Mendel's Garden

Mendel worked with seven genes in pea plants. Each gene has a simple set of two alleles, one dominant and one recessive. Use the table below to pick letters to represent each allele listed. Traditionally, the first letter of the dominant allele is used to represent versions of the gene: capital for dominant and lowercase for recessive. If a capital and lowercase letter look similar, print the capital letter and write the lower case one in cursive.

| Gene | Dominant Allele | Letter | Recessive Allele | Letter |
|-----------------|-----------------|--------|------------------|--------|
| Seed Shape | round | | wrinkled | |
| Seed Color | yellow | | green | |
| Flower Color | purple | | white | |
| Flower Position | axial | | terminal | |
| Pod Color | green | | yellow | |
| Pod Shape | inflated | | constricted | |
| Plant Height | tall | | short | |

On separate pieces of paper, use Punnett squares (showing chromosomes and allele letters) to figure the phenotypic and genotypic ratios for the F2 generation of each situation described below.

- 1. A pure line of purple flowered plants is crossed with a pure line of white flowered plants.
- 2. A pure line of inflated pod plants is crossed with a pure line of constricted pod plants.
- 3. A pure line of axial flower plants is crossed with a pure line of terminal flower plants.
- 4. A pure line of tall plants with green pods is crossed with a pure line of short plants with yellow pods.
- 5. A pure line of plants with round, yellow seeds is crossed with a pure line of plants with wrinkled, green seeds.
- 6. A pure line of tall plants with constricted pods is crossed with a pure line of short plants with inflated pods.
- 7. A pure line of plants with white, axial flowers is crossed with a pure line of plants with purple, terminal flowers.
- 8. A pure line of plants with yellow pods and yellow seeds is crossed with a pure line of plants with green pods and green seeds.