


Name: _____

Date: _____ 

Genetics Practice 5: Sex-Linked Traits

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:

a. $X^R X^r$ _____

b. $X^R X^R$ _____

c. $X^R Y$ _____

d. $X^r Y$ _____

e. $X^r X^r$ _____

2. What are the genotypes of these flies:

a. White-eyed, male: _____

b. White-eyed, female: _____

c. Red-eyed, heterozygous female: _____

d. Red-eyed, male: _____

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

4. Show a cross between a pure (homozygous) red-eyed female and a white-eyed male. What are the genotypes of the parents?

_____ x _____
How many offspring 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?

_____ x _____
How many offspring are

white-eyed, male: _____

white-eyed, female: _____

red-eyed, male: _____

red-eyed, female: _____

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If, from the previous cross, 100 males and 200 females were produced, how many total red-eyed flies would there be?

6. In humans, hemophilia is an X-linked recessive blood disorder. 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?

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

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

9. In cats, the gene for calico cats (orange, black, and white) is codominant. Females that receive a B and an R gene have black and orange splotches on white coats. Males can only be black or orange, but not calico. A calico female's genotype would be $X^B X^R$.

Show the cross of a female calico cat with a black male.

What % of kittens are black/male? _____

What % of kittens are calico/male? _____

What % of kittens are calico/female? _____

10. Show the cross of a female black cat with a male orange cat.

What % of kittens are calico/female? _____

All males will be what color? _____