1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ beetle only lives in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. What is this beetle’s unusual behavior?
   1. What does this behavior allow the beetle to do?
3. Define **behavioral adaptation -**
4. What three characteristics does this beetle have with every other beetle on Earth?



1. Define **evolution –**
2. If you trace the history of any two species back far enough, what should happen?
3. What is the common ancestor of the broccoli, cauliflower, and cabbage?
4. Why is this considered artificial selection?
5. What is **creationism**?
6. What is a **fossil**?
7. What is a **stratum**?
   1. Where are younger fossils found?
   2. Where are older fossils found?
8. What does **paleontology** study?
9. What two observations did paleontologist Georges Cuvier make about fossils?
10. Define **speciation –**
11. Define **extinction –**
12. Explain Cuvier’s theory of **catastrophism**:
13. Explain the opposing theory of **gradualism:**
14. How did the geologists Hutton and Lyell believe the Earth’s surface changed?
    1. How would this explain the formation of valleys?
    2. How did this influence Charles Darwin?
15. What did Lamarck hypothesize?
    1. How would he explain the long necks of giraffes?
    2. What is an **acquired trait**?

**Charles Darwin and his Research**

1. Charles Darwin was originally sent to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but quit and began studying to

become a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. After he graduated, he travelled around the world on what ship?
2. What were three of the ecosystems that Charles Darwin visited?



1. One of the most important visits he made was to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. What made the Galapagos islands so unusual?
   1. Where did Darwin believe the animals on the Galapagos came from?
3. How did the animals on the Galapagos respond to humans?
4. What are **adaptations**?
5. How did Darwin believe new species were formed?
6. One of the animals Darwin studied were the different types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. The birds were all very similar except for what?
7. Describe the beak and food source for each of these birds:

|  |  |  |
| --- | --- | --- |
| **Bird** | **Type of Beak** | **Food Source** |
| Cactus ground finch |  |  |
| Green warbler finch |  |  |
| Large ground finch |  |  |

1. Why was Darwin reluctant to publish his essay about the origin of species?
2. What eventually made him change his mind?
3. Give the two main ideas of Darwin’s book:
4. Darwin did not use the term “evolution.” What did he call his theory?
   1. What does this mean?
   2. All species come from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. What common ancestor do all Asian elephants and African elephants have?
6. Summarize each of Darwin’s five observations:

Observation #1 –

Observation #2 –

Observation #3 –

Observation #4 –

Observation #5 -

1. State the **first conclusion** of Darwin’s theory:
   1. Give a practical example of this conclusion.
2. State the **second conclusion** of Darwin’s theory:
   1. Give a practical example of this conclusion:
3. State the **third conclusion** of Darwin’s theory:
   1. Give a practical example of this conclusion:
4. In the wild guppy experiment, describe the two pools the guppies were studied in:
   1. Pool 1:
   2. Pool 2:
5. How did the guppies living with the more aggressive pike-cichlids adapt?
6. Why is it so difficult to treat HIV?
7. What does the drug Epivir do?
   1. What happens to the effectiveness of this drug over time?
8. Evolution is a theory. Explain what this means.

**Evidence of Evolution**

1. Define **homology –**
2. Define **homologous structures –** 
   1. Examples:
3. Define **comparative embryology –**
4. Define **vestigial organs –** 
   1. Give three examples in humans:
5. What two molecules can also be studied for homology?
6. What is **convergent evolution**?
   1. Define **analogous structures –**
7. What is **biogeography?** 
   1. How does this relate to **Pangaea?**
   2. How do dinosaur fossils relate to Pangaea?
8. What is the most important evidence of evolution?
9. What are **transitional forms**?
   1. What is the transitional form of snakes and lizards?

**Species and Speciation**

1. Define **species –**
2. Define **speciation –**
3. What is geographic separation?
   1. Give an example of when this might occur:
4. What is habitat differentiation?
   1. What happens to the group that separates?
5. What is sexual selection?
   1. What is the basis of the criteria that females use?
   2. Give an example of how sexual selection can lead to the choice of a better mate:

**Reproductive Isolation**

1. A species must be able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ offspring.

1. Define prezygotic barriers –
2. Define postzygotic barriers –
3. Explain each of these types of prezygotic barriers:
   1. Geographic isolation –
   2. Habitat isolation –
   3. Temporal isolation –
   4. Behavioral isolation –
   5. Mechanical isolation –
   6. Gametic isolation –
4. What would be examples of postzygotic barriers?