

Name: _____ Date: _____ Period: _____

Dihybrid Crosses Worksheet

Directions: Answer the following genetic cross problems.

STEP 1: Determine what kind of problem you are trying to solve.

STEP 2: Determine letters you will use to specify traits.

STEP 3: Determine parent's genotypes.

STEP 4: Make your Punnett Square and make gametes.

STEP 5: Complete cross and determine possible offspring.

STEP 6: Determine genotypic and phenotypic ratios.

Two-Factor Crosses (Dihybrid)

1. In man, assume that spotted skin (S) is dominant over non-spotted skin (s) and that wooly hair (W) is dominant over non-wooly hair (w). Cross a marriage between a heterozygous spotted, non-wooly man with a homozygous wooly-haired, non-spotted woman. Give genotypic and phenotypic ratios of offspring.
2. In horses, black is dependent upon a dominant gene, B, and chestnut upon its recessive allele, b. The trotting gait is due to a dominant gene, T, the pacing gait to its recessive allele, t. If a homozygous black pacer is mated to a homozygous chestnut trotter, what will be the appearance of the F₁ generation?
3. In snapdragon flowers, red color is dominant over white color and tall plants are dominant over short plants. What would you expect to get from a genetic cross of a homozygous tall, red snapdragon with a short, white plant? Give genotypic and phenotypic ratios of the offspring.

4. What are the genotypic and phenotypic ratios in the offspring resulting from a cross between two pea plants that are heterozygous for pod color and pod shape?

Trait	Dominant Allele	Recessive Allele
Pod shape	Smooth (N)	Constricted (n)
Pod color	Green (G)	Green (g)
Flower position	Axial (A)	Terminal (a)
Plant height	Tall (T)	Short (t)

Parental Genotypes: _____

Possible Gametes: _____

5. In mice, the ability to run is a dominant trait. Mice with this trait are called running mice (R). The recessive trait causes mice to run in circles only. Mice with this trait are called waltzing mice (r). Hair color is also inherited in mice. Black hair (B) is dominant over brown hair (b).

For each of the following problems, determine the parent genotypes, possible gametes, construct a Punnett square to solve, and give genotypic and phenotypic ratios.

- a. Cross a heterozygous running, heterozygous black mouse with a homozygous running, homozygous black mouse.

Parental genotypes _____

Possible gametes _____

Offspring phenotypic ratio _____

Offspring genotypic ratio _____

- b. Cross a homozygous running, homozygous black mouse with a heterozygous running, brown mouse.

Parental genotypes _____

Possible gametes _____

Offspring phenotypic ratio _____

Offspring genotypic ratio _____