

Name: \_\_\_\_\_  
Mr. Willis  
Biology: \_\_\_\_\_  
Date: \_\_\_\_\_

Unit VII  
Biology – Genetics  
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# VII

## Punnett Square Practice Problems

1. In pea plants, spherical seeds (S) are dominant to dented seeds (s). In a cross of two plants that are heterozygous for the seed shape trait, what percentage of the offspring should have spherical seeds? Complete the Punnett Square below to find out.

Both Parents' phenotype \_\_\_\_\_

Parent 1 genotype \_\_\_\_\_

Parent 2 genotype \_\_\_\_\_


Percentage of offspring with spherical seeds \_\_\_\_\_

2. In dogs, there is a hereditary deafness caused by a recessive gene, (d). A deaf female is crossed with a homozygous hearing male. Complete the Punnett Square below to determine the offspring's genotypes.

Mother's genotype \_\_\_\_\_

Father's genotype \_\_\_\_\_


Offspring's genotypes? \_\_\_\_\_

3. If two hearing dogs were both Dd, what kind of gametes could each produce?

Gametes \_\_\_\_\_ and \_\_\_\_\_


Ratio for phenotype \_\_\_\_\_

4. In humans, brown eyes (B) are dominant over blue (b). A brown-eyed man marries a blue-eyed woman and they have three children, two children have brown eyes and one has blue eyes. Complete the Punnett Square that illustrates this marriage.

If blue is recessive, what must the woman's genotype be? \_\_\_\_\_

What kind of gametes can she produce? \_\_\_\_\_ and \_\_\_\_\_

If the man has brown eyes, but has a blue-eyed child what must his genotype be? \_\_\_\_\_

What kind of gametes can he produce? \_\_\_\_\_ and \_\_\_\_\_


Genotypic ratio \_\_\_\_\_

5. In pea plants, tall pea plants are dominant (T) over short pea plants (t). Predict the percentage of different genotypes and phenotypes of the offspring of a cross between a homozygous tall pea plant and a homozygous short pea plant.

Parent 1 genotype \_\_\_\_\_ Parent 2 genotype \_\_\_\_\_

Parent 1 gametes \_\_\_\_\_ and \_\_\_\_\_ Parent 2 gametes \_\_\_\_\_ and \_\_\_\_\_


Percent genotype \_\_\_\_\_

Percent phenotype \_\_\_\_\_

6. In rabbits, brown hair (B) is dominant to white (b). Short hair (H) is dominant to long hair (h). Complete the 16-box Punnett Square for these two traits if one parent is heterozygous brown hair and heterozygous short-haired. The other parent is homozygous white hair and heterozygous short-haired. Then write out the possible genotypes and phenotypes for the offspring.

Parent 1 genotype \_\_\_\_\_ Parent 2 genotype \_\_\_\_\_  
 Parent 1 gametes \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_  
 Parent 2 gametes \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_


Genotype: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Phenotypes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7. Brown eye (B) color is dominant to blue (b). Brown hair (H) is dominant to blond hair (h). The father is heterozygous for brown eyes and has blonde hair. The mother has blue eyes and is homozygous for brown hair. Predict the possible genotypes and phenotypes that the offspring could have.

Father's genotype \_\_\_\_\_ Mother's genotype \_\_\_\_\_  
 Possible father gametes \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_  
 Possible mother gametes \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_


Genotype: \_\_\_\_\_  
 \_\_\_\_\_

Phenotypes: \_\_\_\_\_  
 \_\_\_\_\_