Testcross Example:

Name: _____

In dogs, there is an hereditary deafness caused by a recessive gene, "d." A kennel owner has a male dog that she wants to use for breeding purposes if possible. The dog can hear, so the owner knows his genotype is either DD or Dd. If the dog's genotype is Dd, the owner does not wish to use him for breeding so that the deafness gene will not be passed on. This can be tested by breeding the dog to a deaf female (dd). Draw the Punnett squares to illustrate these two possible crosses. In each case, what percentage/how many of the offspring would be expected to be hearing? deaf? How could you tell the genotype of this male dog?

1. Let's say you decide to make your living as a mink farmer. In mink, black fur is dominant over white fur. Since the market for black mink coats is higher than white mink, you (being the entrepreneur that you are) decide to only raise black mink. Everything is going well but the guy you bought your mink from seemed a little crooked! You want to make sure they are pure breeds so you run a test-cross.

   a. Give the **phenotypes** of the mink in your test-cross:

   _____X_____

   b. In your first test-cross, 30 out of 60 offspring are black and the rest are white! No wonder you got such a good deal! What are the genotypes of the mink used in your test-cross? (Use "B" and "b")

   _____X_____ Diagram the cross:

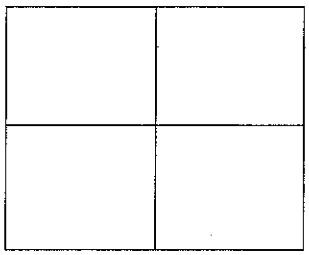
   Genotypic ratio=_____

   Phenotypic ratio=_____

   c. Was the black-furred mink you chose for your test-cross a pure breed? What is his genotype? _____

2. Since you have many mink and there may only be one bad one in the bunch, you decide to do a second test-cross on a different mink. This time out of 55 offspring, every last one is black! What are the genotypes of the mink used in this test-cross?

_____X_____ Diagram the cross:



Genotypic ratio=_____

Phenotypic ratio=_____