

### Sex-linked Traits Practice Problems

1. In fruit flies, the gene for white eyes is sex-linked recessive. (R) is red and (r) is white. Cross a white-eyed female with a normal red-eyed male.


- a. What percent of the males will have red eyes? White eyes?
- b. What percent of the females will have red eyes? White eyes?
- c. What **total percent** of the offspring will be white-eyed?

- d. What **percent** of the offspring will be carriers of the white eye trait?

2. Using the same information as for question #1, cross a heterozygous red-eyed female with a red-eyed male.


- a. What are the genotypes of each parent?
- b. What **fraction** of the children will have red eyes?
- c. What **fraction** of the children will have white eyes?

- d. What **fraction** of the female children will carry the white eyed trait?

3. In humans, hemophilia is a sex-linked recessive trait. If a female who is a carrier for hemophilia marries a male with normal blood clotting, answer the following questions.


- a. What fraction of the female children will have hemophilia?
- b. What fraction of the female children will be carriers?
- c. What fraction of the male children will have normal blood clotting?

- d. What fraction of the male children will be carriers?

- e. What fraction of the male children will have hemophilia?

1. Two normal visioned parents have a color-blind son. Give the genotype of both parents and the son.
2. In cats, the allele (B) produces black color but (b) produces a yellow color. These alleles are incompletely dominant to each other. A heterozygote produces a tortoise shell color. The alleles (B) and (b) are sex-linked as well. Cross a tortoise shell female with a yellow male.


- a. What percent of their offspring will be yellow?
- b. What percent of their offspring will be black?
- c. What percent of their offspring will be tortoise shell?
- d. Why is it impossible to have a tortoise shell male offspring?