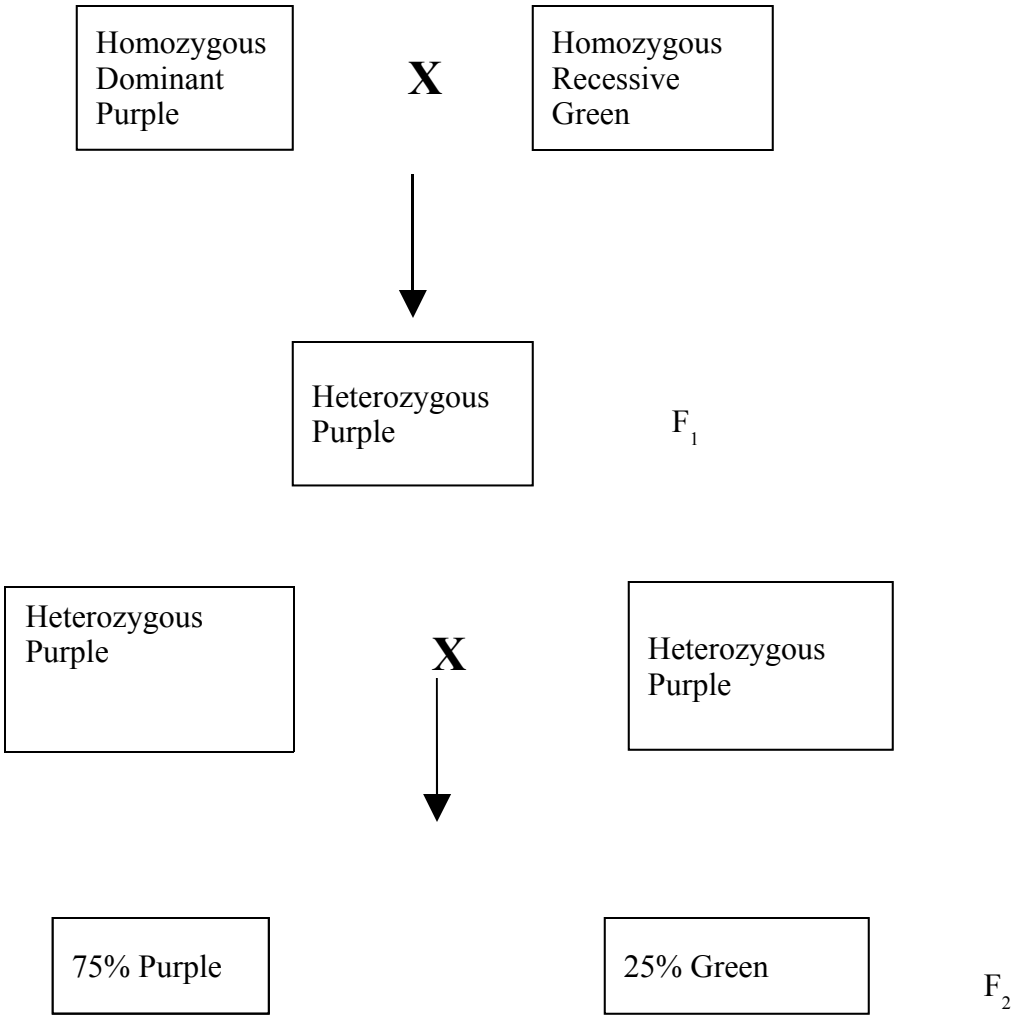
Fast Plant Genetics-Draft needs objectives and Excel piece

Introduction:
The principles and methods formulated by Gregor Mendel provide the basis for studies of inheritance in higher organisms. In this exercise we will study the inheritance pattern of a purple pigment called anthocyanin in Fast Plants. Anthocyanin is found in many plants that have red color. For example the color in red cabbage, cherries, red roses, and autumn red maple leaves is due to anthocyanin that is stored in the plant cell vacuole. In Fast Plants there is a gene for production of anthocyanin. This is called the ANL gene. Plants that have one or two copies of the ANL gene produce anthocyanin in their leaves or stems. The ANL gene is believed to be dominant. The alternative form of the gene, the other allele, is called anl. This allele is believed to be recessive. Plants that are homozygous recessive for anl should be green.

In class you were given plants that resulted from crossing homozygous dominant(purple) plants with homozygous recessive plants(green). In other words you were given the heterozygous or F1 generation. You then crosspollinated these heterozygous F1 plants and seeds formed. These seeds represent the F2. generation. According to Mendel when two F1 s are crossed the resulting F2 generation should have 75% of the plants showing the dominant trait and *25%* of the plants showing the recessive trait. In the case of your Fast Plants, when you germinate your seeds, 75% of them should produce anthocyanin and 25% should be green. See Figure 1

Figure 1



We can check the phenotypes of the F_2 generation can easily be determined by germinating the seeds in Petri Dishes. It will be obvious if the plants contain anthocyanin or are green within 3-5 days of germination.

Materials:
Each student needs:
Several Petri Dishes
Filter Paper for each Dish

Procedures:

1. Remove the seed pods from your plant. Open the pods over a Petri dish and empty the seeds into the dish.
2. Place your name on the lid of a Petri dish.

3. Place a piece of filter paper in the lid. Add water until the paper is wet and pour off the excess water.
4. Place 25 seeds in four neat rows on the upper two-thirds of the filter paper. Place the bottom of the dish over the seeds. If you still have seeds left repeat the process with a new dish. Bring all the dishes to the instructor for germinating.

Results:
Fill in the Table 3 below with your results and the class results.

With your partner discuss how you would determine the experimental percentages for both green and purple plants.

	Number of Purple Plants	Number of Green Plants	Total Number of Plants	Expected % Purple	Expected % Green	Experimental % Purple	Experimental % Green
Your Results							
Class Results							

Questions:
1. In Figure 1 place the possible genotypes of the plants described in the boxes.

2. Most likely the expected and actual % do not agree. What could be a reason for this experimental error.

3. Which results seemed better, yours or the total class? Did you expect this result?
Why?