MAY THE ODDS BE EVER IN YOUR FAVOR!

Name: _____

In this lab, you will be simulating the random combination of genes in genetic crosses. However, rather than crossing some organism and waiting for the offspring to develop, we will be using coins to represent the genes for particular traits and the sides of the coins (heads or tails) to represent the different possible alleles. HEADS will be the dominant allele in all crosses. "Tossing" the coins will represent the crossing of the parents and the sides of the coin facing up will be the genotypes of the offspring.

Cross 1

Aa x Aa

1. Fill in the Punnett Square for Cross 1

	A	a
A		
a		

2. **What are the genotypes for the offspring that may be produced?** Give the percentage or ratio for each genotype. To find the percentage simply divide the number of offspring with that genotype by the total number of offspring. For example: If 2 of the 4 offspring were Aa genotype than the percentage would be 50% because 2 /4 = 50 %. Then predict the number of each genotype that you would get in 100 offspring.

Genotype	Percentage	Predicted number out of 100 offspring
AA		
Aa		
aa		

3. Use the two coins as the parents, and perform 100 "crosses". Record the resulting genotypes in a table below.

	Tally	Number	Percentage
AA			
Aa			
aa			

4. How close is your actual "cross" to the expected ratio in #2?

Cross #2

NN x Nn

5. Do a Punnett Square of the genes above.

	N	N
N		
n		

6. Fill in the chart below.

Genotype	Percentage	Predicted number out of 100 offspring
NN		
Nn		
nn		

7. Use two coins as parents, and perform 100 crosses. Lay one coin face up on the table to represent the homozygous parent (since they will only be able to give the N allele). Record the resulting genotypes in the table below.

Tally	Tally	Number	Percentage
NN			
Nn			
nn			

8. How close is your actual "cross" to the expected ratio from number 6?

9. Suppose in a certain animal the **A** allele is dominant for having 4 toes and the **a** allele is recessive for having only 3 toes.
   a. What percentage of offspring would have 4 toes?

   b. What percentage of offspring would have 3 toes?

10. Suppose in that same animal **N** is dominant for having brown fur and **n** is recessive for having whit e fur.
    a. What percentage of offspring would have white fur?