DATE: NAME: CLASS:

TOPIC 1.2	Punnett Square Worksheet	BLM 1.2-8

Answer the following questions. Use a Punnett square as required to illustrate your answer.

1. Inflated pea pods are dominant (*C*) over constricted pea pods (*c*).

a) Use a Punnett square to determine the genotypes and phenotypes of a cross between a plant that is homozygous dominant and a plant that is homozygous recessive.

b) Cross two plants that are offspring from the cross in part a) and determine the ratio of genotypes and phenotypes of the offspring that result.

2. Tall pea plants are dominant (*T*) over short pea plants (*t*).

a) Use a Punnett square to determine the genotypes and phenotypes of a cross between a plant that is homozygous dominant and a plant that is heterozygous for plant size.

b) Cross two heterozygous plants for plant size and determine the ratio of genotypes and phenotypes of the offspring that result.

3. Short hair is dominant (*H*) over long hair (*h*) in cats. If a homozygous dominant female mates with a homozygous recessive male, give the phenotype ratio of the second generation. Show your work using Punnett squares.

4. Curly hair is dominant (*C*) over straight hair (*c*) in humans. Is it possible for a curly haired man to produce curly haired children if his wife has straight hair? Explain using Punnett squares.

5. A cross between a tall pea plant and a short pea plant produces offspring of which roughly half are tall and half are short. What are the genotypes of the parental plants? Support your answer with a Punnett square. Which of the parental genotypes is true-breeding?

6. Assume that, in humans, the allele for brown eyes (*B*) is dominant to the allele for blue eyes (*b*).
a) What is the probability that the first child of two heterozygous brown-eyed parents will be blue-eyed? Support your answer with a Punnett square.

b) If the first child is blue-eyed, what is the probability that the second child will be blue-eyed?

7. In some cases, you can determine the genotype of an organism by examining the phenotype alone. In the case of Mendel's pea plants, round seeds (*R*) are dominant over wrinkled seeds (*r*).

a) Identify the genotypes for seed shape that you can determine by inspection alone. Explain.

b) A test cross involves mating an individual of unknown genotype with another individual of known genotype to identify genotypes that you cannot determine by inspection. With what would you cross each of your unknowns to determine their genotypes?