

Name: _____ Date: _____ Period: _____

Natural Selection Standards Based Worksheet Evolution of Populations – Ch. 16 Pgs. 392-415.

Answer the following standards-based questions in the space provided. You may attach additional paper if necessary.

1. Given the following alleles in a gene pool, calculate the allele frequency for each. What will the allele frequencies always add to? Show your work. BB Bb Bb BB bb Bb BB bb Bb BB BB bb bb Bb Bb BB BB (Page 394 and Notes)

Allele Frequency for B	
Allele Frequency for b	
Adds to what?	

- A. If BB = Black, Bb = Brown, and bb = White, predict what will happen to the population from number 1 if these were mice living in a desert that was suddenly covered with snow and subject to being preyed upon by polar bears. Include reference to allele frequencies for “B” and “b” in your answer. (Notes and Bunny Lab)
- B. If white was a lethal coat color, why would the allele for whiteness remain in a population even after many generations? How does this happen? Include a punnett square proving your reasoning. (Notes and Bunny Lab)

2. What are the two main sources of genetic variation? Why does each cause genetic variation? (Page 394 and Notes)
3. Why is biodiversity (natural variation) important to the survival of a species during major environmental changes or disasters? (Page 407 and Notes)
4. What is the difference between genotype and phenotype? Why does natural selection act on phenotype instead of genotype? (Page 397)

5. Identify the three ways in which natural selection affects polygenic traits. Complete the table summarizing and stating/drawing examples of each. (Pages 398–399 and Notes)

Type of Selection	Summary	How does the polygenic graph change?

6. What is genetic drift?

- A. List and compare the two ways that genetic drift can occur in a population?

- B. How does genetic drift affect the biological diversity of a population? Why does it have this effect on biological diversity? (Page 400 and Notes)

- C. Why does genetic drift lead to a population bottleneck? (Notes and Worm Lab)

7. List the five conditions that must exist for allele frequencies to remain constant in a population according to the Hardy-Weinberg principle. (Pages 401-402 and Notes)

8. Complete the following table identifying three isolating mechanisms that lead to speciation:

Isolation Mechanism	Description	What is an example of this?

9. Choose your own speciation.

a. Pick an animal:

My animal is a _____. I chose this animal because _____.

b. Pick a form of isolation:

I chose _____ form of isolation because _____.

c. Explain how your animal will create a new species based on the form of isolation. You will need to use 5-6 sentences in a story format to explain your speciation. Please use a minimum of 4 words from the word bank.

Gene Pool	Natural Selection	Speciation	Behavioral Isolation	Geographic Isolation
Temporal Isolation	Reproductive Isolation	Phenotype	Species	Fitness
Adaptation	Evolution			Survival of the fittest

10. Complete the following Standardized test prep questions: Page 415 #1-10. **Complete the chart identifying the reason for your answer choice or the page number in which you found the answer.**

P. 415 Answer	Reason or page number	P. 415 Answer	Reason or page number
1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.		10.	