

**SECTION 12-1 REVIEW**

# CHROMOSOMES AND INHERITANCE

**VOCABULARY REVIEW** Distinguish between the terms in each of the following pairs of terms.

1. X-linked gene, Y-linked gene \_\_\_\_\_  
\_\_\_\_\_
2. germ-cell mutation, somatic mutation \_\_\_\_\_  
\_\_\_\_\_
3. translocation, nondisjunction \_\_\_\_\_  
\_\_\_\_\_
4. nucleotide deletion, nucleotide insertion \_\_\_\_\_  
\_\_\_\_\_
5. substitution, frame shift mutation \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. Genes that belong to the same linkage group tend to be
 

a. located on different chromosomes.	c. found only in males.
b. inherited together.	d. found only in somatic cells.
- \_\_\_\_\_ 2. Two genes that are one map unit apart are separated by crossing-over
 

a. 1% of the time.	b. 20% of the time.	c. 50% of the time.	d. 100% of the time.
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- \_\_\_\_\_ 3. Mutations that can be inherited arise in
 

a. somatic cells.	b. body cells.	c. germ cells.	d. skin cells.
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- \_\_\_\_\_ 4. Which of the following sequences could result from an inversion of the sequence GAGACATT?
 

a. GAGCATT	b. GTGACATT	c. CTCTGATT	d. GATACAGT
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- \_\_\_\_\_ 5. Which of the following is a point mutation that does not produce a frame shift?
 

a. substitution	b. insertion	c. deletion	d. inversion
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**SHORT ANSWER** Answer the questions in the space provided.

1. In humans and fruit flies, which parent determines the sex of the offspring? Explain why. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  
2. How did Morgan determine that eye color in *Drosophila* is an X-linked trait? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  
3. Explain why traits that are controlled by genes on the same chromosome do not always appear in the expected ratio in offspring. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  
4. **Critical Thinking** Would a frame shift mutation have a more serious effect if it occurred near the beginning of a gene or the end of a gene? Explain your answer. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Use the data in the table below to indicate the position of these genes on the chromosome map shown below. Assuming that the gene for white eyes has a chromosome map unit number of 1, write the map unit numbers above each gene's position on the chromosome map.

The *Drosophila* genes for white eyes, vermilion eyes, and miniature wings are located on the same chromosome. The table shows how often these genes are separated by crossing-over.

Genes	Frequency of crossing-over
Vermilion eyes and miniature wings	3%
White eyes and vermilion eyes	30%
White eyes and miniature wings	33%

