

Theoretical vs. Experimental Probability

Learning Target: I can determine theoretical probabilities, compare to experimental results and explain reasons why there might be differences. *(not based on the experimental)*

| Event | Theoretical Probability | Experimental Probability | Questions to guide your group |
|--|----------------------------------|----------------------------------|---|
| Flipping a coin 10 times (on graphing calculator) | H - T - | H - T - | How did your theoretical and experimental probabilities compare when flipping the coin? |
| Flipping a coin 50 times (on graphing calculator) | H - T - | H - T - | Where did you notice the largest difference between the theoretical and experimental probabilities? Why do you think there is a difference? |
| Flipping a coin 100 times (on graphing calculator) | H - T - | H - T - | Predict the probability when your sample space is 500. _____ Predict the probability when your sample space is 1000. _____ |
| Rolling a number cube 10 times (on graphing calculator) | 1- 2- 3- 4- 5- 6- | 1- 2- 3- 4- 5- 6- | How did your theoretical and experimental probabilities compare when rolling the number cube? |
| Rolling a number cube 50 times (on graphing calculator) | 1- 2- 3- 4- 5- 6- | 1- 2- 3- 4- 5- 6- | Where did you notice the largest difference between the theoretical and experimental probabilities? Why do you think there is a difference? |
| Rolling a number cube 100 times (on graphing calculator) | 1- 2- 3- 4- 5- 6- | 1- 2- 3- 4- 5- 6- | Is a sample space of 10 (rolling the number cube 10 times) large enough to make the results valid? Why or why not? |

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|---|----|----|----|----|---|
| Spinning a spinner 10 times (on graphing calculator) | 1- | 3- | 1- | 3- | How did your theoretical and experimental probabilities compare when spinning the spinner? |
| | 2- | 4- | 2- | 4- | |
| Spinning a spinner 50 times (on graphing calculator) | 1- | 3- | 1- | 3- | Where did you notice the largest difference between the theoretical and experimental probabilities? Why do you think there is a difference? |
| | 2- | 4- | 2- | 4- | |
| Spinning a spinner 100 times (on graphing calculator) | 1- | 3- | 1- | 3- | Is a sample space of 50 large enough to make the results valid? Why or why not? |
| | 2- | 4- | 2- | 4- | |

How will you use this information to help guide you when creating the game for your probability project?

How can you use this information when creating a survey like you will do in your statistics project?

How might you connect this information to another subject or job outside the math classroom?