

Topic: Sex-Linked Pedigrees Worksheet

Summary: Students will learn how to use pedigrees to trace a sex-linked trait as it is passed down from generation to generation. Students will also learn about genetic disorders.

Goals & Objectives: Students will be able to trace a gene as it is passed down from generation to generation.

Standards: CA Biology 3c* *Students know* how to predict the probable mode of inheritance from a pedigree diagram showing phenotypes.

Time Length: 20 minutes

Prerequisite Knowledge: Students know how to complete a Punnett square for dominant and recessive traits. Students know vocabulary words like homozygous, heterozygous, dominant, recessive, genotype and phenotype. Students know how to calculate ratios.

Materials:

- Textbook for reference
- Handouts and pencils

Procedures:

1. Students work on the handout by themselves.

Accommodations: Students with an IEP can take the handout home if they need extra time, and/or do the even numbered questions.

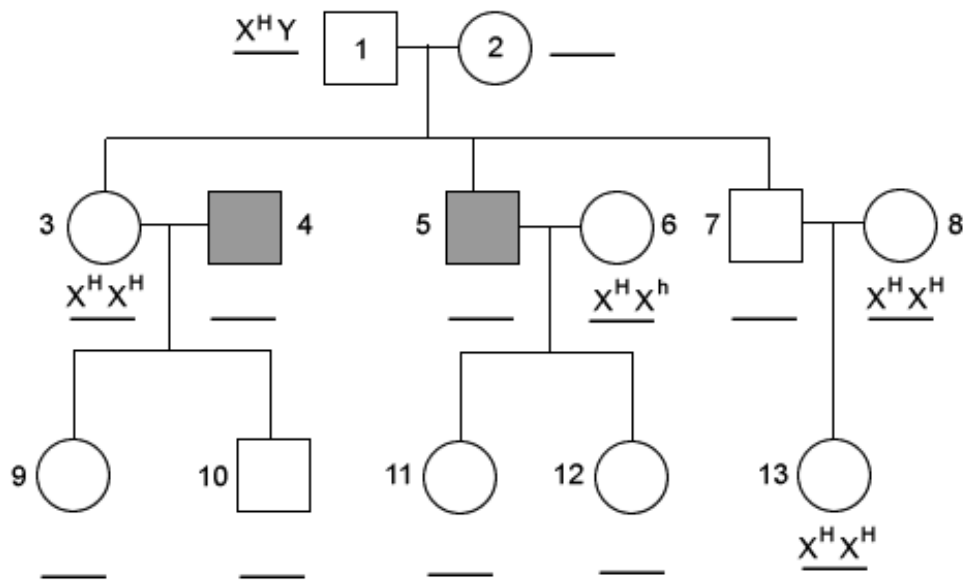
Evaluation:

This assignment is worth a total of 14 points.

Sex-Linked Pedigrees Worksheet

Background Information: Pedigrees are used to trace a gene as it is passed down from generation to generation. The squares represent a male and the circles represent a female. In the examples on this handout, the shaded circles and squares will represent having the disorder. Make sure to read each question to find out if a disorder is caused by dominant alleles or recessive alleles. A person can be a carrier of a trait, meaning they have heterozygous alleles.

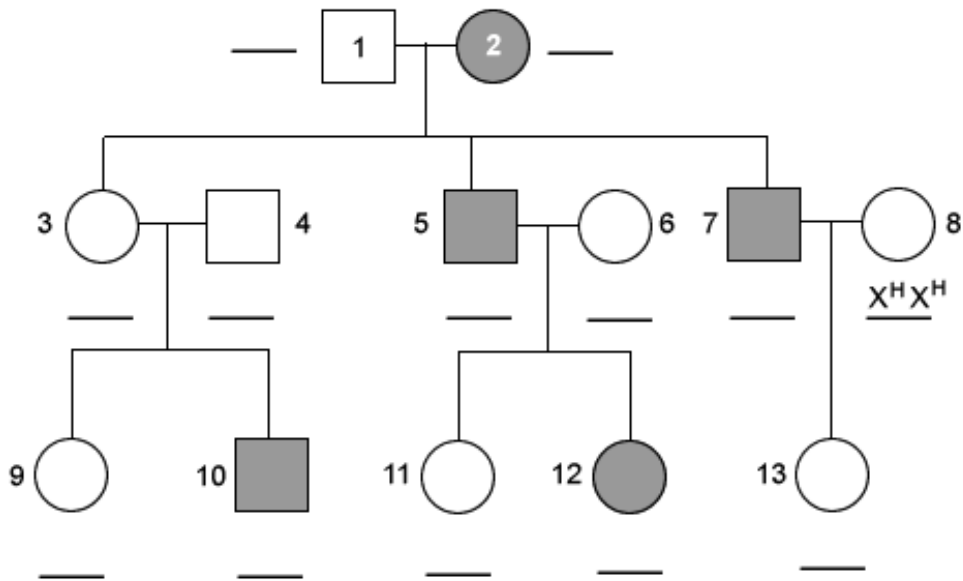
1) Hemophilia is a recessive sex-linked disorder located on the X chromosome where a person's body cannot control blood clotting or coagulation. Write in the genotypes on the line next to / below each individual.



For all phenotype questions, on the first line write: male or female and the second line write: normal, carrier, hemophilia.

- 2) What is the phenotype of individual 2? _____
- 3) What is the phenotype of individual 4? _____
- 4) What is the phenotype of individual 5? _____
- 5) What is the phenotype of individual 7? _____
- 6) What is the phenotype of individual 9? _____
- 7) What is the phenotype of individual 10? _____
- 8) What is the phenotype of individual 11? _____
- 9) What is the phenotype of individual 12? _____

10) Fragile-X syndrome is a recessive sex-linked disorder located on the X chromosome. Below is a pedigree tracing the passing of the fragile-X syndrome gene through 3 generations. Write in the genotypes on the line next to / below each individual.



For all phenotype questions, on the first line write: male or female and the second line write: normal, carrier, fragile-X.

- 11) What is the phenotype of individual 1? _____
 12) What is the phenotype of individual 4? _____
 13) What is the phenotype of individual 6? _____

14) Below is a recessive sex-linked pedigree tracing the red-green colorblindness gene located on the X chromosome. Write in the genotypes on the line next to / below each individual.

