Name _____

Mendel worked with garden peas because

1. They could be grown in large numbers easily.
2. They exhibited several single-gene traits.
3. They were self fertile.
4. They have a short generation time.

He found the following traits to be controlled by single genes:

Round seeds (R) are dominant over wrinkled seeds (r).
Yellow seeds (Y) are dominant over green seeds (y).
Colored seed coats (C) are dominant over white (c).
Purple flowers (P) are dominant over white flowers (p).
Tall plants (T) are dominant over dwarf plants (t).

The following scenarios refer to the above traits. In each scenario, **use punnett squares**, to show all possible genotypes for the identified crosses. Additionally, **give probability percentages/ratios** for each cross.

1. A dwarf plant is crossed with a homozygous tall plant. Show the genotypic and phenotypic rations of the P and F_1 plants.

2. Two plants with purple flowers are crossed, and the offspring express about 25% white flowers. Show the genotypes of the parents and the F_1.

3. A plant with wrinkled seeds is crossed with one with round seeds, producing offspring with both round and wrinkled seeds in approximately equal frequency. What is the genotype of the parents and the F_1?

4. Two plants with yellow seeds are crossed, and all of the F_1 offspring have yellow seeds. However, about 1/16 of the F_2 generation have green seeds. Show the genotypes and ratios of the P, F_1, and F_2 generations.