**Genetics Worksheet #1: Monohybrid Crosses**

1. In peas, long stems (L) are dominant over short stems (l). Give the expected phenotypic and genotypic ratios for the following crosses:
   1. Homozygous long **x** short

/3

* 1. Heterozygous long **x** short

/3

* 1. Heterozygous long **x** homozygous long

/3

* 1. Heterozygous **x** heterozygous

/3

1. The skin texture of tomatoes may be smooth or peach (hairy). The difference is controlled by alleles of one gene. The dominant allele A, causes smooth texture and the recessive allele a, causes peach texture.
   1. What phenotype will appear in the offspring of the following crosses:
      1. Aa **x** AA

/1

* + 1. Aa **x** aa

/1

* + 1. Aa **x** Aa

/1

* 1. A plant with smooth fruits crossed with peach fruits produces 54 smooth and 49 peach offspring. What are the genotypes of the parents?

/2

1. The following problems are based on Wyandotte poultry in which rose comb is dependent upon the dominant gene R, single comb is dependent upon its recessive allele r. To be included in the Wyandotte flock, a bird must have a rose comb.
   1. What would be the genotypic and phenotypic ratios for the F1 offspring of a cross between two heterozygous birds?

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* 1. A rose-combed male is mated with two rose-combed females. Female A produces 14 chicks, all rose-combed. Female B produces 9 chicks, 7 of which are rose combed and 2 single-combed. What are the genotypes of the three parent birds? Justify your answer.

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* 1. The Wyandotte breeders never use a single-combed bird for mating. When one appears in the flock it is immediately discarded. Will this practice be sufficient to eliminated the gene for single-comb from the flock?

/2