

Genetics: The Science of Heredity ▪ *Guided Reading and Study*

Probability and Heredity

This section explains what probability is and how the laws of probability can be used in the study of genetics.

Use Target Reading Skills

After you read the section, reread the paragraphs that contain definitions of Key Terms. Use all the information you have learned to write a definition of each Key Term in your own words.

Principles of Probability

1. A number that describes how likely it is that an event will occur is called _____.
2. Circle the letter of each answer that equals the probability that a tossed coin will land heads up.
 - a. 1 in 2
 - b. $\frac{1}{2}$
 - c. 50 percent
 - d. 20 percent
3. Is the following sentence true or false? When you toss a coin 20 times, you will always get 10 heads and 10 tails. _____
4. If you toss a coin five times and it lands heads up each time, can you expect the coin to land heads up on the sixth toss? Explain.

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Probability and Heredity *(continued)*



Probability and Genetics





5. When Mendel crossed two hybrid plants for stem height (Tt), what results did he always get?

6. Mendel realized that the principles of probability could be used to _____ the results of genetic crosses.

7. A chart that shows all the possible combinations of alleles that can result from a genetic cross is called a(n) _____.

8. Write in the alleles of the parents and the possible allele combinations of the offspring in the Punnett square below.

| | |
|---|--|
|  | <p>_____</p> |
| <p>_____</p> |  |
| <p>_____</p> | <p>_____</p> |

| | |
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Phenotypes and Genotypes

Match the term with its definition.

| Term | Definition |
|----------------------|---|
| ___ 9. phenotype | a. Describes an organism with two identical alleles for a trait |
| ___ 10. genotype | b. An organism's physical appearance, or visible traits |
| ___ 11. homozygous | c. An organism's genetic makeup, or allele combinations |
| ___ 12. heterozygous | d. Describes an organism that has two different alleles for a trait |

13. Mendel used the term _____ to describe heterozygous pea plants.

Codominance

14. Is the following sentence true or false? In codominance, the alleles are neither dominant nor recessive. _____
15. In cattle, red hair and white hair are codominant. Cattle with both white hair and red hair are _____.