CONCEPT: MONOHYBRID CROSS

- A **monohybrid cross** is a mating between two organisms with different alleles at a single gene
  - □ Remember: The alleles can be presented in different ways
    - Dominant, recessive (A=dominant, a=recessive)
    - Wild Type, Mutant (+ = WT, a = mutant)

1. Two heterozygous purple plants

Genotypes

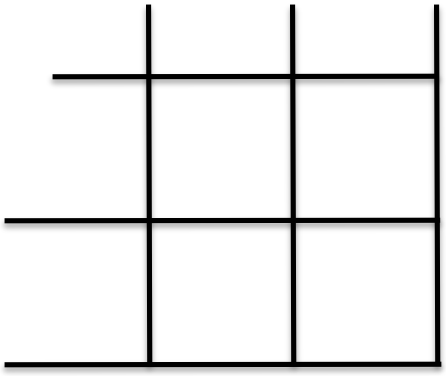
Mother: _____

Father: _____

Phenotypes

Mother: _____

Father: _____



Genotypes _____

Phenotypes _____

2. WT winged fly with mutant short-winged fly

Genotypes

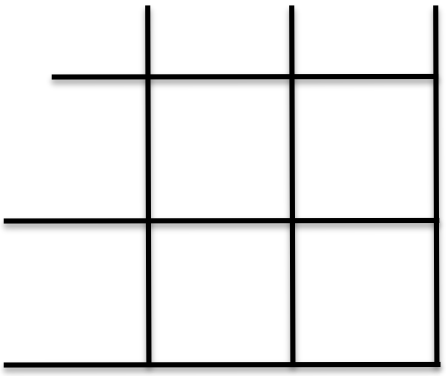
Mother: _____

Father: _____

Phenotypes

Mother: _____

Father: _____



Genotypes _____

Phenotypes _____

PRACTICE

1. A black and white rabbit were mated. All F_1 offspring were black, and the F_2 offspring is made up of approximately ¾ black and ¼ white rabbits.
    a. Draw out two Punnet squares detailing both matings.
    b. Supposed two white F_2 offspring were mated. What would be the phenotype and genotype of the F_3 offspring?
        (a) White, aa
        (b) White, Aa
        (c) Black, Aa
        (d) Black AA

2) Green scales (G) in a particular species of fish is dominant over blue scales (g). The following crosses are carried out, producing the progeny shown. Write out all possible genotypes of the parents in each cross.

	Parents	**Progeny**	**Genotypes of Parents**
a)	Green x Green	4 green, 2 blue	_____
b)	Green x Green	8 green	_____
c)	Green x Blue	12 green	_____
d)	Green x Blue	3 green, 1 blue	_____
e)	Blue x Blue	2 Blue	_____

3) Which of the following offspring ratios is expected from a Mendelian heterozygous cross examining one gene?
   a) 2:2
   b) 3:1
   c) 9:3:3:1
   d) 4:2:1

4) Human albinism is a simple recessive trait. Determine the genotypes of the parents for each offspring combination
    i. A wild-type male and albino female have 6 wild-type children
        a. AA x aa
        b. Aa x Aa
        c. aa x aa
        d. AA X AA
        e. AA x Aa

    ii. A wild-type male and albino female have 8 children, 4 wild-type, and four albino
        a. AA x aa
        b. Aa x Aa
        c. Aa x aa
        d. AA X AA
        e. AA x Aa