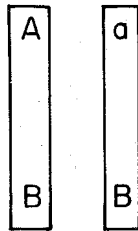


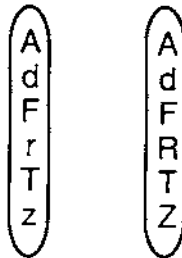
1. Based on the gene chromosome theory, the law of independent assortment assumes that certain genes are
- (1) formed by chromosomal mutations
 - (2) located on the same chromosome
 - (3) formed in the cytoplasm
 - (4) **located on separate chromosomes**

2. The diagram below represents a pair of homologous chromosomes. Which allelic combination represents the heterozygous condition for a trait?



- (1) *Aa*
- (2) *BB*
- (3) *AB*
- (4) *aB*

3. In the diagram below of two homologous chromosomes, what do *r* and *R* represent?

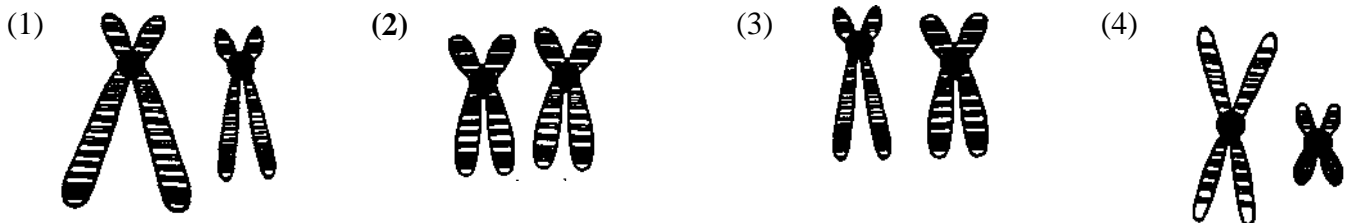


- (1) **two different alleles**
- (2) two gametes that can form a zygote
- (3) two identical alleles
- (4) two chromosomes in a hybrid pea plant

4. According to the gene-chromosome theory, which statement is true?

- (1) Genes are present only on human chromosomes.
- (2) **Genes are arranged in a linear sequence on a chromosome.**
- (3) Alleles are located on nonhomologous chromosomes.
- (4) Mutations occur mainly in sex cells

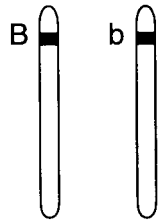
5. Which diagram represents a pair of homologous chromosomes?



6. Hereditary information for most traits is generally located in

- (1) **genes found on chromosomes**
- (2) chromosomes found on genes
- (3) the mitochondria of gametes
- (4) the lysosomes in the cytoplasm

7. The diagram below represents a pair of homologous autosomes.



The letters *B* and *b* represent genes for a certain trait. These letters also represent

- (1) **an allelic pair of genes**
- (2) linked genes
- (3) genes for sex determination
- (4) homozygous genes

8. The mechanism that accounts for the separation and recombination of the "hereditary factors" proposed by Mendel is best described in the

- (1) concept of multiple alleles
- (2) concept of gradualism
- (3) theory of natural selection
- (4) **gene-chromosome theory**

9. According to the gene-chromosome theory, the two alleles associated with a single trait are located at

- (1) **corresponding positions on homologous chromosome**
- (2) corresponding positions on non-homologous chromosomes
- (3) different positions on homologous chromosomes
- (4) different positions on non-homologous chromosomes

10. The hereditary factors proposed by Mendel are now known to be composed of

- (1) ATP
- (2) lipids
- (3) starch
- (4) **DNA**

11. Which statement is part of the gene-chromosome theory?

- (1) Chromosomes migrate during mitotic cell division to form gametes.
- (2) Alleles governing the same trait are found on the same chromosome.
- (3) **Alleles governing the same trait are found on homologous chromosomes.**
- (4) Chromosomes link during meiotic cell division to double the chromosome number.

12. Which chromosome pair below best illustrates the gene-chromosome theory?

- (1)
- (2)
- (3)
- (4)

13. The gene-chromosome theory states that

- (1) **chromosomes from both parents always have identical genes**
- (2) genes exist at definite loci in a linear sequence on chromosomes
- (3) homologous chromosomes do not have alleles
- (4) Mendel's principles no longer apply to genetics

14. The fact that people with red hair usually have freckles is an illustration of

- (1) **gene linkage**
- (2) independent assortment
- (3) intermediate inheritance
- (4) dominance