

Name \_\_\_\_\_

Date \_\_\_\_\_

### Warm-Up: Simple Monohybrid Cross

- Describe the **genotype** given. The first one is done for you.
  - DD *homozygous, dominant*
  - dd \_\_\_\_\_
  - Dd \_\_\_\_\_
  - ss \_\_\_\_\_
  - Yy \_\_\_\_\_
  - WW \_\_\_\_\_
- In humans, brown eye color (B), is dominant over blue eye color (b). What are the **phenotypes** of the following genotypes?
  - BB \_\_\_\_\_
  - bb \_\_\_\_\_
  - Bb \_\_\_\_\_
- The allele for dimples (D) is dominant to the allele for no dimples (d). A man heterozygous for dimples marries a woman who is also heterozygous for dimples.**
  - What is the man's genotype and the woman's genotype? \_\_\_\_\_
  - What is the man's phenotype and the woman's phenotype? \_\_\_\_\_
  - Do a cross to determine all potential dimple genotypes and phenotypes for the offspring of this man and woman.
- The allele for hitchhiker's thumb (h) is recessive to straight thumb (H). If a man and his wife are both homozygous recessive, will any of their offspring potentially have hitchhiker's thumb?**
  - What is the man's genotype and the woman's genotype? \_\_\_\_\_
  - What is the man's phenotype and the woman's phenotype? \_\_\_\_\_
  - Do a cross to determine all potential hitchhiker's thumb genotypes and phenotypes for the offspring of this man and woman. Is it possible for any offspring of the F<sub>1</sub> generation to have hitchhiker's thumb?

5. In a certain breed of dogs, a gene (L) codes for hair length. The dominant trait is short hair and the recessive is long hair. Suppose a heterozygous female dog and a homozygous recessive male dog mate.
- a.) What is the man's genotype and the woman's genotype? \_\_\_\_\_
  - b.) What is the man's phenotype and the woman's phenotype? \_\_\_\_\_
  - c.) What will be the genotypic and phenotypic ratio of the F<sub>1</sub> generation?
6. A genetic engineer is going to cross two watermelon plants to produce seeds for a spring planting. He is breeding for size, and wants to have as many watermelons with the phenotype for long shape as possible. In watermelons, the allele for short shape (R) is dominant to the allele for long shape (r). Would crossing a watermelon homozygous recessive for the trait with a watermelon heterozygous for the trait give the most long watermelons possible? Explain your answer using Punnett Squares.