TITLE: Picking Chips (Experimental Probability)

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Goal: The goal of this lesson is to demonstrate the difference between experimental and theoretical probability. Students should also see the effect of sample size on experimental probability.

Grade and Course: 9th, 10th grade algebra classes

KY Standards: MA-HS-4.3.1 (Data Analysis and Probability: Experiments and
                Samples)
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                Samples)

Objectives: The objective of this lesson to have students realize the difference between experimental and theoretical probability. Also, students should realize the need for a large sample size.

Resources/materials needed: Worksheets, Blue and White Poker Chips, Blindfolds, and Plastic Baggies.

Description of Plan: Students will work in pairs with one student blindfolded. The non-blindfolded student will place the three chips in a baggie (two blue chips and one white chip). Then the blindfolded student will draw two of the chips from the baggie. The non-blindfolded student will record whether the chips drawn had the same color or different colors (this will be repeated 20 times). Then the students will calculate the experimental probability of drawing the same color chips and the probability of drawing different color chips. Then as a class, the actual probabilities will be calculated. Then all of the data from the students picks will be compiled to demonstrate the effects of a larger sample size on experimental probability.

Lesson Source: This lesson is adapted from the Simple Experimental Probability activity given on the website www.themathlab.com.

Instructional Mode: Group activity

Date Given: 10/03/06   **Estimated Time**: 50 minutes

Date Submitted to Algebra[3]: 11/15/06

Experimental Probability

You are going to place two blue chips and one white chip in a baggie. Then you will draw two chips from the baggie (without looking) and record whether they are the same color or different colors. Before you get started answer the following question:

1. Do you think you will draw two chips of the same color or two different colored chips more often? Explain your reasoning.

Now we will do the experiment. You will draw the chips from the baggie 20 times. One person will draw the two chips from the baggie, and the other person will record whether the two chips drawn are the same color or different colors in the chart below. Before you get started, blindfold the person who will be picking the chips so that they cannot see the chips they are picking.

Pick Number	Color of Chips (Same or Different)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Pick Number	Color of Chips (Same or Different)
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Tally up the number of times chips of the same color were drawn and the number of times different colored chips were drawn.

<u>Same Colored</u>   <u>Different Colored</u>

Based on your experiment, what is the probability that you will draw two chips that are the same color?

What is the probability that you will draw two different colored chips?