Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Investigation 11: **Independent or Not Independent Events?**

**Worksheet 11.2 Simulation**

**Statistical Question** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Design and Implement a Plan to Collect Data**

Simulation Steps per Trial:

Step 1: Thoroughly mix the slips of paper in the paper bag

Step 2: Pick 30 slips representing the students who won the game.

Step 3: Count the number of slips that have a 1 on it.

Step 4: Determine the estimated probability of a 1st or 2nd year student winning the game and record the estimated probability on a data recording sheet that may look like the following:

|  |  |  |
| --- | --- | --- |
| Trial  number | Number of slips representing  1st or 2nd year students winning  The game | Probability estimate that a  1st or 2nd year student  wins the game |
| Example | 10 | .25 |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

Step 5: Repeat steps 1 to 4 at least 4 more times (for a total of 5 trials). Record each trial result on the recording sheet.

Add your probability estimates to the class dot plot.

**Interpret the Results in the Context of the Original Question**

1. Based on the class dot plot of the simulated probabilities, what estimates of the proportion of a 1st or 2nd year student winning the game are most likely to occur under the assumption that the probability that 1st or 2nd year students win the game is 30%? Explain your answer.
2. Do you think the sample of 100 students collected by the computer science students could have come from a population in which the events of grade level and winning the game are independent? Explain your answer.