



Standard #: MAFS.912.S-MD.1.3

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Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes. ★

Grade: 912	
Cluster: Calculate expected values and use them to solve problems -	Date Adopted or Revised: 02/14
Content Complexity Rating: Level 2: Basic Application of Skills & Concepts - More Information	Date of Last Rating: 02/14
Status: State Board Approved	

Related Courses

Course Number	Course Title
1210300:	Probability & Statistics with Applications Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1298310:	Advanced Topics in Mathematics (formerly 129830A) (Specifically in versions: 2014 - 2015, 2015 and beyond (current))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.912.S-MD.1.AP.3a:	Determine the theoretical probability of multistage probability experiments (e.g., draw or select a representation of the theoretical probability for a sample space).
MAFS.912.S-MD.1.AP.3b:	Collect data from multistage probability experiments.
MAFS.912.S-MD.1.AP.3c:	Compare actual results of multi-stage experiment with theoretical probabilities (e.g., make a statement that describes the relationship between the actual results of a multistage experiment with its theoretical probabilities [ex., more, less, same, different, equal]).

Related Resources

Perspectives Video: Expert

Name	Description
History of Probability and the Problem of Points:	What was the first question that started probability theory?

Virtual Manipulative

Name	Description
Interactive Marbles:	This online manipulative allows the student to simulate placing marbles into a bag and finding the probability of pulling out certain combinations of marbles. This allows exploration of probabilities of multiple events as well as probability with and without replacement. The tabs above the applet provide access to supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the Java applet.
Plinko Probability:	The students will play a classic game from a popular show. Through this they can explore the probability that the ball will land on each of the numbers and discover that more accurate results coming from repeated testing. The simulation can be adjusted to influence fairness and randomness of the results.

Lesson Plan

Name	Description
Modeling Conditional Probabilities 2:	This lesson unit is intended to help you assess how well students understand conditional probability, and, in particular, to help you identify and assist students who have the following difficulties representing events as a subset of a sample space using tables and tree diagrams and understanding when conditional probabilities are equal for particular and general situations.
	This lesson is designed to develop students' understanding of probability in real life situations. Students will also be

Probability:	introduced to running experiments, experimental probability, and theoretical probability. This lesson provides links to discussions and activities related to probability as well as suggested ways to integrate them into the lesson. Finally, the lesson provides links to follow-up lessons designed for use in succession with the current one.
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Worksheet

Name	Description
Replacement and Probability:	This lesson is designed to develop students' understanding of sampling with and without replacement and its effects on the probability of drawing a desired object. The lesson provides links to discussions and activities related to replacement and probability as well as suggested ways to work them into the lesson. Finally, the lesson provides links to follow-up lessons that are designed to be used in succession with the current one.

Student Resources

Name	Description
Interactive Marbles:	This online manipulative allows the student to simulate placing marbles into a bag and finding the probability of pulling out certain combinations of marbles. This allows exploration of probabilities of multiple events as well as probability with and without replacement. The tabs above the applet provide access to supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the Java applet.
Plinko Probability:	The students will play a classic game from a popular show. Through this they can explore the probability that the ball will land on each of the numbers and discover that more accurate results coming from repeated testing. The simulation can be adjusted to influence fairness and randomness of the results.