

## Genetics

Name: \_\_\_\_\_

### Genes & Traits Benchmark Review

Period: \_\_\_\_\_

Use your brain to answer the following questions, then check your work using Chapter 6.

Complete each of the following sentences by choosing the correct term from the word bank.

genotype      alleles      phenotype      meiosis

1. The \_\_\_\_\_ is the expression of a trait and is determined by the combination of alleles called the \_\_\_\_\_.

2. \_\_\_\_\_ produces cells that have half the normal number of chromosomes found in body cells.

3. Different versions of the same genes are called \_\_\_\_\_.

\_\_\_\_\_ 4. Genes carry information that determines

- a. alleles.      b. ribosomes.      c. chromosomes.      d. traits.

\_\_\_\_\_ 5. The process that produces sex cells is

- a. mitosis.      b. photosynthesis.      c. meiosis.      d. probability.

\_\_\_\_\_ 6. A male guinea pig that has long, orange fur mated with a female guinea pig that has short, black fur. The litter consisted of guinea pigs that have only long, black fur. Which of the following is probably dominant for both traits?

- a. short, orange fur      b. long, orange fur      c. long, black fur      d. short, black fur

\_\_\_\_\_ 7. Which of the following statements about meiosis is true?

- a. Chromosomes are copied twice.      c. Four cells are produced from a single cell.  
b. The nucleus divides once.      d. Two cells are produced from a single cell.

Use the Punnett square below to answer the next three questions.

	?	?
T	TT	TT
t	Tt	Tt

8. What is the unknown genotype? \_\_\_\_\_

9. 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?

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

11. Punnett squares can be used to predict many traits of offspring based on the traits of the offspring's parent. Why is it difficult to use a Punnett square to determine certain traits, such as eye color?

12. In pea plants, the allele for yellow seeds, Y, is dominant to the allele for green seeds, y. If a plant that has the genotype Yy is crossed with a plant that has the genotype yy, what is the probability that the offspring will have green seeds? Show your work below.