Sex-Linked Traits Worksheet Answers

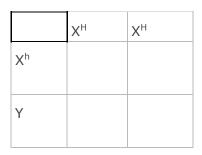
Hemophilia Sex Linkage Phenotypes and Genotypes				
Normal Female	$X^H X^H$	blood clots normally		
Carrier Female	$X^{H} X^{h}$	blood clots normally		
Hemophilic Female	$X^h \; X^h$	blood does not clot normally		
Normal Male	X ^H Y	blood clots normally		
Hemophilic Male	X ^h Y	blood does not clot normally		

Use the information above to answer the following questions.

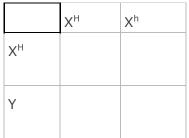
1. Write the genotypes for the following phenotypes of hemophilia:

- i. normal male _____
- ii. normal female carrying no hemophilia alleles (Homozygous)
- iii. hemophiliac male_____
- iv. normal female carrying the hemophilia allele (Heterozygous) _____
- v. hemophilic female _____

- 2. A homozygous normal female (X^HX^H) has children with a hemophiliac male (X^h Y)
 - i. Complete the Punnett Square to predict the possible genotypes and phenotypes of their children.



- ii. What proportion/percent of the male children may have hemophilia?
- iii. What proportion/percent of the female children may have hemophilia?
- 3. A female who is a carrier for hemophilia (X^HX^h) has children with a normal male (X^H Y)
 - i. Complete the Punnett Square to predict the possible genotypes and phenotypes of their children.



- ii. What proportion/percent of the male children may have hemophilia?
- iii. What proportion/percent of the female children may have hemophilia?
- 4. What is the probability that a woman with hemophilia who has a child with a normal male will have a child with hemophilia?
 - i. Write the genotypes for the male and female parents

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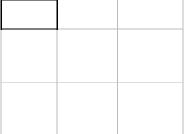
- ii. Complete the Punnet Square
- iii. What is the probability of the child having hemophilia?

	Х
Y	
Y	

5. A woman who is a carrier for hemophilia marries a hemophiliac man i. What are the genotypes of the parents?

_____ X _____

Complete the Punnet Square ii.



- What is the probability their son will have hemophilia? iii.
- What is the probability their daughter will have hemophilia? iv.

Colorblindness Sex Linkage Phenotypes and Genotypes			
Normal Female	$X^B X^B$	normal vision	
Carrier Female	$X^{B} X^{b}$	normal vision	
Color blind Female	$X^{b} X^{b}$	colorblind for red and green	
Normal Male	X ^B Y	blood clots normally	
Color blind Male	X ^b Y	colorblind for red and green	

- 6. A woman who is a carrier for colorblindness marries a color blind man.
 - i. What are the genotypes of the parents?

_____X _____

Complete the Punnet Square ii.

- iii.
- What proportion of their male children will be colorblind? ______ What proportion of their female children will be colorblind? ______ iv.

- 7. A normal-sighted woman (whose father was colorblind) has children with a colorblind man.
 - i. What are the genotpyes of the parents?

_____ X _____

- ii. What is the probability their son will be colorblind?
- iii. What is the probability their daughter will be colorblind?

Check your understanding of sex linkage and inheritance by answering the following questions.

- 8. What is a sex-linked trait?
- 9. Why must males inherit colorblindness or hemophilia from their mothers?
- 10. Why is colorblindness or hemophilia more common in males than in females?