Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Genetics: X Linked Genes**

In fruit flies, eye color is a sex linked trait. Red is dominant to white.

1. What are the sexes and eye colors of flies with the following genotypes:

X R X r \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_X R Y \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

X R X R \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_X r Y \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What are the genotypes of these flies:

white eyed, male \_\_\_\_\_\_\_\_\_\_\_\_ red eyed female (heterozygous) \_\_\_\_\_\_\_\_

white eyed, female \_\_\_\_\_\_\_\_\_\_\_ red eyed, male \_\_\_\_\_\_\_\_\_\_\_

3. Show the cross of a white eyed female X r X r with a red-eyed male X R Y .



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4. Show a cross between a pure red eyed female and a white eyed male.
 What are the genotypes of the parents:

 \_\_\_\_\_\_\_\_\_\_\_& \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 How many are:

 white eyed, male\_\_\_

 white eyed, female \_\_\_

 red eyed, male \_\_\_\_

 red eyed, female \_\_\_\_

5. Show the cross of a red eyed female (heterozygous) and a red eyed male. What are the genotypes of the parents?

 \_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 How many are:

 white eyed, male\_\_\_, white eyed, female \_\_\_

 red eyed, male \_\_\_\_, red eyed, female \_\_\_\_

Math: What if in the above cross, 100 males were produced and 200 females. (Think about the percentage of the total #.) How many total red-eyed flies would there be? 6.

7. In humans, hemophilia is a sex-linked trait. Females can be normal, carriers, or have the disease. Males will either have the disease or not, but they won’t ever be carriers.

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| XHXH = female, normalXHXhh= female, carrierXhhXhh = female, hemophiliac | XhhY= male, normalXHY= male, hemophiliac |

Show the cross of a man who has hemophilia with a woman who is a carrier.

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8. What is the probability that their children will have the disease? \_\_\_\_\_\_\_\_\_\_

9. A woman who is a carrier marries a normal man. Show the cross. What is the probability that their children will have hemophilia? What sex will a child in the family with hemophilia be?

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10. A woman who has hemophilia marries a normal man. How many of their children will have hemophilia, and what is their sex?

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