**M30-3 Activity: Theoretical vs. Experimental Probability**

“Rolling Two Dice”

THEORETICAL PROBABILITY

1. Use a table/grid to determine all the possible outcomes when you roll two dice.
2. Complete the following table using the outcomes from above.

|  |  |
| --- | --- |
| **Sum of Both Dice** | **Theoretical Probability**  **(Fraction, Decimal, %)** |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 |  |

1. Sketch a graph of the theoretical probability of getting a certain sum when rolling two dice.
2. Answer the following questions.
   1. What is the probability of rolling a 7?
   2. What are the odds in favour of rolling a 7?
   3. What are the odds against rolling a 7?

EXPERIMENTAL PROBABILITY

1. With a partner, roll two dice 50 times and record the results in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sum of Both Dice** | **Tally** | **Number of Times Rolled** | **Experimental Probability**  **(Fraction, Decimal, %)** |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| 11 |  |  |  |
| 12 |  |  |  |

1. Compare your theoretical results to the results of the experiment

|  |  |  |
| --- | --- | --- |
| **Sum of Both Dice** | **Theoretical Probability (%)** | **Experimental Probability (%)** |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |

1. Explain why the theoretical probability might not always match the experimental probability.