Incomplete Dominance and Codominance

Name _____

1. Cat fur color is determined by codominance. The allele for tan fur (TT) and the allele for black fur (BB) are codominant. The heterozygous condition (TB) results in a cat with tan and black spots, called a tabby cat. Show a tan cat was crossed with a tabby cat. Draw the Punnett square and identify the genotypes and phenotypes of their offspring.

2. If two tabby cats are crossed with each other, what is the likelihood that they'll have a tabby kitten? A black kitten? **(show your Punnett square)**

3. Sickle cell anemia is a trait that exhibits codominance. A person with an AA genotype does not have sickle cell anemia, and a person with an SS genotype has full sickle cell anemia. A person with an AS genotype will have some sickle-cells, though s/he might show minimal or no symptoms (a "carrier").

   Bert is a carrier for sickle-cell anemia (shows minimal symptoms), and his wife, Gwen, does not have it. What are the chances that Bert and Gwen will have a child with ANY sickle-shaped blood cells? **Show your work!**

4. In a species of birds, incomplete dominance for black (BB) and white (WW) feathers is observed. Heterozygotes (BW) are blue. If two blue birds are crossed, what will be the possible genotypes and phenotypes of the offspring?

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:

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

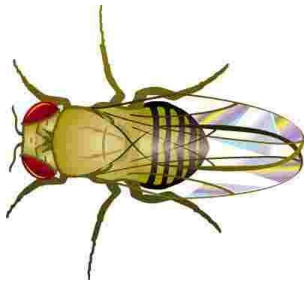
$X^R X^R$ _____ $X^r Y$ _____

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 $X^R Y$. What are the chances of getting white-eyed males?



4. 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)

$X^H X^H$ = female, normal	$X^H Y$ = male, normal
$X^H X^h$ = female, carrier	$X^h Y$ = male, hemophiliac
$X^h X^h$ = female, 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? _____

5. 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?