
Unit 5: Worksheet 7 Basic Genetics

Introduction:

The Punnett square is a chart, used by geneticists, to help determine the chances of an offspring receiving a particular characteristic. The Punnett square will not tell you how many offspring will develop, or the order in which they will likely be born. In order to use the Punnett Square the genes must be represented by the letters of the alphabet. In sample 1, use the following letters: B = brown hair and b = blonde hair.

Example: Bb X Bb represents the parents that are both heterozygous for Brown hair. These parents produce special reproductive cells called gametes as a result of meiosis. These gametes are: B and b, B and b. Each parent produces 2 gametes.

Punnett Square:

Notice where the gametes for each parent are placed. Now combine these gametes and fill in the appropriate box. Each box must contain two letters, one from the male and one from the female.

Table 7.1

Gametes	B	b
B		
b		

Answer the following questions based on the data from Table 7.1

1. What are the chances of the offspring being homozygous brown haired?

2. What are the chances of the offspring having blonde hair? _____

3. What are the chances of the offspring being heterozygous brown haired? _____

4. What is the phenotypic ratio? _____

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5. What is the dominant gene? _____
6. What does the term heterozygous refer to? _____
7. If curly hair is dominant to straight hair, what letters will we use to show these genes?
Curly = _____ Straight = _____
8. If a heterozygous curly haired male marries a straight haired female, what would there genotypes look like using the letters in question 7? _____ X _____
9. List the gametes for the male parent? _____ and _____
10. List the gametes for the female parent? _____ and _____
11. Work out the Punnett square in Table 7.2 and answer the questions that follow.

Table 7.2

Gametes		

12. What are the chances of the offspring being homozygous curly haired?

13. What are the chances of the offspring having straight hair? _____
14. What are the chances of the offspring being heterozygous curly haired? _____
15. What is the phenotypic ratio? _____
16. What is the recessive gene? _____
17. If yellow pods are dominant to green pods, what letters will we use to show these genes?
Yellow = _____ Green = _____

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18. If a heterozygous yellow male is crossed with a heterozygous yellow female, what would their genotypes look like using the letters in question 20?

_____ X _____.

19. What would be the gametes for the male parent? _____ and _____

20. What would be the gametes for the female parent? _____ and _____

21. Work out the Punnett square in Table 7.3 and answer the questions that follow.

Table 7.3

Gametes		

22. What are the chances of the offspring being homozygous green? _____

23. What are the chances of the offspring being yellow? _____

24. What are the chances of the offspring being heterozygous yellow? _____

25. What is the phenotypic ratio? _____

26. What is the recessive gene? _____