

**Genetics - Rules for Dominance**

Name: \_\_\_\_\_ Per. \_\_\_\_\_

1. A certain flowering plant has *co-dominance* for flower color. Some plants produce purple flowers and some produce white flowers. Construct a Punnett Square to illustrate a monohybrid cross between purple flowered plant and a white flowered plant. Also, show the appropriate genotypes, phenotypes, and the expected ratio for the offspring.

Parent 1's genotype: \_\_\_\_\_

Parent 2's genotype: \_\_\_\_\_

Expected ratio: \_\_\_\_\_

Phenotype(s) of F<sub>1</sub> offspring: \_\_\_\_\_


2. Refer to question one. Now do a Punnett Square for a monohybrid cross between two of the offspring from the first generation. Also show the appropriate genotypes and expected ratios.

Parent 3's genotype: \_\_\_\_\_

Parent 4's genotype: \_\_\_\_\_

Expected ratio: \_\_\_\_\_

Phenotype(s) of F<sub>2</sub> offspring: \_\_\_\_\_


3. A certain breed of dogs has *incomplete dominance* for hair color. Some dogs have black hair and some have white. Do a Punnett Square for a monohybrid cross between a black male and white female. Also show the appropriate genotypes and expected ratios.

Male parent's genotype: \_\_\_\_\_

Female parent's genotype: \_\_\_\_\_

Expected ratio: \_\_\_\_\_

Phenotypes of F<sub>1</sub> offspring: \_\_\_\_\_


4. Refer to question 3 and do a Punnett Square for a monohybrid cross between two offspring from that first generation. Also show the appropriate genotypes and expected ratios.

Male parent's genotype: \_\_\_\_\_

Female parent's genotype: \_\_\_\_\_

Expected ratio: \_\_\_\_\_

Phenotypes of F<sub>2</sub> offspring: \_\_\_\_\_


5. Right-handedness is dominant over left-handedness. Do a monohybrid cross between Mr. Schulz, homozygous recessive for hand preference, and his wife, homozygous dominant for hand preference. Complete the Punnett Square and record the genotypes for Mr. and Mrs. Schulz and the possible phenotypes and ratios of their children. Then do a monohybrid cross for one of their children with a heterozygous spouse for hand preference. What are the likely phenotypes and ratios for Mr. Schulz's grandchildren?

1<sup>st</sup> Generation

Mr. Schulz's genotype:

Mrs. Schulz's genotype:

Children's Phenotype(s):

Expected Ratio:


2<sup>nd</sup> Generation

Schulz child genotype:

Spouse's genotype:

Grandchildren's Phenotype(s):

Expected Ratio:


6. Do a dihybrid cross for hand preference and eye color. See the previous question for hand preference info. For human eyes, brown is dominant over recessive blue. Mr. Schulz is heterozygous and Mrs. Schulz is homozygous recessive for eye color. List the genotypes and phenotypes and expected ratio for the Schulz children.

Mr. Schulz's genotype:

Mrs. Schulz's genotype:

Children's Phenotype(s):

Expected Ratio:
