



Grade 6 Math Enrichment - Unit 5 - What are the Chances?

Unit Focus

Students will explore probability through game play and simulations. They will be able to express probability in a continuum from impossible to certain, and as a fraction, decimal or percent. Students will examine games to determine if they are fair or unfair based on probabilities. As a final project, students will create their own game that will be played by classmates, and will share the probabilities of winning and what makes it fair or unfair.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 7 - Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. (CCSS.MATH.CONTENT.7.SP.C.5) - Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. (CCSS.MATH.CONTENT.7.SP.C.6) - Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. (CCSS.MATH.CONTENT.7.SP.C.7A) - Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (CCSS.MATH.CONTENT.7.SP.C.8A) - Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., rolling double sixes),	<i>Students will be able to independently use their learning to...</i> T1 Apply an understanding of known patterns to new problems and make connections between concepts. T2 Represent situations using mathematical reasoning and symbols T3 Apply models to solve problems.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Mathematicians communicate precisely and clearly using mathematical definitions. U2 Mathematicians can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments. U3 Mathematicians construct viable arguments to explain problems, solutions, and mathematical representations. U4 Mathematicians see patterns to make generalizations about structures and relationships.	<i>Students will keep considering...</i> Q1 How do I determine that my answer makes sense? Q2 What does my solution mean? Q3 How can the relationship between quantities be represented? Q4 What patterns are present? Q5 What is the significance of this pattern?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 Vocabulary: Independent, Dependent, Experimental Probability, Theoretical Probability, Data, Fair, Unfair K2 an outcome has an expected outcome and an experimental outcome.	<i>Students will be skilled at...</i> S1 finding the probability of simple or compound events using favorable outcome(area) divided by total outcomes (area).

Stage 1: Desired Results - Key Understandings

identify the outcomes in the sample space which compose the event. (CCSS.MATH.CONTENT.7.SP.C.8B) • Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) • Reason abstractly and quantitatively. (CCSS.MATH.MP.2) • Model with mathematics. (CCSS.MATH.MP.4) • Look for and make use of structure. (CCSS.MATH.MP.7) Madison Public Schools Profile of a Graduate • Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2)		S2 creating a sample space for two or more events using a tree diagram, chart or organized list. S3 finding the expected number of events that will occur when the probability of that event and number of trials is known.
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