

## Sex-Linked Punnett Squares

1. Color-blindness is sex-linked recessive. A woman with normal vision marries a man with color-blindness.
  - a. What is the man's genotype?
  
  
  
  
  
  
  
  
  
  
  - b. What is the woman's genotype?
  
  
  
  
  
  
  
  
  
  
  - c. What are the possible genotypes of their sons and daughters?
  
  
  
  
  
  
  
  
  
  
  - d. What is the phenotypic ratio of their children?
  
2. A colorblind woman marries a man with normal vision.
  - a. What is the man's genotype?
  
  
  
  
  
  
  
  
  
  
  - b. What is the woman's genotype?
  
  
  
  
  
  
  
  
  
  
  - c. What are the possible genotypes of their sons and daughters?
  
  
  
  
  
  
  
  
  
  
  - d. What is the phenotypic ratio of their children?

3. A woman who is heterozygous for color-blindness marries a normal vision man.

a. What is the woman's phenotype?

b. What is the man's phenotype?

c. What is the man's genotype?

d. What is the woman's genotype?

e. What are the possible genotypes of their sons and daughters?

f. What is the phenotypic ratio of their children?

4. Describe two possible crosses that can produce color-blind daughters.

5. Hemophilia is a sex-linked recessive. A woman who is a carrier for the hemophilia gene marries a normal man.

- a. What is the man's genotype?
- b. What is the woman's genotype?
- c. What are the possible genotypes of their sons and daughters?

d. What is the phenotypic ratio of their children?

6. A homozygous woman marries a man with hemophilia.

- a. What is the man's genotype?
- b. What is the woman's genotype?
- c. What are the possible genotypes of their sons and daughters?

d. What is the phenotypic ratio of their children?



f. What would the genotype of the bull and Cow 2's offspring be?

g. What is the phenotypic ratio of their offspring?

h. Remembering that the rancher is interested in males with pigmented eyes, which cross should the rancher do?

8. Clouded leopards are a medium sized, endangered species of cat, living in the very wet cloud forests of Central America. Assume that the normal spots are a dominant, sex-linked trait and that dark spots are the recessive counterpart. Suppose as a Conservation Biologist, you are involved in a clouded leopard breeding program. One year you cross a male with dark spots and a female with normal spots. She has four cubs and, conveniently, two are male and two female. One each of the male and female cubs have normal spots and one each have dark spots.

a. What was the genotype of the father?

b. What was the genotype of the cubs?

c. What was the genotype of the mother?