Selections Test
Natural and Artificial Selections

8.LS4.4) Develop a scientific explanation of how natural selection plays a role in determining the survival of a species in a changing environment.

8.LS4.5) Obtain, evaluate, and communicate information about the technologies that have changed the way humans use artificial selection to influence the inheritance of desired traits in other organisms.

Write 2 facts from the following slides.

OR

If there are questions on the slides answer the questions.

AFTER you have finished with the notes, watch the "Selections Test video" and write five facts.

Natural Selection

- observable properties of an organism which can be physical properties; appearance, development, etc.

- Phenotypes can help an organism to survive in an environment.

- Non desirable phenotypes will not help an organism survive in an environment,

Natural Selection

- Desire phenotypes help an organism to survive in their environment

   Example: dark color moths blend in on dark color trees

- Non desirable phenotypes do not help an organism to survive

   Example: light color moths do not blend in on dark color trees

- <u>Survival means:</u> finding food, finding shelter, defending against predators, and reproducing

Natural Selection

- Phenotypes displayed in a population can change over time

- Environment can influence a change in the population's displayed phenotype

- Environment can influence a species chances of survival

- The longer an individual lives, the better chances for reproduction.

Natural selection

- Example:

In a species of rabbit there are two varieties: brown fur (*bb*) and black fur (<u>BB</u> or *Bb*). The brown fur rabbits are camouflaged into their environment and are able to hide from predators. The black fur rabbits are not as well camouflaged into their environment and tend to be seen and killed by predators. Over 20 generations the rabbit population no longer has any rabbits with black fur.

- Explain why the rabbits with black fur are not successful:_____

- Explain what happened to the phenotype of black fur:

_____

Artificial Selection

- Selective breeding: the process of selecting organisms with desired traits to be parents of the next generation

- Humans choose which traits are desirable

- Not a 100% guarantee that the offspring will have the desired trait, but it increases the chances.

1. Why do humans selectively dairy cow?

_____

2. What traits are desirable in a dairy cow?

_____

Artificial Selection

- <u>Clone</u>: an organism that has exactly the same genes as the organism from which it was produced.

- <u>Genetic engineering</u>: genes from one organism are transferred into the DNA of another organism so the organism will grow and develop with the desired trait.

- Gene Therapy: gene from one organism are transferred into the DNA of an organism in order to correct a mutation or problem with a gene.

Gene Therapy VS Genetic Modification

- Gene modification involves one species DNA being inserted into another organisms DNA. The <u>offspring</u> would inherit the trait inserted into the DNA. The inserted DNA does not have to be from the same species as the offspring.
  - example: bacteria producing insulin)
- Gene therapy is used to correct a gene mutation in an <u>already living organism</u>. The gene implanted into the organism would "cover up" the gene causing the issue.
  - Example: hemophilia and some cancer patients

Natural vs Artificial Selections

Natural selection	BOTH	Artificial Selection
-Process that occurs in nature without human interference -Traits acquired increase the species chances for survival in their environment - Future generations display desirable traits inherited from their parents/ancestors	-Physical change in the structure/form of the species occurs over many generations -Traits are inherited from parents. A percentage of DNA from each parent (male and female).	-Desired traits are selected by humans -Desired traits are not always helpful for the animal to survive, but are deemed desirable by the human breeders. -Future generations display the traits determined by human breeders