Types of Selection Worksheet **Name**_____

I Can:
Identify the different types of natural selection and describe how a population will evolve over time.

Read the following situations below and identify the 5 points of Darwin's theory.

1)There are 2 types of worms: worms that eat at night (nocturnal) and worms that eat during the day (diurnal). The birds eat during the day and seem to be eating ONLY the diurnal worms. The nocturnal worms are in their burrows during this time. Each spring when the worms reproduce, they have about 500 babies but only 100 of these 500 ever become old enough to reproduce.

a. What worm has natural selection selected AGAINST? _____ FOR? _____

Darwin's 5 points: Identify the 5 points in the scenario above.
Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive._____

Those that survive have favorable traits. _____

A population will change over time. _____

2) There are 3 types of polar bears: ones with thick coats, ones with thin coats and ones with medium coats. It is fall, soon to be winter. The temperatures are dropping rapidly and the bears must be kept warm, or they will freeze to death. Many of the bears have had ~2 cubs each but due to the extreme temperatures, many mothers only have one cub left.

a. What bear will natural selection select AGAINST? _____ FOR? _____

Darwin's 5 points: Identify the 5 points in the scenario above.
Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive._____

Those that survive have favorable traits. _____

A population will change over time. _____

3) Bob believes that giraffes have long necks because they have stretched their necks to try and reach food that is high in trees. Since the parent had stretched its neck, it passed the long neck on to its offspring.

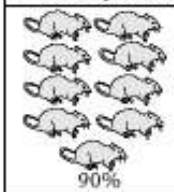
Ryan believes that giraffes have long necks because the ones with long necks were able to reach the food, and those with short necks could not and died. The long necked giraffes reproduced, and soon all of the giraffes had long necks.

a. Who thinks like Lamarck? Why?_____

b. Who thinks like Darwin? Why?_____

Natural Selection on a Single-Gene Trait

A color mutation occurred in brown mice, causing darker fur. The table shows population changes over 30 generations.

Initial Population	Generation 10	Generation 20	Generation 30
 90%	 80%	 70%	 40%
 10%	 20%	 30%	 60%

4. What is happening to the relative frequency of the lighter fur color allele?

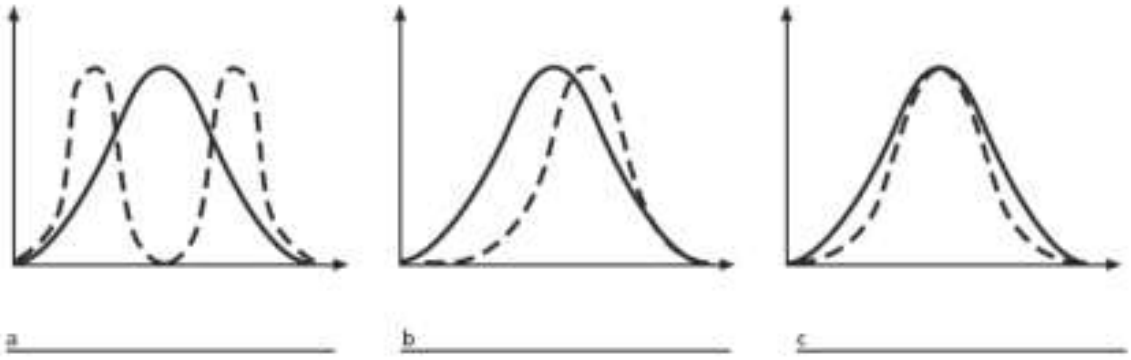
5. What is happening to the relative frequency of the darker fur color allele?

6. Is the darker color mutation favorable or unfavorable?

7. What may have caused the change in the population shown in the table?

8. Predict how the mouse population will look after 40 generations. How were you able to make this prediction?

9. Label the three types of natural selection illustrated below:



10. What type of individuals in the population are represented by the 2 ends of the bell curve?

11. Starlings produce an average of five eggs in each clutch. If there are more than five, the parents cannot adequately feed the young. If there are fewer than five, predators may destroy the entire clutch. This is an example of

a. disruptive selection. b. stabilizing selection.
c. directional selection. d. none of the above.

12. The occurrence of large or small beak sizes among seed crackers in the absence of medium sized beaks is an example of

a. directional selection. b. stabilizing selection.
c. disruptive selection. d. none of the above.

13. A scientist measures the circumference of acorns in a population of oak trees and discovers that the most common circumference is 2 cm. What would you expect the most common circumference(s) to be after 10 generations of stabilizing selection?

a. 2 cm b. greater than 2 cm or less than 2 cm
c. greater than 2 cm and less than 2 cm d. can't tell from the information given

14. Refer to question 8, but this time answer what you would expect after 10 generations of disruptive selection.

a. 2 cm b. greater than 2 cm or less than 2 cm
c. greater than 2 cm and less than 2 cm d. can't tell from the information given

15. Refer to question 8, but this time answer what you would expect after 10 generations of directional selection.

a. 2 cm b. greater than 2 cm or less than 2 cm
c. greater than 2 cm and less than 2 cm d. can't tell from the information given

Each of the following is an example of **stabilizing**, **disruptive**, or **directional selection**. Choose the correct term for each example, explain why it fits that category and sketch the appropriate graph.

16. Larger squirrels can carry larger acorns to their burrows, and they outcompete smaller squirrels when acorn supplies are limited. _____

17. Spotted brown-and-white butterflies blend into lichen-covered tree bark, making it difficult for predators to see them, while solid brown and solid white butterflies are easier to see and get eaten. _____

18. Panthers with teeth that are too short have difficulty capturing prey, while panthers with teeth that are too long have difficulty chewing their food. _____

19. In a lake in South Africa, guppies are eaten by the pike fish, and the larger the guppy, the more difficulty it has escaping its pike fish predator. _____

20. The rocks at the bottom of a stream are either black or white. Snails that live on these rocks are a range of color from solid black to gray to solid white. A local freshwater fish loves to munch on these snails, but it cannot see the solid black or solid white snails when the snails are on matching rocks. Grey does not blend into either rock color and is much easier to see. _____

21. Human babies usually do not survive if they are born under 4 pounds because their organs are too small to work properly; they cannot be born if they are too big because the mother would not be able to give birth without dying. _____