

Name: _____

Date: _____

Period: _____

The Blue Fugates

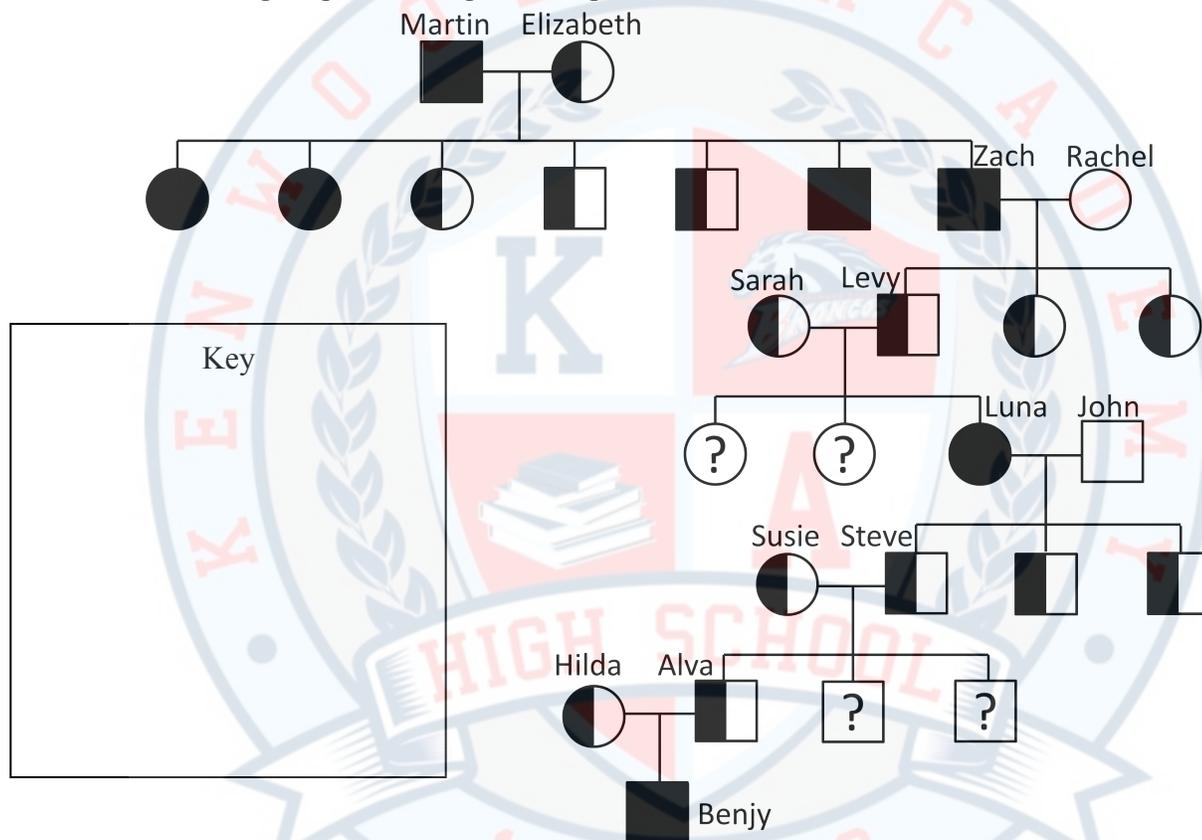
Week # _____

Directions: Read the passage to determine the genotype for each phenotype.

Being blue is the result of a blood disorder in which an abnormal amount of methemoglobin -- a form of hemoglobin -- is produced. This rare condition is inherited as a recessive trait. In other words, to get the disorder, a person would have to inherit two recessive alleles for it, one from each parent.

Phenotype	Genotype(s)
Blue	
Non-Blue	

Directions: Use the pedigree to complete the questions.



- Martin Fugates' genotype is _____ and his wife Elizabeth Fugates' genotype is _____.
- What is the probability of their children being blue? Use a Punnett Square to show your work.
- Zach's genotype is _____ and his wife Rachel's genotype is _____.
- What is the probability of their children being blue? Use a Punnett Square to show your work.

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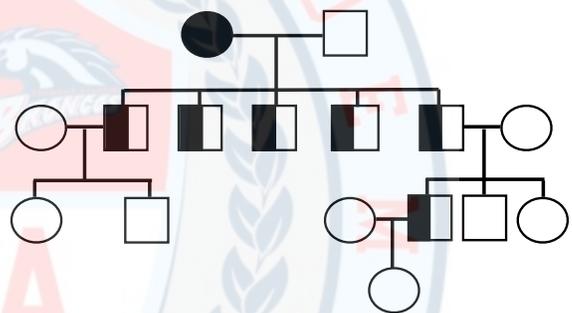
5. Sarah's genotype is _____ and Levy's genotype is _____.
6. What is the probability of their children being blue? Use a Punnett Square to show your work.

7. Hilda and Alva are both heterozygous. What is the probability of children being blue? Use a Punnett Square to show your work.

Directions: Complete the table and answer the questions by analyzing the pedigree.

The pedigree below traces the family of Jane Fugate, who has an extensive family history of being blue. As a teenager, Jane moved away from her family to an area with no history of individuals being blue.

Generation	Phenotype		Genotype(s)
	Blue	Non-Blue	
I	1	1	bb and BB
II			
III			
IV			



8. What do you notice about every individual that married into Jane Fugate's family?

9. Explain what is happening to the frequency of the b allele through each generation of the pedigree.

10. Use this pedigree as evidence to explain how recessive traits can, over time, diminish within a population.
