

## The Plum Stones Game: Prediction

Subject: Mathematics

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Strand: Statistics and Probability

Grade: 5

Content (topic)	
Exploring Probability	
Outcomes	Indicators
<p><b>SP 5.3:</b> Describe, compare, predict, and test the likelihood of outcomes in probability situations.</p>	<p><b>SP 5.3b:</b> Design and conduct probability experiments to determine the likelihood of a specific outcome and explain what the results tell about the outcome including whether the outcome is impossible, possible, or certain.</p> <p><b>SP 5.3c:</b> Identify all possible outcomes in a probability experiment and classify the outcomes as less likely, equally likely, or more likely to occur and explain the reasoning (e.g., for an upcoming Pow Wow, list the dances that could be done and then classify the likelihood of each of the dances occurring, or of the dances occurring while you are in attendance).</p> <p><b>SP 5.3d:</b> Predict how the likelihood of two outcomes in a probability experiment, carry out the experiment, compare the results to the prediction, and identify possible reasons for discrepancies.</p>
<p>Mathematical Processes:</p> <ul style="list-style-type: none"> <li>• Connections</li> <li>• Communication</li> <li>• Problem Solving</li> <li>• Reasoning</li> </ul>	
<p>Lesson Preparation</p> <p>Equipment/materials:</p> <ul style="list-style-type: none"> <li>• One set of game pieces plus one extra star-moon piece for each group of students.</li> <li>• One basket for each group of students.</li> <li>• Game instructions are in <a href="#">The Plum Stones Game: Bar Graphs</a></li> </ul>	
Presentation	
Development	

- Divide your class into groups of size 3 or 4. Have each group play the game to become familiar with the game pieces and the scoring.
- Ask the students which is more likely: that the three marked-unmarked turn up matching or un-matching. Have each group of students design and conduct a probability experiment to help answer this question. (Toss only the three marked-unmarked pieces a number of times and keep track of the number of times they match and the number of times they don't match. Present the results in a bar graph.)
- For the two star-moon pieces, ask the students to predict which is more likely: that the two star-moon pieces turn up matching or un-matching? Have each group of students design and conduct a probability experiment to help answer this question.
- Give each group a third star-moon piece to toss with the other two. What are the possible outcomes: all three match, only two match, all three are different? Predict which is most likely and design and conduct a probability experiment to confirm or refute the prediction.
- Go back to the Plum Stones Game but with the three star-moon pieces. Have each group decide on a scoring scheme and play the game until one of the players in the group reaches a score of 11. Present the results in a bar graph.