

Sex-Linked Practice Problems

The normal female condition is a result of the chromosomal pairing XX, while the normal male condition is XY. Certain genes located on the X chromosome, not associated with female sex characteristics, cause sex-linked recessive traits. As a result, females must receive two recessive alleles to exhibit any particular characteristic associated with one of these genes, while males only need to receive one of these alleles. The reason for this male anomaly is that the Y chromosome does not carry versions of the same genes as the X chromosome. Consequently, only females can be true heterozygotes (carriers).

1. Hemophilia is a rare genetic disease in which blood does not clot properly. In the marriage of two non-hemophiliac parents, a bleeder son is born. Use H to represent the normal, non-hemophiliac allele and h to represent the recessive hemophiliac allele.
- What are the probabilities of these parents producing hemophiliac daughters? _____
 - What are the probabilities of these parents producing hemophiliac sons? _____

Mom's Genotype:	
Dad's Genotype:	
Hemophiliac Son Genotype:	
Hemophiliac Daughter Genotype:	

2. A woman with hemophilia marries a man who is normal for the trait. Use H to represent the normal, non-hemophiliac allele and h to represent the recessive hemophiliac allele.
- What are the probabilities of these parents producing a daughter with hemophilia? _____
 - What are the probabilities of these parents producing a son with hemophilia? _____

Mom's Genotype:	
Dad's Genotype:	
Hemophiliac Son Genotype:	
Hemophiliac Daughter Genotype:	

Glue this page directly into your notebook and glue Sex-Linked Practice Problems Tab Here

3. Red-green colorblindness is caused by a sex-linked recessive allele. A colorblind man marries a woman with normal vision but whose father was colorblind. Use B to represent the normal, non-colorblind allele. Use b to represent the colorblind allele.
- What is the probability that they will produce a colorblind daughter? _____
 - What is the probability that they will produce a colorblind son? _____

Mom's Genotype:	
Dad's Genotype:	
Colorblind Son Genotype:	
Colorblind Daughter Genotype:	

4. A normal male marries a woman who is not colorblind but carries the trait.
- What is the probability that they will produce a colorblind daughter? _____
 - What is the probability that they will produce a colorblind son? _____

Mom's Genotype:	
Dad's Genotype:	
Colorblind Son Genotype:	
Colorblind Daughter Genotype:	
