**PROBABILITY LAB**

The laws of probability govern many activities in life ranging from practicing math to making smart gambling decisions to predicting the outcomes of genetic problems. This lab will help you to demonstrate the laws of probability by tossing coins. It will also help you to predict the outcomes of certain events, especially genetic ones.

**PROCEDURE**

1. With a partner, you are going to flip two coins a given number of times and record the results (HH, HT, TT).
2. You will flip both coins 10 times and record the results.
3. Then toss the coins 50 times and record the results.
4. Then team up with another pair and combine results of the 50 tosses to get data for 100 tosses. Those numbers will be recorded.
5. Pardue will calculate the class data. You will record that data as well.

**DATA**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **HH** | **HT** | **TT** |
| **10**  **Times** |  |  |  |
| **Total** | **/10** | **/10** | **/10** |
| **50**  **Times** |  |  |  |
| **Total** | **/50** | **/50** | **/50** |
| **100x data with other group** | **/100** | **/100** | **/100** |
| **Class Data** |  |  |  |

**QUESTIONS**:

1. Determine the % of heads/heads, heads/tails and tails/tails for each series of tosses:

10 x: \_\_\_\_\_ HH \_\_\_\_\_HT \_\_\_\_\_TT

50 x: \_\_\_\_\_ HH \_\_\_\_\_HT \_\_\_\_\_TT

100 x: \_\_\_\_\_ HH \_\_\_\_\_HT \_\_\_\_\_TT

Class: \_\_\_\_\_ HH \_\_\_\_\_HT \_\_\_\_\_TT

1. Which combination occurred most often?
2. What is the expected ratio for each?

\_\_\_\_\_\_HH \_\_\_\_\_\_HT \_\_\_\_\_\_TT

1. a. Which set of flips from your table is closest to what the expected ratios were?

b. Why do you think this is the case?

1. If you flipped a coin 3 times, what is the probability that they will all be tails?
2. Two adults date, fall in love, get engaged, marry and then decide to have children.
   1. What is the probability that the first child will be a boy?
   2. They want more than one child. What is the probability that the second child will be a boy?
   3. What is the probability that this couple will have 4 boys in a row?
3. If a couple has 5 children, all girls, can you correctly assume that, if they have another child, probability would favor it being a boy? Why?