Pretest: Genetics and Heredity

Read each question. Circle the letter of the correct answer.

1. Which technique is used to separate DNA fragments by their size?

A. gene cloning

B. gel electrophoresis

C. genetic engineering

D. nucleotide sequencing

2. Which of these are bacterial enzymes that cut the DNA of viruses?

A. bacterial helicases

B. mapping enzymes

C. restriction enzymes

D. DNA polymerases

3. What is the term for when an organism has two different alleles at a particular locus?

A. purebred

B. dominant

C. recessive

D. heterozygous

4. What is the term for a cross that involves just one trait, such as pod shape?

A. test cross

B. dihybrid cross

C. monohybrid cross

D. homozygous cross

5. Polymerase chain reaction (PCR) is a technique used with DNA. What does PCR do to DNA?

A. isolates DNA

B. amplifies DNA

C. translates DNA

D. preserves DNA

6. If a pea plant were homozygous recessive for height, how would its alleles be represented?

A. tt

B. tT

C. Tt

D. TT

7. Which of these influences gene expression?

A. pedigree

B. karyotype

C. environment

D. phenotype

8. Phenotype is influenced by many factors, including the chromosome upon which a gene is located, ranges of dominance, and _____.

A. pedigree

B. karyotype

C. phenotype

D. environment

9. At fertilization, what happens to the sex cells?

A. Their nuclei fuse to form one nucleus.

B. They retain half of their chromosomes.

C. Half of the cells copy their DNA twice.

D. One becomes an egg, and one becomes a sperm cell.

10. Which of these is the term for the two similar chromosomes one inherits from parents?

A. sister chromatids

B. sex chromosomes

C. homozygous alleles

D. homologous chromosomes

11. Mendel was able to identify predictable patterns of heredity. He succeeded mainly because he chose to study traits that _____.

A. could be diluted

B. had only two forms

C. tended to be recessive

D. were always dominant

12. During what stage of meiosis does crossing over occur?

A. prophase I of meiosis I

B. telophase I of meiosis I

C. anaphase II of meiosis II

D. metaphase II of meiosis II

13. Which law states that organisms inherit two copies of each gene and donate one copy to each of their offspring

A. law of inheritance

B. law of segregation

C. law of genetic linkage

D. law of independent assortment

14. Which of these is a result of the study of gene linkage?

A. The relative distances between genes can be calculated.

B. The specific characteristics of offspring can be predicted.

C. The exact order of genes on a chromosome can be found.

D. The precise genes in the human genome have been mapped.

15. Which conclusion was a result of Mendel's observations?

A. Organisms that have intermediate features are self-pollinating.

B. Organisms that give rise to purebreds are genetically superior.

C. Organisms inherit two copies of each gene, one from each parent.

D. Organisms that self-pollinate do not have "either-or" features.