Name: _____ Date: _____ Darwin's Voyage Notes

Charles Darwin

- A _____ (a person who studied nature) on an observation trip to the Galapagos Islands.
- He set sail on the _____ in 1858 from England on a 5 year expedition.

Galapagos Islands

- Located in the _____ _____ , Northwest of _____ _____.
- The islands were formed by undersea _____, almost 5 million years ago.

What did Darwin find on his voyage?

- He found a _____ of _____ similar to those found in South and Central America.
- He also encountered new and unusual organisms while on his voyage, especially on the _____.

What did Darwin observe on his visit to Galapagos Islands?

- Darwin observed similarities and differences between the individual _____ and the _____ organisms.
- Darwin wondered why these organisms had _____ characteristics from those on the mainland.
- He concluded that these organisms faced conditions that were different to that of the mainland.
- As a result they had to develop _____ or traits that helped the organisms' _____.

What did Darwin hypothesize?

- Darwin hypothesized that a _____ number of different plant and animal species had come to the _____.
  His hypothesis is an example of _____ and _____ or _____.

Dispersal

- Defined as the movement of organisms from one location to another
  - Some might have _____ to sea during a storm
  - Some may have set _____ on a fallen log
- Once the plants and animals reached the islands, they _____.
- Eventually their offspring became _____ from the mainland species.

Three conclusions that Darwin made during his voyage were:

- _____
- _____
- _____

What is adaptation?

- It is a _____ that helps an organism to survive in its environment.

How did Darwin's voyages and observations lead to the theory of natural selection?

- He hypothesized that the species _____ over many generations and became _____ to the _____conditions.
- The gradual change in an organism's genetic makeup leads to the development of _____ _____.
- From his voyages, Darwin wrote a book called "_____."

What is natural selection?

- _____: means that organisms with traits best suited to their environment are more likely to _____ and _____.

Results of natural selection

- The offspring will inherit these _____ traits and will be more likely to _____ and _____.
- Over time _____ variations may gradually _____ while _____ ones may _____.

Factors that affect natural selection are:

1. Over-production – where organisms produce more offspring than can survive.
2. _____ are found among individuals of a species (some may move faster, hard shell, or keen eye sight). Some variations allow members of a population to _____ and _____ better than others.

What is variation?

- It is a(n) _____ (change in the DNA) that makes an individual _____ from other members of the same species.
- Can be _____ , _____, _____, and _____.

3. Competition - where organisms _____ for the same _____and other _____ in a restricted or specific space.

Genes and natural selection:

- Darwin could not explain what caused variations or how they were passed on.
- Today we know that they can result from both mutations and the shuffling of alleles during meiosis.
- _____ are passed from parent to offspring on chromosomes, because of this, only _____ that are controlled by genes can be acted upon by _____.

Evidence of evolution:

1. _____: A new species will form when a group of individuals remains _____ from the rest of its species long enough to evolve different traits. Isolation can occur from a _____, a _____, or a _____.
2. Homologous structures: Similar structures in a variety of different organisms. _____ provides evidence that the organisms had a shared common ancestor with that trait.

What are homologous structures? These are body parts that are similar in both _____ and _____. Examples: _____.

3. _____ - organs that serve _____ useful function in an organism. Example: gills and tailbones in humans.
4. _____ - In their early stages of development, chickens, turtles and rats look similar, providing evidence that they shared a _____.

What similarities do you see between these embryos?

Branching Tree:

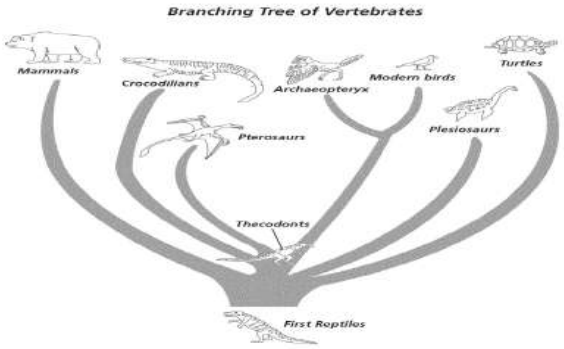
- A _____ or _____ that shows how scientists think different groups of organisms are related.
- Scientists use all the evidence available to make a _____ (Body structure, embryology, DNA, and fossil record Etc.)

Use the diagram bellow to answer the following questions:

Did birds evolve from Pterosaurs? _____

What is the common ancestor of Crocodilians and Modern Birds? _____

Are modern birds more closely related to Archaeopteryx or to the first reptiles? _____



Summary of Darwin's Theory:

- _____ in nature differ from one another
- Organisms in nature produce more _____ than can _____, and many of those who do not survive do not reproduce.
- Because more organisms are produced species may struggle for _____.
- Each organism is _____, each has advantages and disadvantages in the struggle for existence.
- Individual(s) _____suited for the environment survive and reproduce most successful.
- _____change over time.

Evolution can occur in two ways:

1. Gradualism: A _____ _____ process where you can see different forms of the new species. Minor changes occur.
2. Punctuated equilibrium: Happens _____. Sometimes _____ species are not there. Species branch off and evolve simultaneously.