Name: _____ Hour: _____ Date: _____

Lesson 8.1 – The Last Banana

Suppose that you're on a desert island playing dice with another castaway. The winner's prize will be the last banana. Here are the rules of the game:

- Each player rolls a die
- If the largest value shown is a 1, 2, 3, or 4, then player A wins
- If the largest value shown is a 5 or 6 then player B wins

1. Who do you think has advantage in this game: Player A, Player B, or neither? Make your **best guess** and explain your choice.

Player A, they have more numbers to win.

2. Play the game 20 times with your partner and record the winner of each game by tallying in the table below.

Player	A	B
Tally/Count of Wins		
Percentage of Wins		

Experimental Probability

1. How many times did Player A win? _____ Write this as a fraction. _____
2. How many times did Player B win? _____ Write this as a fraction. _____

Probabilities add to 1

3. Who won more often? Maybe this was only true for your group. Let's see how the rest of the class did. Write the number of wins for Player A in the table on the board.
   a. Find the total percent of wins for Player A for the whole class.
   b. Find the total percent of wins for Player B for the whole class.

Complements: $P(B) = 1 - P(\text{Not } B)$

4. To determine the true probability of Player A winning, we should list out all possible rolls that we could get. Complete the table below to show all possible rolls.

	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,6
5	5,1	5,2	5,3	5,4	5,5	5,6
6	6,1	6,2	6,3	6,4	6,5	6,6

Sample Space: 5
List of all possible outcomes

Theoretical probability

5. Use your table to find the probability of Player A winning.

$16/36 = 4/9 = .\overline{44}$

6. Which was closer to the percentage you found in #5, your group data or the classroom data? Why do you think that is?

The class data. The more trials you do the closer you get to the true probability.

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Lesson 8.1 – Probability

Important ideas:

Probability Rules:

$P(\text{Outcome E}) = \frac{\#\text{ ways E can occur}}{\text{Total \# of possible outcomes}}$

Complement:

$P(\text{Not E}) = 1 - P(E)$

Sample Space: List of all possible outcomes.

- All prob. are between 0 & 1
- All prob. add to 1.

Theoretical Prob.: What we expect to happen

Experimental Prob: What actually happens.

Check Your Understanding

1. Mr. Wilcox has three shirts (blue, red and green) and two pairs of pants (grey and black). He will randomly choose one shirt and one pair of pants each day.

a. Make a diagram showing all possible combinations of shirts and pants that Mr. Wilcox can choose.

	Blue	Red	Green
Gray	Gray Blue	Gray Red	Gray Green
Black	Black Blue	Bl. Red	Black Green

b. Find each of the following probabilities.

P(blue shirt)

$\frac{2}{6} = \frac{1}{3}$

P(blue shirt, grey pants)

$\frac{1}{6}$

P(not a red shirt)

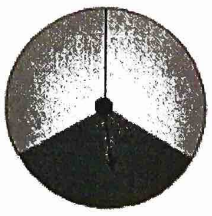
$\frac{4}{6} = \frac{2}{3}$

The spinner below is used for a contest. The outcomes for the first 5 spins were:

Blue, Green, Blue, Orange, Green

a. Find the experimental probability of landing on green.

$\frac{2}{5}$



b. Assuming the spinner is fair, what is the theoretical probability of landing on green?

$\frac{1}{3}$