

Name _____ Class _____ Date _____

ACTIVE READING WORKSHEETS

FUNDAMENTALS OF GENETICS

Genetic Crosses

Read the passage below, which covers topics from your textbook. Answer the questions that follow.

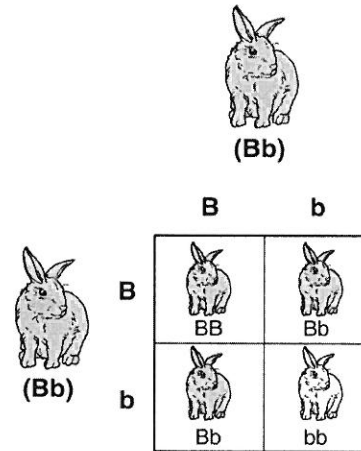
Biologists use a diagram called a **Punnett square** to aid them in predicting the probable distribution of inherited traits in the offspring.

In rabbits, the allele for black coat color (*B*) is dominant over the allele for brown coat color (*b*). The Punnett square below shows the predicted results of crossing two rabbits that are both heterozygous (*Bb*) for coat color. As you can see, 1/4 (25 percent) of the offspring are predicted to have the genotype *BB*, 1/2 (50 percent) are predicted to have the genotype *Bb*, and 1/4 (25 percent) are predicted to have the genotype *bb*. Thus, 3/4 (75 percent) of the offspring resulting from this cross are predicted to have a black coat. One-fourth (25 percent) of the offspring are predicted to have a brown coat. The ratio of the genotypes that appear in offspring is called the **genotypic ratio**. The ratio of the offspring's phenotypes is called the **phenotypic ratio**.

Read each question and write your answer in the space provided.

SKILL: Interpreting Graphics

- The figure below is a Punnett square. Using the information provided in the passage and the figure, answer the questions that follow.



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a. What is the purpose of this figure?

b. The passage states that both parents are heterozygous for coat color. What does this statement mean?

c. How can you use the information in the figure to determine the coat color of the parents?

d. What are the genotypes of predicted homozygous offspring?

e. What is the probable genotypic ratio of the cross represented in the graphic?

f. What is the probable phenotypic ratio of the cross represented in the graphic?

Read the question and write your answer in the space provided.

SKILL: Vocabulary Development

2. The prefix *pheno-* is derived from a Greek term meaning “to show.” How does knowledge of this word part aid in decoding the term *phenotype*?

Circle the letter of the word or phrase that best completes the statement.

3. Another Punnett square yielded 2 black: 2 brown. This is an example of a

- a. genotypic ratio.
- b. probability equation.
- c. percentage.
- d. phenotypic ratio.