**Biology 3201**

**Punnett Square Problems - Sheet 2**

**Monohybrid Cross**

1. In pea plants, spherical seeds (S) are dominant to dented seeds (s). In a genetic cross of two plants that are heterozygous for the seed shape trait, what fraction of the offspring should have spherical seeds?
2. In cattle, horns (h) are recessive over hornlessness (H). If two homozygous cattle, one hornless and the other horned, are crossed, what are the genotypes and phenotypes of the first filial generation.
3. In tomatoes, red fruit (R) is dominant over yellow fruit (r). If a homozygous dominant plant were crossed with a heterozygous plant, what would the potential offspring be?
4. If a short pea plant (tt) were crossed with a heterozygous tall pea plant (Tt), what would be the genotypes and phenotypes of the offspring.

Other problems. Page 535, #10, 11, 13, 14.

**Dihybrid Cross**

1. In people, curly hair is dominant over straight hair and the ability to curl the tongue is dominant over not being able to curl the tongue. A man with curly hair (homozygous) who has the ability to roll his tongue (heterozygous) and a woman with curly hair (heterozygous) who cannot curl her tongue have children. What are the possible genotypes and phenotypes?
2. In a dihybrid cross of two pea plants, one homozygous for two dominant traits and the other homozygous for the corresponding recessive traits, what will be the phenotypic ratio for the F1 generation? F2 generation? (Green is dominant over yellow; tall is dominant over short)
3. Fruits with seeds are dominant over fruits that are seedless, and blue color is dominant over purple colour. A homozygous purple fruit with seeds (heterozygous) is crossbred with a homozygous blue, seedless fruit. What are the genotypes and phenotypes of the offspring?
4. Parents are heterozygous for both genes; Parent 1: Genotype=AaCc, Parent 2: Genotype=AaCc