

Human Inheritance

◆ Understanding Main Ideas

Fill in the Punnett squares for dimples, a trait controlled by a dominant allele (A), and colorblindness, a trait controlled by a recessive sex-linked allele (B). Then answer the questions that follow.

5. Does either the mother or the father in A have dimples?

6. What percentage of children are likely to have dimples?

A: Dimples

	D	d
d	1. _____	2. _____
d	3. _____	4. _____

B: Colorblindness

	X ^c	Y
X ^c	7. _____	8. _____
X ^c	9. _____	10. _____

11. Is either the mother or father in B colorblind?

12. What percentage of female children are likely to be colorblind?

13. What percentage of male children are likely to be colorblind?

◆ Building Vocabulary

Fill in the blank to complete each statement.

14. Three or more forms of a gene that code for a single trait are called _____.

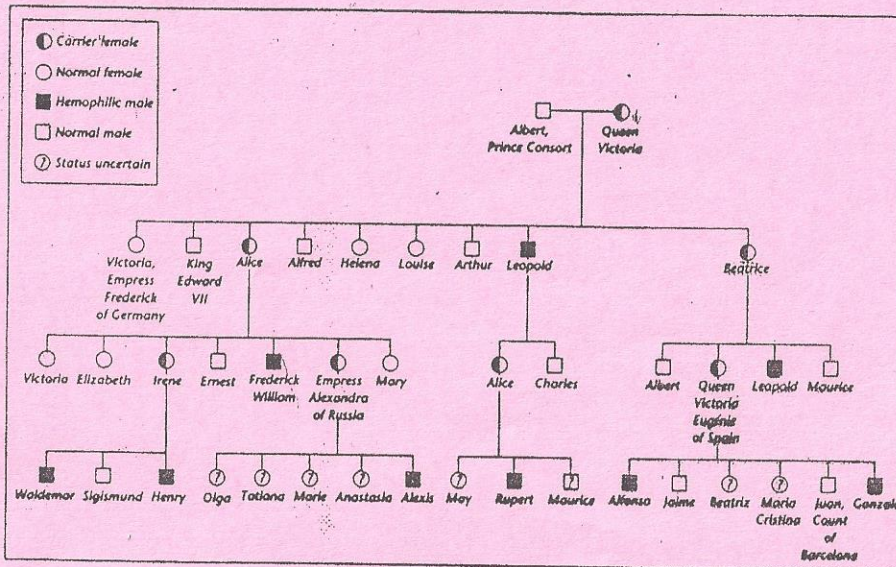
15. _____ are alleles passed from parent to child on a sex chromosome.

16. A(n) _____ is a person who has one recessive allele for a trait and one dominant allele for the same trait.

17. A(n) _____ is a chart that tracks which members of a family have a particular trait.

Pedigrees of the Rich and Famous

The pedigree of Queen Victoria of England shown below is often used as an example of sex-linked inheritance. Victoria was a carrier of hemophilia, a sex-linked disorder that is controlled by a recessive allele. The blood of a person with hemophilia clots very slowly or not at all because the person does not produce one of the proteins needed for blood clotting. Victoria passed the hemophilia allele on to her son Leopold, who had the disease, and to two of her daughters, who were carriers. The allele then passed through successive generations of Victoria's family, as the pedigree below shows.



Answer the following questions on a separate sheet of paper.

1. Which of Victoria's children were carriers of the hemophilia allele?
2. Which of Victoria's children passed the hemophilia allele on to Empress Alexandra of Russia?
3. Which of Victoria's children passed the hemophilia allele on to Queen Victoria of Spain?
4. Assume that a direct descendant of Maria Cristina, daughter of Queen Victoria Eugénie of Spain, has just been found to have had hemophilia. How would this change Maria Cristina's status?
5. Explain why males are more likely than females to have hemophilia.