

Name _____

Date _____

Punnett Squares and Monohybrid Cross

For each of the following problems, give the genotype of the parents, make a Punnett square and give the genotype ratio and phenotype ratio expected in the offspring.

1. For humans, **brown eyes** are dominant (**B**) over **blue eyes** (**b**). A heterozygous brown-eyed man marries a heterozygous brown-eyed female. What are the possible genotypes and phenotypes of the offspring?

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

2. **Cystic fibrosis** is a recessive genetic disorder. Ron is homozygous dominant (**FF**) and Nancy is a carrier (**Ff**) of cystic fibrosis. Use a Punnett square to predict the probability that one of their children will have cystic fibrosis.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

3. Patty is homozygous dominant for **freckles** (**SS**), while Charlie is homozygous for no freckles (**ss**). Fill in the Punnett square predicting the probability if their children will have freckles.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

4. Raquan has **brown eyes**, while Shyniece has **blue**. If brown eyes are known to be dominant, and blue eyes are recessive, use a Punnett square to predict their offspring. Assume Raquan doesn't carry a recessive allele.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

5. Larry and Lola Little have **Achondroplasia**, a form of dwarfism. Both are heterozygotes. Their son, Big Bob Little, is 7'1". Use a Punnett square to show how Big Bob got his genotype.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

6. Woody Guthrie, who wrote *This Land is Your Land*, was heterozygous for Huntington's disease (**Hh**). His wife was homozygous recessive and perfectly normal (**hh**). Huntington's disease is caused by a latent dominant gene, meaning that it is not phenotypically (physically) expressed until later in life. Dominant disease genes are expressed in homozygous dominant and heterozygous people (**HH** or **Hh**). Fill in a Punnett square for Woody and his wife.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

7. In Wakanda, **dreadlocks (D)** are dominant to **baldness (d)**. Cross a female who's bald with her husband, who is homozygous for dreads.

Parent genotype: _____ X _____

Genotypic ratio: _____

Phenotypic ratio: _____

