Pennies and Probability:
Exploring Genetics with Money

In this lab, your pennies will represent the gametes an offspring receives from its mother (one coin) and its father (the second coin).

The parents' genotypes are _____ and _____.

Heads represents the Dominant trait: Round Seed (R)
Tails represents the Recessive trait: Wrinkled Seed (r)

Procedure:
Before starting the lab, read the procedure completely and make your hypothesis in the space provided.
   i. Acquire 2 coins.
   ii. Flip both coins at the same time, and record the results below.
      For Heads, Heads, make a tally mark in the "RR" column
      For Heads, Tails, make a tally mark in the "Rr" column
      For Tails, Tails, make a tally mark in the "rr" column
   3. Total your tallies and wait for class totals.
   4. Answer the questions

Hypothesis:

Data:

	RR	Rr	rr
Tally for my 50 tosses			
Total for my 50 trials			
Class totals			

Conclusions:
1. Based on your data and the class totals for this particular cross, what is the probability of producing an offspring that is has a round seed? _____ a wrinkled seed? _____

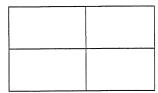2. What is the ratio of genotypes produced from this particular genetic cross?

Punnett Squares

1. Create a Punnett Square for the cross two pea plants that are both heterozygous (Tt) for the plant height trait (the Tall allele is Dominant).

Rr   x   Rr

     a) What is the probability that these plants will produce a tall offspring?

     b) What is the probability that that they will produce an offspring with the genotype rr?

     c) What is the ratio of the all possible genotypes (RR:Rr:rr)?

2. Incomplete dominance occurs when one allele is not completely cominant over another. When a Red (RR) and White (WW) Snapdraggons are crossed, all heterozygous offspring will be pink (RW). Complete the Punnett Square to show how this occurs:

RW   x   RW

a) What will happen if two of these heterozygous offspring are crossed? Identify the Phenotypes and Genotypes of offspring that could result from this cross:

RW   x   RW

b) What is the probability of each of these phenotypes?
     Of each of the genotypes?