

Algebra I: Data Analysis

Stage 1 Desired Results		
ESTABLISHED GOALS: Competencies: - Students will demonstrate perseverance and strategic thinking by identifying the underlying meaning of a problem, planning a logical solution pathway, working through challenges, and verifying the reasonableness of their answers. - Students will demonstrate application skills by using mathematical concepts and symbols to represent, analyze, and solve problems arising in everyday life, society, and the workplace. - Students will demonstrate resourcefulness by evaluating and selecting the most effective tools to solve mathematical problems and deepen their understanding of concepts. - Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials. - Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences. - Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style. Content Standards: - S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots). - S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. - S.ID.3 Interpret differences in shape, center, and spread in the context of the data - S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. - S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. - Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models. - Informally assess the fit of a function by plotting and analyzing residuals. - Fit a linear function for a scatter plot that suggests a linear association. - S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. - S.ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit. - S.ID.9 Distinguish between correlation and causation.	Transfer	
	<i>Students will be able to independently use their learning to construct and defend a well thought out conclusion.</i>	
	Meaning	
	ENDURING UNDERSTANDINGS <i>Students will understand that...</i> - data may be represented in a variety of ways, and there are advantages and disadvantages associated with each statistical method. - how data is represented influences how it may be interpreted.	ESSENTIAL QUESTIONS Can you ever be sure that a conclusion is correct?
	Acquisition	
	<i>Students will know...</i> - that, when data plots are examined, a correlation can often be seen which might be modeled by a linear or exponential function. - that a correlation between quantities does not always imply causation. - that the mode should be used when the data are non-numeric or when choosing the most popular item. - that histograms can demonstrate if the data's distribution is uniform, symmetric, or skewed. - that the mean should be used to describe the middle of a set of data that does not have an outlier. - that the median should be used to describe the middle of a set of data that does have an outlier. - that separating data into subsets is a useful way to summarize and compare data sets. vocabulary: line of best fit, causation, scatter plot, direct correlation, frequency, histogram, interval, cumulative frequency table, measure of central tendency, outlier, mean, median, mode, measure of dispersion, range, quartile, interquartile range	<i>Students will be skilled at...</i> - creating scatterplots. - determining the line of best fit. - determining if either a linear or exponential function can be used to model data. - building a function based on data plots and using the function to make predictions. - making and interpreting frequency tables and histograms. - determining appropriate intervals when constructing data representations. - calculating measures of central tendency, including mean, median, and mode. - creating line plots. - comparing measures of central tendency. - creating and interpreting a box and whisker plot to summarize a set of data.

- F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). - MP2 Reason abstractly and quantitatively. - MP3 Construct viable arguments and critique the reasoning of others. - MP6 Attend to precision. - MP7 Look for and make use of structure. - MP8 Look for and express regularity in repeated reasoning.		
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Content Area Literacy Standards	21st Century Skills
- RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. - RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. - RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9-10 texts and topics</i>. - RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force</i>, <i>friction</i>, <i>reaction force</i>, <i>energy</i>). - RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. - RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. - RST.9-10.9 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	<i>reason effectively</i> <i>make judgments and decisions</i> <i>access and evaluate information</i>

Stage 2 - Evidence	
Evaluative Criteria	Assessment Evidence
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Stage 3 – Learning Plan
<i>Summary of Key Learning Events and Instruction</i>

<i>Science Integration</i>	<i>College, Career, and Civic Life Integration</i>	<i>Technology Integration</i>
<i>District Materials</i>	<i>Distance Learning/Field Trips</i>	<i>Technology Resources</i>