

**CHAPTER 17****MODERN GENETICS****SECTION**  
**17-1** **Human Inheritance**  
(pages 588-594)

*This section tells why some traits in people have many possible phenotypes. It also describes the tools scientists use to learn how traits are inherited in families.*

**► Traits Controlled by Single Genes (pages 588-589)**

1. The probability that two heterozygous parents for widow's peak will have a child with a straight hairline is \_\_\_\_\_ percent.
2. Is the following sentence true or false? Smile dimples are caused by the recessive allele of a gene. \_\_\_\_\_

**► Multiple Alleles (page 589)**

3. A gene with three or more alleles for a single trait has \_\_\_\_\_.
4. Is the following sentence true or false? Even though a gene has multiple alleles, a person can carry only two of those alleles. \_\_\_\_\_
5. Complete the table by writing all possible combinations of alleles for each blood type.

Blood Types	
Blood Type	Combination of Alleles
A	or
B	or
AB	
O	

## **CHAPTER 17, Modern Genetics** *(continued)*

### ► **Traits Controlled by Many Genes** (page 590)

6. Why do some human traits, such as height and skin color, show a large number of phenotypes? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. Is the following sentence true or false? Skin color is controlled by more than one gene. \_\_\_\_\_

### ► **The Effect of Environment** (page 590)

8. The effects of genes are often altered by the \_\_\_\_\_.
9. What environmental factor contributes to the fact people have grown taller over time? \_\_\_\_\_

### ► **Male or Female?** (page 591)

10. Is the following sentence true or false? Genes on chromosomes determine whether a baby is a boy or a girl. \_\_\_\_\_
11. Females have two \_\_\_\_\_ chromosomes. Males have one \_\_\_\_\_ chromosome and one \_\_\_\_\_ chromosome.
12. Circle the letter of each sentence that is true about the sex chromosomes.
- a. All eggs have one X chromosome.
  - b. Half of a male's sperm cells have an X chromosome.
  - c. None of a male's sperm cells have a Y chromosome.
  - d. The egg determines the sex of the child.

► **Sex-Linked Genes** (pages 592–593)

13. Genes on the X and Y chromosomes are called \_\_\_\_\_.
14. Why are males more likely than females to have a sex-linked trait that is recessive? \_\_\_\_\_
15. Is the following question true or false? A carrier for colorblindness is colorblind. \_\_\_\_\_
16. Why is a son who receives the allele for colorblindness from his mother always going to be colorblind? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

► **Pedigrees** (pages 593–594)

17. A chart or “family tree” that tracks which members of a family have a certain trait is called a(n) \_\_\_\_\_.
18. Is the following sentence true or false? On a pedigree, a circle represents a male. \_\_\_\_\_

**SECTION** **Human Genetic Disorders**  
**17–2** (pages 595–599)

*This section describes how changes in the DNA of some genes have affected certain traits in humans.*

► **Introduction** (page 595)

1. An abnormal condition that a person inherits through genes or chromosomes is called a(n) \_\_\_\_\_.
2. What causes genetic disorders? \_\_\_\_\_  
 \_\_\_\_\_