Standard #: MAFS.912.S-MD.1.2

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Calculate the expected value of a random variable; interpret it as the mean of the probability distribution. ★

Subject Area: Mathematics	**Grade:** 912
Domain-Subdomain: Statistics & Probability: Using Probability to Make Decisions	**Cluster:** Level 2: Basic Application of Skills & Concepts
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 Resources

Problem-Solving Task

Name	Description
Bob's Bagel Shop:	The purpose of this task is to assess a student's ability to compute and interpret the expected value of a random variable.

Teaching Idea

Name	Description
Conditional Probability and Probability of Simultaneous Events:	This lesson is designed to further students' practice with probability as well as introduce them to conditional probability and probabilities of simultaneous independent events. The lesson provides links to discussions and activities related to conditional and simultaneous probabilities as well as suggested ways to integrate them into the lesson. Finally, this lesson provides links to follow-up lessons designed for use in succession with this one.

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.
Probability:	This lesson is designed to develop students' understanding of probability in real life situations. Students will also be 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.
Winner! Winner! - Expected Values:	County Fairs and Carnivals are wonderful. The smell of the food, the thrill of the rides, and the chance to win prizes make for a perfect combination. Winner! Winner! is an activity about the Carnival coming to town with seven (7) exciting games: Rolling Dice, Bottle Bowling, Fish Bowl, Weigh in on That!, Pin the Wing, Colors, and Spin It! Student groups must look at the cost, rules, and awarded prizes in order to give the best rank order for these games. The groups will be expected to give details on the procedures they used to develop their ranking order. Furthermore, students will be expected to calculate the expected values of the Rolling Dice game and interpret the results in context. All of a sudden more information is collected about these Carnival Games and now the savvy students must use this information to either revise or rewrite their procedures. Then, when the students are ready to attack this new dilemma, they will encounter Andy, a Carnival Lover, who has had a thrilling time but now discovers his funds are running low. Which games will the students select for Andy and why?

Virtual Manipulative

Name	Description
	The students will play a classic game from a popular show. Through this they can explore the probability that the ball

| Plinko Probability: | 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. |

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
Bob's Bagel Shop:	The purpose of this task is to assess a student's ability to compute and interpret the expected value of a random variable.
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.

Parent Resources

Name	Description
Bob's Bagel Shop:	The purpose of this task is to assess a student's ability to compute and interpret the expected value of a random variable.