

Name _____ Date _____ Period _____

Punnett Square Questions

1. In tobacco plants, the gene for green leaves is dominant. The gene for white leaves is recessive. A true-breeding green female is crossed with a true-breeding white male.

- a. Choose letters for the two alleles.
- b. What are the genotypes of the parents?
- c. Make a Punnett square of the cross.

- d. What is the ratio of the genotypes?
- e. What is the ratio of the phenotypes?

2. In rats, the gene for long tails is dominant to the gene for short tails. A hybrid long-tailed male is crossed with a short-tailed female.

- a. Choose letters for the two alleles.
- b. What are the genotypes of the parents?
- c. Make a Punnett square of the cross.

- d. What is the ratio of the genotypes?
- e. What is the ratio of the phenotypes?

3. In pea plants, the gene for yellow seeds is dominant to the gene for green seeds. Two hybrid plants are crossed.

- a. Choose letters for the two alleles.
- b. What are the genotypes of the parents?
- c. Make a Punnett square of the cross.

- d. What is the ratio of the genotypes?
- e. What is the ratio of the phenotypes?

4. In humans, PTC tasting ability (T) is dominant to non-tasting (t). A woman who cannot taste PTC and a man who cannot taste PTC have children. Will any of the children be able to taste PTC? Explain your answer by making a Punnett Square of the cross.

5. If two parents with dominant phenotypes have an offspring with a recessive phenotype, what are the genotypes of the parents?

6. Most members of one animal species are brown, but occasionally a black individual appears.

a. How could two brown parents produce a black offspring?

b. What is the genotype of the black offspring?

c. What are the possible genotypes of the black offspring's siblings?

d. Construct a Punnett Square to show the cross.

7. In the garden pea, the allele for green seed pods (*G*) is dominant to the allele for yellow seed pods (*g*), and the allele for round pod shape (*R*) is dominant to the allele for wrinkled pod shape (*r*). A plant homozygous for green seed pods and heterozygous for round pod shape is crossed with a plant that has yellow seed pods and wrinkled pod shape.

a. What are the genotypes of the parents?

b. Make a Punnett Square of the cross.

c. What is the genotypic ratio found in the offspring?

d. What is the phenotypic ratio found in the offspring?

8. A man and his wife are both known to be of the following genotype (EeDd). Free earlobes (E) are dominant to attached ear lobes (e) and Dimples (D) are dominant to not having dimples (d).

a. What are the genotypes of the parents?

b. Make a Punnett Square of the cross.

- c. What is the genotypic ratio found in the offspring?
- d. What is the phenotypic ratio found in the offspring?