Name _____

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:

$X^R X^r$ _____ $X^R Y$ _____ $X^r X^r$ _____
$X^R X^R$ _____ $X^r Y$ _____

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 $X^R Y$.

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

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?
_____ & _____

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. How many total red-eyed flies would there be? _____

6. In humans, hemophilia is a sex linked trait. Females can be normal, carriers, or hemophiliacs. Males will either have the disease or not (but they won't ever be carriers)

$X^H X^H$ = female, normal

$X^H X^h$ = female, carrier

$X^h X^h$ = female, hemophiliac

$X^H Y$ = male, normal

$X^h Y$ = male, hemophiliac

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 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?

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

9. In cats, the gene for calico (multicolored) cats 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 never calico.

Here's what a calico female's genotype would look like. $X^B X^R$

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

What percentage of the kittens will be black and male? _____
What percentage of the kittens will be calico and male? _____
What percentage of the kittens will be calico and female? _____

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

What percentage of the kittens will be calico and female? _____
What color will all the male cats be? _____