**Extension: Punnett Square (Monohybrid)**

**Name:**

1. In dogs, there is a hereditary deafness caused by a recessive gene “d”. A kennel owner has a male dog (Gilbert) that she wants to use for breeding purposes if possible; however she does not want to produce any deaf offspring. Gilbert can hear.
   1. What are the two possible genotypes of Gilbert?
   2. Create two test crosses to show the offspring of Gilbert if he is crossed with a deaf female.
   3. Using two test crosses above indicate how the owner will know what Gilbert’s genotype is.
   4. Explain why the owner would not want to use Gilbert if his genotype is Dd.
   5. Using a Punnett square, show how two hearing dogs could produce deaf offspring.
2. Grackles are small black birds seen commonly in N.B. Suppose long tails (L) are dominant to short tails. A female short-tailed grackle mates with a long-tailed male grackle that had one parent short-tailed and one parent long-tailed. What is the genotype of the male?
3. In certain cattle the polled (hornless) trait is dominant over horns. A polled bull is mated to a cow with horns. Their calf is born and develops horns. The bull is then mated to another cow which is polled. Their calf also develops horns. Identify the genotypes of all the individuals. (Use the letter H for the alleles)
4. In horses the trotter characteristic is dominant to the pacer characteristic. A male trotter mates with 3 females. Each female produces a foal. The first female, a pacer, calves a pacer. The second female, also a pacer, calves a trotter. The third female a trotter, calves a pacer. Determine the genotypes of all the individuals. (Use the letter T for the alleles)
5. Some genetics works backwards to find out the genotypes of the parents. In dogs, the gene for short hair is dominant to long hair. Two short haired dogs have a litter with 8 pups. Six puppies have short hair and two have long hair. What are the genotypes of the parents? (Use the letter H for the alleles)