

Statistics and Probability: Grade 8

Stage 1 Desired Results		
ESTABLISHED GOALS: <u>Competencies:</u> - Students will demonstrate the ability to reason with quantities by defining, evaluating, and comparing functions. - Students will demonstrate the ability to apply statistical methods in order to analyze and summarize bi-variate data. - Students will demonstrate the ability to model real world problems by building and analyzing the appropriate expression, equation, or function. - 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. <u>Content Standards:</u> 8.SP.A.1 - Construct and interpret scatter plots for bi-variate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. 8.SP.A.2 - Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 8.SP.A.3 - Use the equation of a linear model to solve problems in the context of bi-variate measurement data, interpreting the slope and intercept. <i>For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</i> 8.SP.A.4 - Understand that patterns of association can also be seen in bi-variate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	Transfer	
	Students will be able to independently use their learning to analyze and describe patterns between quantities.	
	Meaning	
	ENDURING UNDERSTANDINGS Students will understand that... patterns of association can be generalized and used for decision making and processing information.	ESSENTIAL QUESTIONS What are relationships and how do they affect decision making?
	Acquisition	
	Students will know... - that a scatter plot is a graph that shows how two sets of data are related in order to make predictions about the data. - the difference between categorical data and quantitative data. - how a non-linear association and a linear association differ visually on a scatter plot. - what data clustering reveals on a scatter plot. - what the line of best fit represents and can be used for. - that two-way tables show data that pertains to two different categories. - that a two-way table can organize information from two different categories to identify and describe any association between the two categories. - the difference between qualitative and quantitative data. - statistical data describes relationships and helps us to make decisions. <u>vocabulary:</u> bi-variate data, distribution, line of best fit, qualitative data, quantitative data, relative frequency, scatter plot, positive association, negative	Students will be skilled at... - constructing a scatter plot from a two-way data table. - using a scatter plot to determine and describe relationship between data. - reading and interpreting a scatter plot. - identifying outliers in data. - identifying a positive, a negative, or no association between two sets of data. - creating and describing a line of best fit and writing an equation for the line. - interpreting the slope and intercepts of a line of best fit. - collecting bi-variate categorical data and constructing a two-way table to summarize the data. - calculating frequencies from a two-way table to describe associations between two variables. - interpreting patterns of association in bi-variate categorical data from a two-way table. - writing an equation to model the relationship between the two variables, given a linear model in a scatter plot.

<i>For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?</i> • 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. • MP6 Attend to precision. • MP7 Look for and make use of structure. • MP8 Look for and express regularity in repeated reasoning.	<i>association, no association, linear association, non-linear association, two-way table, correlation, categorical data, frequency, clustering, outliers</i>	
Content Area Literacy Standards		21st Century Skills
• RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. • RST.6-8.4 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 6-8 texts and topics</i>. • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. • RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. • RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.		• <i>reason effectively</i> • <i>use systems thinking</i> • <i>make judgments and decisions</i> • <i>solve problems</i> • <i>access and evaluate information</i> • <i>use and manage 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>	
Language Arts Integration	Mathematics Integration
• 1.OA.1 Use	• 1.OA.1 Use

<i>Technology Integration</i>	<i>District Materials</i>
• 1.OA.1 Use	