Plainfield Public Schools
Mathematics
Unit Planning Organizer

Grade/Course	Algebra II
Unit of Study	Unit 3 Inference and Conclusions from Data
Pacing	7 weeks
Dates	January 30 – April 4, 2017

Standards for Mathematical Practices
MP1. Make sense of problems and persevere in solving them. MP2. Reason abstractly and quantitatively. MP3. Construct viable arguments and critique the reasoning of others. MP4. Model with mathematics. MP5. Use appropriate tools strategically. MP6. Attend to precision. MP7. Look for and make use of structure. MP8. Look for and express regularity in repeated reasoning.

Hyperlinks are noted underlined in italics.

NEW JERSEY STUDENT LEARNING STANDARDS
S.IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population. ★ S.IC.A.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a s S.IC.B.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. ★ S.IC,B.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. ★ S.IC,B.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. ★ S.IC.B.6 Evaluate reports based on data S.ID.A.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. S.CP.A.1Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). S.CP.A.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent S.CP.A.3Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B S.CP.A.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object

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being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*

S.CP.A.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

S.CP.B.6Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model

S.CP.B.7Apply the Addition Rule, P(A or B) = P(A) + P(B) - P(A and B), and interpret the answer in terms of the model.

“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
FOCUS STANDARD: S.IC.B.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.		
Recognize	sample surveys	1

“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
FOCUS STANDARD: S.IC.B.4Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.		
Use	Population mean Proportion Margin of error Random sampling	2

“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
FOCUS STANDARD: SS.IC.B.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.		
Use	Randomized simulators	2

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“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
FOCUS STANDARD: S.IC.B.6Evaluate reports based on data.		
Evaluate	data	3

“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
Additional Standard S.IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population.		
Understand	Statistic Population Random sample	1

“Unwrapped” Skills (students need to be able to do)	**“Unwrapped” Concepts (students need to know)**	**DOK Levels**
Additional Standard : S.IC.A.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*		
IIIDecide	Data generating	2

II. New Jersey Student Learning Standards ……………………….Explanations and Examples

Statistics and Probability: Making Inferences and Justifying Conclusions ★ (S-IC) **Understand and evaluate random processes underlying statistical experiments.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
.S-IC.A.1. Understand statistics as a process for making inferences to be made about population parameters based on a random sample from that population.	*HS.MP.4.* Model with mathematics. *HS.MP.6.* Attend to precision.	

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Statistics and Probability: Making Inferences and Justifying Conclusions ★ (S-IC) **Understand and evaluate random processes underlying statistical experiments.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
S-IC.A.2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin will fall heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*	*HS.MP.1.* Make sense of problems and persevere in solving them. *HS.MP.2.* Reason abstractly and quantitatively. *HS.MP.3*. Construct viable arguments and critique the reasoning of others. *HS.MP.4.* Model with mathematics. *HS.MP.5.* Use appropriate tools strategically. *HS.MP.6.* Attend to precision. *HS.MP.7*. Look for and make use of structure. *HS.MP.8.* Look for and express regularity in repeated reasoning.	Possible data-generating processes include (but are not limited to): flipping coins, spinning spinners, rolling a number cube, and simulations using the random number generators. Students may use graphing calculators, spreadsheet programs, or applets to conduct simulations and quickly perform large numbers of trials. The law of large numbers states that as the sample size increases, the experimental probability will approach the theoretical probability. Comparison of data from repetitions of the same experiment is part of the model building verification process. **Example:** • Have multiple groups flip coins. One group flips a coin 5 times, one group flips a coin 20 times, and one group flips a coin 100 times. Which group's results will most likely approach the theoretical probability?

Statistics and Probability: Making Inferences and Justifying Conclusions ★ (S-IC) **Make inferences and justify conclusions from sample surveys, experiments, and observational studies.**		
Standards *Students are expected to:*	*Mathematical Practices*	*Explanations and Examples*
S-IC.B.3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	*HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.4.* Model with mathematics. *HS.MP.6.* Attend to precision.	Students should be able to explain techniques/applications for randomly selecting study subjects from a population and how those techniques/applications differ from those used to randomly assign existing subjects to control groups or experimental groups in a statistical experiment. In statistics, an observational study draws inferences about the possible effect of a treatment on subjects, where the assignment of subjects into a treated group versus a control group is outside the control of the investigator (for example, observing data on academic achievement and socio-economic status to see if there is a relationship between them). This is in contrast to controlled experiments, such as randomized controlled trials, where each subject is randomly assigned to a treated group or a control group before the start of the treatment.
S-IC.B.4. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	*HS.MP.1.* Make sense of problems and persevere in solving them. *HS.MP.4.* Model with mathematics. *HS.MP.5.* Use appropriate tools strategically.	Students may use computer generated simulation models based upon sample surveys results to estimate population statistics and margins of error.
S-IC.B.5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	*HS.MP.1.* Make sense of problems and persevere in solving them. *HS.MP.4.* Model with mathematics. *HS.MP.5.* Use appropriate tools strategically. *HS.MP.8.* Look for and express regularity in repeated reasoning.	Students may use computer generated simulation models to decide how likely it is that observed differences in a randomized experiment are due to chance. Treatment is a term used in the context of an experimental design to refer to any prescribed combination of values of explanatory variables. For example, one wants to determine the effectiveness of weed killer. Two equal parcels of land in a neighborhood are treated; one with a placebo and one with weed killer to determine whether there is a significant difference in effectiveness in eliminating weeds.

Hyperlinks are noted underlined in italics.

Standards Students are expected to:	*Mathematical Practices*	*Explanations and Examples*
S-IC.B.6. Evaluate reports based on data.	*HS.MP.1*. Make sense of problems and persevere in solving them. HS.MP.2. Reason abstractly and quantitatively. *HS.MP.3.* Construct viable arguments and critique the reasoning of others. *HS.MP.4.* Model with mathematics. *HS.MP.5.* Use appropriate tools strategically. *HS.MP.6.* Attend to precision. *HS.MP.7*. Look for and make use of structure. *HS.MP.8*. Look for and express regularity in repeated reasoning.	Explanations can include but are not limited to sample size, biased survey sample, interval scale, unlabeled scale, uneven scale, and outliers that distort the line-of-best-fit. In a pictogram the symbol scale used can also be a source of distortion. As a strategy, collect reports published in the media and ask students to consider the source of the data, the design of the study, and the way the data are analyzed and displayed. **Example:** • A reporter used the two data sets below to calculate the mean housing price in Arizona as $629,000. Why is this calculation not representative of the typical housing price in Arizona? ○ King River area {1.2 million, 242000, 265500, 140000, 281000, 265000, 211000} ○ Toby Ranch homes {5 million, 154000, 250000, 250000, 200000, 160000, 190000}

III.Essential Questions ……………………………………….Corresponding Big Ideas

Essential Questions	Corresponding Big Ideas
What are the advantages and disadvantages of each sampling technique? How can data be misrepresented? How can we use summary statistics to describe a distribution or support or refute a claim? How can understanding statistics and their appropriate use be important and useful to us? What is a normal distribution? How can the different spreads be used to describe a given data set? How can the area under the normal curve be utilized to estimate frequencies and represent probability? How can theoretical and empirical results be interpreted?	Statistics measuring center and spread can be used to analyze and answer questions about a particular distribution. Appropriate statistics should be chosen based on the general shape of the data. Summarize, represent, and interpret data on a single count or measurement variable. Use data distributions to understand that the normal distribution uses area to make estimates of frequencies (which can be expressed as probabilities). Emphasize that only some data are well described by a normal distribution. Understand and evaluate random processes underlying statistical experiments. Compare theoretical and empirical results to evaluate the effectiveness of a treatment. Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Focus on the variability of results from experiments. Determine the scope and nature of the conclusions given a data set. Statistical significance is developed through random sampling or random assignment in an experiment. Use probability to evaluate outcomes of decisions.

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How can null and alternate hypothesis be written to conduct an experiment or simulation to examine the validity of a claim? What is the difference between a hypothesis test and a confidence interval? When should each be used? How can the result from inference tests be used to draw conclusions? How are confidence interval and margin of error related? What are the causes of misleading conclusions?	Explore complex probability models such as quality control or diagnostic tests that yield both false positive and false negative results. Conduct simulations for a given statistical scenario and draw conclusions from the results. Use inference testing to determine validity of a claim as well as compare two sample means. Use confidence interval to determine margin of error. Understand and apply different sampling techniques (simple random sample, stratified, cluster, and systematic) in order to conduct a simulation, survey, or experiment. Recognize misleading conclusions in a report or conclusion due to bias in sampling, small sample size, etc. Read and interpret conclusions from reports. Sources: Lloyd, G., Herbel-Eisenmann, B., & Star, J.R. (2011). *Developing Essential Understanding of Expressions,Equations, and Functions for Teaching Mathematics in Grades 6-8.* Reston, VA: The National Council of Teachers of Mathematics, Inc. Cooney, T., Beckmann, S., & Lloyd, G. (2010). *Developing Essential Understanding of Functions Grades 9-12.* Reston, VA: The National Council of Teachers of Mathematics, Inc

IV. Student Learning Goals

Student Learning Goals	Concepts / Skills	*Instructional Clarification PARRC Mathematics (Algebra 2) Test Specifications Evidence Document*	Mathematical Practices
Use the mean and standard deviation of a data set to fit it to a normal distribution, estimate population percentages, and recognize that there are data sets for which such a procedure is not appropriate (use calculators, spreadsheets, and tables to estimate areas under the normal curve). S.ID.A.4	**Concepts:** • Mean and standard deviation are used to fit in a normal distribution • Population percentages may be estimated when the data are approximately normally distributed. **Students are able to:** • identify data sets as approximately normally distributed or not. • explain the 68-95-99.7 rule for normal distributions (approximately 68% of the area under a normal distribution curve is within one standard deviation, approximately 95% of the area under a normal distribution curve is within two standard deviations, etc). • use the mean and standard deviation of a normal distribution to estimate population percentages. • use calculators, spreadsheets, and tables to estimate areas under the normal curve and interpret in context.	• Tasks may require finding the area associated with a z-score using technology. • Use of a z-score table will not be required. • Tasks may involve finding a value at a given percentile based on a normal distribution.	MP.2 MP.4

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Identify and evaluate random sampling methods. S.IC.A.1.	**Concepts:** • Statistics is a process for making inferences about a population based on analysis of a random sample from the population. **Students are able to:** • identify and evaluate random sampling methods. • explain the importance of randomness to sampling and inference making. • explain the difference between values that describe a population and a sample, in context.		MP.2 MP.4
Determine if the outcomes and properties of a specified model are consistent with results from a given data-generating process (e.g. using simulation).S-IC.2	**Concepts:** • Random processes can be described mathematically by using a model: a list or description of possible outcomes. **Students are able to:** • determine whether a given model is consistent with results from and experiment. • know the difference between experimental and theoretical modeling. • know how far predictions can be projected based on sample size. • design simulations of random sampling.	• Tasks might ask the students to look at the results of a simulation and decide how plausible the observed value is with respect to the simulation. *For an example, see question 7 on the calculator section of the online practice test(<u>http://practice.parcc.testnav.com/#</u>).*	MP.2 MP.4.

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Identify the differences among and purposes of sample surveys, experiments, and observational studies, explaining how randomization relates to each. S-IC.3	**Concepts:** • Collecting data from a random sample of a population makes it possible to draw conclusions about the whole population. • Randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. • Sample surveys, experiments, and observational studies serve different statistical purposes allowing for different statistical analyses. **Students are able to:** • distinguish between sample surveys, experiments, and observational studies. • explain the importance of randomization in each of these processes. • identify voluntary response samples and convenience samples. • describe simple random samples, stratified random samples, and cluster samples. • explain how under coverage, nonresponse, and question wording can lead to bias in a sample survey.	For tasks that address simple random sample: A simple random sample requires that every possible group of the given sample size has an equal chance of being selected, not that every unit in the population has an equal chance of being selected. Purposes and distinctions are as follows: • Survey: To estimate or make a decision about a characteristic of a population based on a random sample. • Experiment: To estimate or compare the effects of different treatments based on randomized assignment of treatments to units for the purpose of establishing a cause and effect relationship. • Observational study: To suggest patterns and/or associations among variables where treatments or conditions are inherent and not assigned to units.	MP.2 MP.3 MP.4 MP.6

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Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. S.IC.B.4.	Concepts: • Appropriately drawn samples of a population may be used to estimate a population mean or population proportion. • Relationship between margin of error, variation with a data set, and variability in the population Students are able to: • conduct simulations of random sampling to gather samples. • estimate population means with sample means. • estimate population proportions with sample proportions. • calculate martins of error for the estimates. • explain how the results relate to variability in the population.	• If the content is only S-ID, the task must include Algebra 2 / Math 3 content (S-ID.4 or S-ID.6) • Longer tasks may require some or all of the steps of the modeling cycle (CCSSM, pp. 72, 73); for example, see ITN Appendix F, "Karnataka" task (Section A "Illustrations of innovative task characteristics," subsection 7 "Modeling/Application," subsection f "Full Models"). As in the Karnataka example, algebra and function skills may be used. • Predictions should not extrapolate far beyond the set of data provided. • Line of best fit is always based on the equation of the least squares regression line either provided or calculated through the use of technology. • Tasks may involve linear, exponential, or quadratic regressions. If the linear regression is in the task, the task must be written to allow students to choose the regression. • To investigate associations, students may be asked to evaluate scatterplots that may be provided or created using	MP.2 MP.4

		technology. Evaluation includes shape, direction, strength, presence of outliers, and gaps. • Analysis of residuals may include the identification of a pattern in a residual plot as an indication of a poor fit. • Models may assess key features of the graph of the fitted model. Tasks that involve S-ID.4, may require finding the area associated with a z-score using technology. Use of a z-score table will not be required. • Tasks may involve finding a value at a given percentile based on a normal distribution • the task addresses S-IC.4, the margin of error can be estimated as being 2 standard deviations of the sampling distribution of the statistic.	
Use data from a randomized experiment to compare two treatments and use simulations to decide if differences between parameters are significant; evaluate reports based on data. S-IC.5, S-IC.6	. **Concepts:** • A statistically significant outcome is one that is unlikely to be due to chance alone. **Students are able to:** • conduct a t-test to evaluate the effectiveness and differences in two treatments. • use simulations to generate data simulating applying two treatments.	• For tasks that address comparing two data distributions: Comparisons of center, shape, and spread are required. • Tasks may use the term s 'variability" and "spread". • For tasks that address simple random sample: A simple random sample requires that every possible	MP.2 MP.3 MP.4 MP.6

	• use the results of simulations to determine if the differences are significant. • read and explain, in the context of the situation, data from outside reports – discussing experimental study design, drawing conclusions from graphical and numerical summaries, and identifying characteristics of the experimental design.	group of the given sample size has an equal chance of being selected, not that every unit in the population has an equal chance of being selected. • For tasks that address comparing two data distributions: Comparisons of center, shape, and spread are required.	
Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and,"" not"). S.CP.A.1	**Concepts:** • Events are described as subsets of a sample space. **Students are able to:** • identify a sample space, recognizing it as the set of all possible outcomes. • identify and describe subsets of a sample space as events. • describe unions, intersections and complements of events. • visualize unions, intersections and complements of events with Venn diagrams.		MP.2 MP.3 MP.4 MP.6
Use two-way frequency tables to determine if events are independent and to calculate conditional probability. Use everyday language to explain independence and conditional	**Concepts**: • Two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities. • Independence of event *A* and event *B* means that the conditional probability of *A* given *B*		MP.1 MP.2 MP.4 MP.5, MP.6

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probability in real-world situations. S.CP.A.2, S.CP.A.3, S.CP.A.4	is the same as the probability of, and the conditional probability of *B* given *A* is the same as the probability of *B.* **Students are able to:** • identify events as independent or dependent. • interpret the conditional probability of A given B as answering the question 'now that B *has* occurred, what is the probability that event A will occur?'. • determine the conditional probability of *A* given *B* using *P* (*A* and *B*)/*P*(*B*). • represent conditional probability of *A* given *B* as P(A|B). • calculate conditional probabilities. • construct two-way frequency tables for two categorical variables. • calculate probabilities from the two-way frequency table. • use the probabilities to assess independence of two variables.		
Find the conditional probability of A given *B* as the fraction of *B*'s outcomes that also belong to *A* and apply the Addition Rule [*P (A* or *B) = P(A) + P(B) – P (A* and *B)*]. S.CP.B.6, S.CP.B.7	**Concepts:** • Mutually exclusive events exist. **Students are able to:** • analyze event B's outcomes to determine the proportion of B's outcomes that also belong to event A. • interpret this proportion as	Calculating expected values of a random variable is a plus standard and not assessed; however, the word "expected" may be used informally (e.g., if you tossed a fair coin 20 times, how many heads would you expect?).	MP.1 MP.2 MP.4 MP.5, MP.6

	conditional probability of A given B. • identify two events as mutually exclusive (disjoint). • calculate probabilities using the Addition rule P(A or B) = P(A) + P(B) – P(A and B).			

V. Unit Vocabulary

Unit Vocabulary	
Sample surveys	Population
mean proportion	Randomization
standard deviation	binomial distribution
Theoretical probability	experimental probability
random samples	Conditional probability
Symmetric	skewed
binomial theorem	random variable
binomial distribution	
binomial experiment	normal curve
standard normal distribution	
z-score	
sample biased	
unbiased sample	
margin of error	
control experiment	

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VI. Differentiation Strategies / Modifications

Research Based Effective Teaching Strategies	Modifications (how do I differentiate instruction?)	Strategies for Special Needs Learners	Strategies for English Language Learners
Task /Activities that solidifies mathematical concepts Use questioning techniques to facilitate learning Reinforcing Effort, Providing Recognition Practice, reinforce and connect to other ideas within mathematics Promotes linguistic and nonlinguistic representations Cooperative Learning Setting Objectives, Providing Feedback Varied opportunities for students to communicate mathematically Use technological and /or physical tools	**Modifications** Before or after school tutorial program Leveled rubrics Increased intervention Small groups Change in pace Calculators Extended time Alternative assessments Tiered activities/products Color coded notes Use of movements Use any form of technology **Extension:** Students conducts various studies related to health , population , foreign relationships	Change in pace Calculators Alternative assessments Accommodations as per IEP Modifications as per IEP Use graphic organizer to clarify mathematical functions for students with processing and organizing difficulties'. Constant review of math concepts to strengthen understanding of prior concepts for difficulties recalling facts. Use self-regulations strategies for student to monitor and assess their thinking and performance for difficultly attending to task Cooperative learning (small group, teaming, peer assisted tutoring) to foster communication and strengthen confidence. Use technology and/or hands on devices to: clarify abstract concepts and process for: 1. Difficulty interpreting pictures and diagram. 2.difficulties with oral communications	*Whiteboards* *Small Group / Triads* *Word Walls* *Partially Completed Solution* *Gestures* *Native Language Supports* *Pictures / Photos* *Partner Work* *Work Banks* *Teacher Modeling* *Math Journals*

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		3. Difficulty correctly identifying symbols of numeral 4.Difficulty maintaining attentions Simplify and reduces strategies / Goal structure to enhance motivation, foster independence and self-direction for: 1.Difficulty attending to task 2. Difficulty with following a sequence of steps to solution. 3.Difficulty processing and organizing Scaffolding math idea/concepts by guided practice and questioning strategies' to clarify and enhance understanding of math big ideas for: 1.Difficulty with process and organization 2.Difficulty with oral and written communication Teacher models strategies' and think out aloud strategies to specify step by step process for: 1.Difficulties processing and organization 2. Difficulty attending to tasks. Use bold numbers and/or words to draw students' attention to important information.	

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VII. Assessments and Instructional Resources

Instructional Resources and Materials		
Formative Assessment	**Print**	
Short constructed responses Extended responses Checks for Understanding Exit tickets Teacher observation Projects Group Timed Practice Test – Multiple Choice & Open-Ended Questions **Performance Tasks:** *S.IC.B.3 Strict Parents* *S.IC.B.4 Margin of Error for Estimating a Population Mean* **Additional Performance Tasks** *S.ID.A.4 Do You Fit in This Car?* *S.IC.A.1School Advisory Panel* *S.IC.A.2 Sarah, the chimpanzee* *S.CP.A.1 Describing Events* *S.CP.A.2 Cards and Independence* *S.CP.A.3 Lucky Envelopes* *S.CP.A.4 Two-Way Tables and Probability* *S.CP.A.5 Breakfast Before School* *S.CP.B.6 The Titanic 1* *S.CP.B.7 The Addition Rule* *S.CP.B.7 Rain and Lightning*	Mc Dougal Littell: Algebra 2 @ 2007 : Chapter 11 : Data Analysis and Statistic **Technology** *Resources for teachers* *Annenberg Learning : Insight into Algebra 1* *Mathematics Assessment Projects* *Get the Math* *Achieve the Core* *illustrative Mathematics* *Inside Mathmatics.org* *Asia Pacific Economic Cooperation : :Lesson Study Videos* *Genderchip.org* *Interactive Geometry* *Mathematical Association of America* *National Council of Teachers of Mathematics* *learner.org* *Math Forum : Teacher Place* *Shmoop /common core math* *Geometer's Sketchpad*	*Resources for Students* *Khan Academy* *Math world : Wolfram.com* *Webmath.com* *sosmath.com* *Mathplanet.com* *Interactive Mathematics.com* *Mathexpression.com.algebra* *Math Words for Advance Algebra & Pre-Calculus* *Math TV*

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