

Standard #: MAFS.912.S-IC.2.5

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Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. ★

Grade: 912	
Cluster: Make inferences and justify conclusions from sample surveys, experiments, and observational studies. (Algebra 2 - Major Cluster) - Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.	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
1200330:	Algebra 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200340:	Algebra 2 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1207310:	Liberal Arts Mathematics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1210300:	Probability & Statistics with Applications Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2107310:	Psychology 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2000520:	Bioscience 3 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200335:	Algebra 2 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2019 (course terminated))
2100335:	African-American History (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2106410:	Humane Letters 1 - History (Specifically in versions: 2019 and beyond (current))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.912.S-IC.2.AP.5a:	Use measures of center tendency (mean, median, mode) and measures of variability (range and standard deviation) for numerical data from random experiment to compare two treatments.

Related Resources

Virtual Manipulative

Name	Description
Advanced Fire Simulator - Shodor:	In this online activity, students burn a simulated forest and adjust the probability that the fire spreads from one tree to the other. This simulation also records data for each trial including the burn probability, where the fire started, the percent of trees burned, and how long the fire lasted. This activity allows students to explore the idea of chaos in a simulation of a realistic scenario. 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 are linked to the applet.

Perspectives Video: Expert

Name	Description
Carbon Foam and Geometry:	Carbon can take many forms, including foam! Learn more about how geometry and the Monte Carlo Method is important in understanding it.
Let's Make a Math Deal:	Should I keep my choice or switch? Learn more about the origins and probability behind the Monty Hall door picking dilemma and how Game Theory and strategy effect the probability.

Lesson Plan

Name	Description
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Changing World Oceans - An Ocean Acidification Simulation:	This 5-day lesson introduces students to the phenomenon of ocean acidification, including processes involved and the importance it has on earth ecosystems. It focuses on the atmosphere / hydrosphere interaction with respect to carbon dioxide. The lesson progresses from the introductory first day where student preconceptions and misconceptions are identified and addressed in an introductory lesson. The lab on the second day can be accomplished using non-specialized, inexpensive equipment or more sophisticated probeware. Day 3 is for data analysis and reflecting on the lab results and building process diagrams, and days 4 and 5 are time for writing the lab report.
Hot Coffee Coming Through:	In this lesson, students will explore data collection using the temperature probe sensor and perform statistical analysis of the data. Students will use a scientific method of inquiry to plan an investigation to determine which coffee mug is the best. This activity is meant to allow students to use a variety of skills they have acquired throughout a statistics unit in a problem based STEM challenge. Due to the multiple skills there are many standards that are covered. There are two options for this lab. The first student handout is for students at an average high school statistics level (Algebra 1) and will allow for standard deviation and graphical analyses of the data. The second option is for advanced students that have been exposed to hypothesis testing of claims (Algebra 2 or AP Stats).

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.

Video/Audio/Animation

Name	Description
MIT BLOSSOMS - Is Bigger Better? A Look at a Selection Bias that Is All Around Us:	This learning video addresses a particular problem of selection bias, a statistical bias in which there is an error in choosing the individuals or groups to make broader inferences. Rather than delve into this broad topic via formal statistics, we investigate how it may appear in our everyday lives, sometimes distorting our perceptions of people, places and events, unless we are careful. When people are picked at random from two groups of different sizes, most of those selected usually come from the bigger group. That means we will hear more about the experience of the bigger group than that of the smaller one. This isn't always a bad thing, but it isn't always a good thing either. Because big groups "speak louder," we have to be careful when we write mathematical formulas about what happened in the two groups. We think about this issue in this video, with examples that involve theaters, buses, and lemons. The prerequisite for this video lesson is a familiarity with algebra. It will take about one hour to complete, and the only materials needed are a blackboard and chalk. The downloadable Teacher's Guide found on the same page as the video, provides suggestions for classroom activities during each of the breaks between video segments.

Assessment

Name	Description
Sample 1 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.
Sample 2 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.
Sample 3 - High School Algebra 2 State Interim Assessment:	This is a State Interim Assessment for 9th-12th grades.

Student Resources

Name	Description
Advanced Fire Simulator - Shodor:	In this online activity, students burn a simulated forest and adjust the probability that the fire spreads from one tree to the other. This simulation also records data for each trial including the burn probability, where the fire started, the percent of trees burned, and how long the fire lasted. This activity allows students to explore the idea of chaos in a simulation of a realistic scenario. 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 are linked to the applet.