

CHAPTER

6

VOCABULARY & NOTES WORKSHEET

Heredity

By studying the Vocabulary and Notes listed for each section below, you can gain a better understanding of this chapter.

SECTION 1

Vocabulary

In your own words, write a definition for each of the following terms in the space provided.

1. heredity _____

2. self-pollinating plant _____

3. true-breeding plant _____

4. dominant trait _____

5. recessive trait _____

6. genes _____

7. alleles _____

Heredity, continued

8. Punnett square _____

9. genotype _____

10. phenotype _____

11. probability _____

Notes

Read the following section highlights. Then, in your own words, write the highlights in your ScienceLog.

- Heredity is the passing on of traits from parents to offspring.
- Traits are inherited forms of characteristics.
- Gregor Mendel used pea plants to study heredity.
- Mendel's pea plants were self-pollinating. They contained both male and female reproductive structures. They were also true breeding, always producing offspring with the same traits as the parents.
- Offspring inherit two sets of instructions for each characteristic, one set from each parent.
- The sets of instructions are known as genes.
- Different versions of the same gene are known as alleles.
- If both the dominant allele and the recessive allele are inherited for a characteristic, only the dominant allele is expressed.
- Recessive traits are apparent only when two recessive alleles for the characteristic are inherited.
- A genotype is the combination of alleles for a particular trait.
- A phenotype is the physical expression of the genotype.
- Probability is the mathematical chance that an event will occur. It is usually expressed as a fraction or as a percentage.

Heredity, continued

SECTION 2

Vocabulary

In your own words, write a definition for each of the following terms in the space provided.

1. sex cells _____

2. homologous chromosomes _____

3. meiosis _____

4. sex chromosomes _____

Notes

Read the following section highlights. Then, in your own words, write the highlights in your ScienceLog.

- Genes are located on chromosomes.
- Most human cells contain 46 chromosomes, or 23 pairs.
- Each pair contains one chromosome donated by the mother and one donated by the father. These pairs are known as homologous chromosomes.
- Meiosis produces sex cells, eggs, and sperm.
- Sex cells have half the usual number of chromosomes.
- Sex chromosomes contain genes that determine an offspring's sex.
- Females have two X chromosomes, and males have one X chromosome and one Y chromosome.

CHAPTER

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CHAPTER REVIEW WORKSHEET

Heredity**USING VOCABULARY**

To complete the following sentences, choose the correct terms from each set of terms listed below, and write the term in the space provided.

1. Sperm and eggs are known as _____ .
(sex cells or sex chromosomes)
2. The _____ , the expression of a trait, is determined
by the _____ , the combination of alleles.
(genotype/phenotype or phenotype/genotype)
3. _____ produces cells with half the normal number of
chromosomes. (Meiosis or Mitosis)
4. Different versions of the same genes are called _____ .
(sex cells or alleles)
5. A _____ plant can pollinate its own eggs.
(self-pollinating or true-breeding)

UNDERSTANDING CONCEPTS**Multiple Choice**

6. Genes are found on
 - a. chromosomes.
 - b. alleles.
 - c. proteins.
 - d. anthers.
7. The process that produces sex cells is
 - a. mitosis.
 - b. photosynthesis.
 - c. meiosis.
 - d. probability.
8. The passing of traits from parents to offspring is
 - a. probability.
 - b. heredity.
 - c. recessive.
 - d. meiosis.
9. If you cross a white flower (with the genotype *pp*) with a purple flower (with the genotype *PP*), the possible genotypes in the offspring are:
 - a. *PP* and *pp*.
 - b. all *Pp*.
 - c. all *PP*.
 - d. all *pp*.

Heredity, continued

10. For the above cross, what would the phenotypes be?

- a. all white
- b. all tall
- c. all purple
- d. 1/2 white, 1/2 purple

11. In meiosis,

- a. the chromosomes are copied twice.
- b. the nucleus divides once.
- c. four cells are produced from a single cell.
- d. All of the above

12. Probability is

- a. always expressed as a ratio.
- b. a 50% chance that an event will occur.
- c. the mathematical chance that an event will occur.
- d. a 3:1 chance that an event will occur.

Short Answer

13. Which sex chromosomes do females have?

Which do males have?

14. In your own words, give a one- or two-sentence definition of the term *recessive trait*.

15. How are sex cells different from other body cells?

Heredity, continued

CONCEPT MAPPING

16. Use the following terms to create a concept map: *meiosis, eggs, cell division, X chromosome, sex cells, sperm, mitosis, Y chromosome.*



Heredity, continued

CRITICAL THINKING AND PROBLEM SOLVING

Write one or two sentences to answer each of the following questions:

17. If a child has blue eyes and both her parents have brown eyes, what does that tell you about the trait for blue eyes? Explain your answer.

18. Why is meiosis important for sexual reproduction?

19. Gregor Mendel used only true-breeding plants. If he had used plants that were not true breeding, do you think he would have discovered dominant and recessive traits? Why or why not?

Heredity, continued

MATH IN SCIENCE

20. Assume that Y is the dominant allele for yellow seeds and y is the recessive allele for green seeds. What is the probability that a pea plant with the genotype Yy crossed with a pea plant with the genotype yy will have offspring with the genotype yy ?

INTERPRETING GRAPHICS

Examine the Punnett square below, and then answer the following questions.

	<i>T</i>	<i>t</i>
<i>T</i>	<i>TT</i>	<i>Tt</i>
<i>t</i>	<i>Tt</i>	<i>tt</i>

Heredity, continued

21. What is the unknown genotype?

22. If T represents the allele for tall pea plants, and t represents the allele for short pea plants, what is the phenotype of each parent and of the offspring?

23. If each of the offspring were allowed to self-fertilize, what are the possible genotypes in the next generation?

24. What is the probability of each genotype in item 23?

NOW WHAT DO YOU THINK?

Take a minute to review your answers to the ScienceLog questions at the beginning of the chapter. Have your answers changed? If necessary, revise your answers based on what you have learned since you began this chapter. Record your revisions in your ScienceLog.