Name_____ Class_____ Date_____

Section 11–2 Probability and Punnett Squares (pages 267–269)

This section explains how geneticists use the principles of probability.

Genetics and Probability (page 267)

1. The likelihood that a particular event will occur is called _____.

2. Circle the letter of the probability that a single coin flip will come up heads.

a. 100 percent **b.** 75 percent **c.** 50 percent **d.** 25 percent

3. Is the following sentence true or false? The past outcomes of coin flips greatly affect the outcomes of future coin flips. _____

4. Why can the principles of probability be used to predict the outcomes of genetic crosses? _____

_____

_____

Punnett Squares (page 268)

5. How do geneticists use Punnett squares? _____

_____

_____

6. Complete the Punnett square to show the possible gene combinations for the F_2 offspring.

PUNNETT SQUARE FOR *Tt* × *Tt*

	T	***t***
T		
t		

Match the terms with the definitions.

Definitions

_____ **7.** Organisms that have two identical alleles for a particular trait (*TT* or *tt*)

_____ **8.** Organisms that have two different alleles for the same trait (*Tt*)

_____ **9.** Physical characteristic of an organism (tall)

_____ **10.** Genetic makeup of an organism (*Tt*)

Terms

a. genotype

b. homozygous

c. phenotype

d. heterozygous

Name_____ Class_____ Date_____

11. Is the following sentence true or false? Homozygous organisms are true-breeding for a particular trait. _____

12. Is the following sentence true or false? Plants with the same phenotype always have the same genotype. _____

Probability and Segregation (page 269)

13. Circle the letter of each sentence that is true about probability and segregation.

a. In an F_1 cross between two hybrid tall pea plants (*Tt*), ½ of the F_2 plants will have two alleles for tallness (*TT*).

b. The F_2 ratio of tall plants to short plants produced in a cross between two hybrid tall pea plants (*Tt*) is 3 tall plants for every 1 short plant.

c. Mendel observed that about ¾ of the F_2 offspring showed the dominant trait.

d. Segregation occurs according to Mendel's model.

14. In Mendel's model of segregation, what was the ratio of tall plants to short plants in the F_2 generation? _____

Probabilities Predict Averages (page 269)

15. Is the following sentence true or false? Probabilities predict the precise outcome of an individual event. _____

16. How can you be sure of getting the expected 50 : 50 ratio from flipping a coin?

_____

17. The _____ the number of offspring from a genetic cross, the closer the resulting numbers will get to expected values.

18. Is the following sentence true or false? The ratios of an F_1 generation are more likely to match Mendelian predicted ratios if the F_1 generation contains hundreds or thousands of individuals. _____

Reading Skill Practice

Taking notes helps the reader focus on the main ideas and the vocabulary of the reading. Take notes while rereading Section 11–2. Note the main ideas and the boldface terms in the order in which they are presented. You may copy the ideas word for word or summarize them using your own words. Do your work on a separate sheet of paper.