

Sex-Linked Traits Practice

Name: _____

Date: _____

In fruit flies, eye color is a **sex-linked trait**. Red (R) eyes are dominant to white (r) eyes.

1. Since the characteristic is sex-linked, on which chromosome (X or Y) will the allele for fly eye color be located? _____

2. What are the sexes and eye colors of flies with the following genotypes?

$X^R X^r$ sex: _____ eye color: _____

$X^R Y$ sex: _____ eye color: _____

$X^R X^R$ sex: _____ eye color: _____

$X^r Y$ sex: _____ eye color: _____

3. What are the genotypes of these flies?

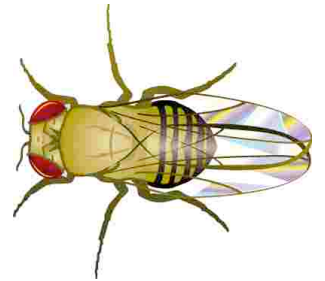
white eyed, male _____

red eyed female (heterozygous) _____

white eyed, female _____

red eyed, male _____

4. Show the cross of a white eyed female ($X^r X^r$) with a red-eyed male ($X^R Y$) .



5. What are the possible *genotypes* of the **male** offspring? _____

6. What are the possible *phenotypes* of the **male** offspring? _____

7. What are the possible *genotypes* of the **female** offspring? _____

8. What are the possible *phenotypes* of the **female** offspring? _____

9. Let's now perform a cross between a homozygous red-eyed female and a white-eyed male!

a. What are the genotypes of the parents? _____ & _____

b. Complete the cross. What is the possibility that the offspring are:

white eyed, male _____% red eyed, male _____%

white eyed, female _____% red eyed, female _____%

10. Show the cross of a red-eyed female (heterozygous) and a red-eyed male.

a. What are the genotypes of the parents? _____ & _____

b. Complete the cross. What is the possibility that the offspring are:

white eyed, male _____% red eyed, male _____%

white eyed, female _____% red eyed, female _____%

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). Write the genotypes for the following phenotypes.

_____ = female, normal

_____ = male, normal

_____ = female, carrier

_____ = male, hemophiliac

_____ = female, hemophiliac

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

What is the probability that their children will have the disease? _____%

What is the probability that their sons will have the disease? _____%

What is the probability that their daughters will have the disease? _____%

14. A woman who is a carrier marries a normal man. Show the cross.

What is the ratio of normal sons to hemophiliac sons? _____

Is that the genotypic or phenotypic ratio? _____

15. A woman who has hemophilia marries a normal man.

What percentage of their children would you predict to have hemophilia? _____

Will more, less, or equal boys be affected by hemophilia than girls? _____ Why is this?