Genetics Problems #2   Name: _____
AP Biology
Lindemulder
(adapted from Mr. Mandley)   Date: _____ Hour: _____

Directions: Complete the following problems showing all work.

Information necessary to complete this worksheet:
          - Height is an example of incomplete dominance.
          - Colorblindness is a sex-linked trait.
          - Blood type is an example of codominance and multiple alleles.
          - Eye color shows complete dominance with brown as dominant.
          - Red nose color is a dominantly inherited disorder.

1. A tall female who is a carrier for colorblindness marries a medium height, colorblind male. What
   proportion of their children would be medium-height, colorblind females?

2. A tall, blue-eyed male with a normal nose marries a medium-sized, brown eyed (Bb) female with a red
   nose (Rr). What proportion of the children would be tall, blue-eyed females with a normal nose?

3. Examine the data below from the cross of **TtRr** and **ttrr**.
          58 Tall Pink
          61 Tall White
          60 Short Pink
          61 Short White

   a. Explain what type of dominance both characters show and what phenotype each genotype
      generates.

   b. From these observations is this valid by the X^2 test?

4. The cross of $RrTtI^AI^A$ and $RrTtI^AI^B$ gives you 33 $RRTTI^AI^A$ and 66 $rrTtI^AI^B$ out of a total of 960. Does this make sense by X^2?

5. When you cross AaBb and Aabb, what proportion should be aabb?

6. In a cross of AABbCc and AaBbcc, out of 512 offspring, what proportion should be AAbbCc?

7. A colorblind male with type O blood marries a normal-vision, AB female. What proportion of the offspring would be colorblind females?

8. A coin is flipped 5000 times (Wow, that would take a long time.) 2499 heads were observed. Is this correct by X^2? (Prove it genius.)

9. Aa and Aa were crossed. They give rise to 100 new plant offspring. Of the 100 new offspring, how many should be the following?

    _____ AA   _____ Aa   _____ aa

    You are the DNR field biologist one year later and you counted the following: 27 AA, 53 Aa, and 20 aa. Is this acceptable by the chi squared test?