frog	67
Lamprey	125

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1. What structures do the human and the whale have in common?
2. What kind of structures are these bones?
3. How do these bones differ from the bones in a bat and a butterfly?
4. Table 22.1 shows the difference in amino acids between seemingly unrelated organisms. What do these commonalities (similarities) imply about the relationship between these organisms?

## STATION 6- NATURAL SELECTION

Answer the questions in complete sentences.



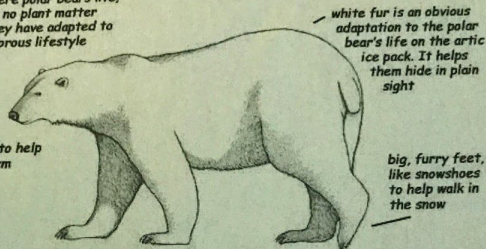
1. What is natural selection?
2. What trait has nature selected for? Against?
3. Does the result of natural selection occur immediately? Explain.
4. What would the furry offspring genotype be? Phenotype? Is there a difference? Explain.

## STATION 7- ADAPTATIONS

Answer the questions in complete sentences.

### Adaptations of the Polar Bear

most bears do eat some plant matter, but where polar bears live, there is almost no plant matter available, so they have adapted to a totally carnivorous lifestyle



white fur is an obvious adaptation to the polar bear's life on the arctic ice pack. It helps them hide in plain sight

thick blubber to help keep them warm

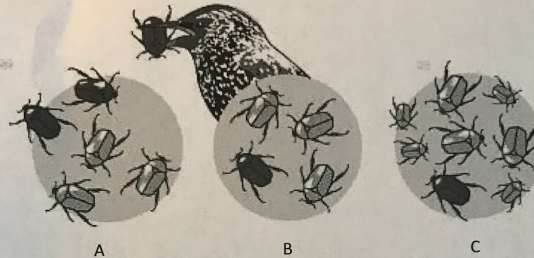
big, furry feet, like snowshoes to help walk in the snow

©Sheri Amsel

1. Identify at least two structural adaptations that the polar bear has to help them survive the climate.
2. Identify how the fur looking white is an adaptation. Identify the type (be specific) and explain how it helps the bear survive.
3. Polar bears migrate to find food, and pregnant polar bears almost hibernate to conserve energy for their young. What type of adaptations are these two adaptations?
4. Most bears eat plants, but not polar bears. Describe how this activity could be removed from the actions of a polar bear.

## STATION 8- FITNESS

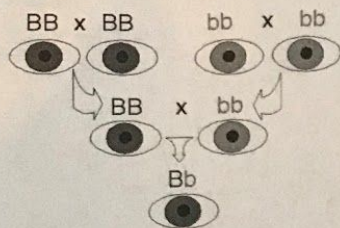
Answer the questions in complete sentences.



1. Describe what has happened to the populations of bugs as you go through generations A-C.
2. What population has nature selected for? How do you know?
3. Which bug has the greater fitness as they go through generations B and C? How do you know?
4. The bugs in this environment went from being all black to being black and gray. What could result in this change? What is this change beneficial, harmful or neutral? How do you know?
5. Predict what generation D would look like.

## STATION 9- GENETIC VARIATION

Answer the questions in complete sentences.

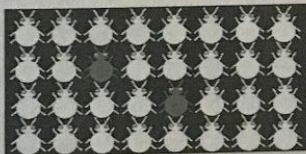
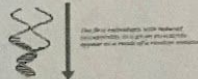


B= brown b= blue

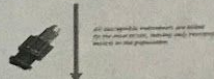
1. What is the genotype of the offspring?
2. What is the phenotype of the offspring?
3. Is there a difference?



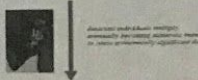
The illustrations show the changes of a bug population after being exposed to a pesticide (poison). The white bugs are impacted by the pesticide. Eventually the pesticide resistant gray bugs are the ones to survive.



1. What type of mutation (preventable or non-preventable) is occurring to keep the gray bugs alive? Explain.



2. Is this mutation helpful, harmful or neutral? How do you know?



3. Mutation help improve the genetic variation of a species. What are three ways genetic variation help improve fitness?