GENETICS PROBLEM SET II

A gray dog is homozygous for the trait which produces coat color. The gray dog is mated with a brown dog. The dogs have numerous offspring which are all of the gray phenotype.

1. What is the dominant allele for the trait of coat color? _____
2. What is a good symbol for the gray allele? _____ Brown allele? _____
3. What is the probability that the two dogs above will have a brown pup? _____
4. Two members of the F_1 are crossed. Make a Punnett square to show this cross.

5. What is the expected genotypic outcome of this cross?

6. What is the expected phenotypic outcome of this cross?

7. You have just calculated the probability of the two dogs in #4 having a brown pup. Let's say that they have a brown puppy. On the next birth, what are the odds of having a brown pup? _____

8. Calculate the probability that they will have three brown pups in a row. _____

~~9. Calculate the probability that these two dogs will have at least one brown puppy in three births. Remember that there are several birth outcomes that will give us at least one brown puppy. (Hint: There is only one birth outcome that will not give us at least one brown puppy.)~~

10. A brown dog mates with a gray dog and has five gray pups. What is the genotype of the brown dog?

11. What is most likely the genotype of the gray dog? _____

12. A heterozygous dog mates with a brown dog. What is the probability that these two will have five gray pups in a row?