

Punnett Squares Practice

1. Cross a hybrid yellow seed plant with a green seed plant.
2. In pea plants, smooth seeds (S) are dominant over wrinkled seeds (s). Predict the offspring resulting from the cross of a hybrid smooth seed plant with a purebred smooth seed plant.
3. Cross a wrinkled seed plant with a hybrid smooth seed plant.
4. Cross two wrinkled seed plants.
5. In horses, black color (B) is dominant over chestnut color (b). If a chestnut horse is mated to a purebred black horse, what are the possible genotypes and phenotypes of their offspring?
6. In humans, having a second toe longer than the other toes (T) is a trait that is dominant over having a big toe longer than the other toes (t). If a father has longer big toes and the mother has purebred longer second toes, what possible phenotypes and genotypes could their children have?
7. A father's earlobes are not attached, and his genotype is homozygous. The mother's earlobes are attached. Unattached earlobe (N) is the dominant trait and attached earlobe is the recessive trait (n). Could any of their children have attached earlobes?
8. In humans, dimpled cheeks (D) are dominant over smooth cheeks (d). What are the genotypes and phenotypes of a heterozygous father and a heterozygous mother? What possible genotypes and phenotypes could their children have?
9. A dog breeder wants to produce a beagle with long hair. In beagles, short hair is the dominant trait (S). What offspring phenotypes are possible if the breeder crosses a purebred shorthaired beagle with a longhaired beagle? To produce longhaired puppies every time, what parent genotypes would be needed?
10. In a famous experiment, Gregor Mendel discovered that when he crossed a tall pea plant (TT) with a short pea plant (tt) all of the offspring had a tall phenotype. But when he crossed these tall offspring with each other, some of their offspring were tall and some were short. Mendel was surprised by these results. Explain his observations using Punnett squares.
11. In watermelons, the trait of solid green color (G) is dominant over striped green color (g). What was the genotype of the female parent if the male parent was striped and all of the offspring are striped? Show your reasoning using a Punnett square.