

# UbD: Algebra 1 - One Variable Statistics

Time Frame: 16 Lessons	Unit 1: One Variable Statistics	Course Name: Algebra 1
Stage 1: Desired Results		
Established Goal(s)	Transferable Skills	
<b>Competencies Addressed:</b> One variable statistics  <b>Standards Addressed:</b> <b>6.SPA.1</b> Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. <b>6.SP.B.4</b> Display numerical data in plots on a number line, including dot plots, histograms, and box plots. <b>6.SP.B.5.c</b> Giving quantitative measures of center (median and/or mean) and variability (interquartile range)	<i>Students will be able to independently use their learning to</i> <ul style="list-style-type: none"> <li>● discuss the difference between statistical and non-statistical questions and classify that data as numerical or categorical.</li> <li>● develop clear and effective communication.</li> <li>● increase self-direction.</li> <li>● develop creative and practical problem-solving.</li> <li>● become responsible and involved citizens.</li> <li>● develop informed and integrative thinking.</li> </ul>	
	Meaning	
	<b>Understandings</b> <i>Students will understand that..</i> <ul style="list-style-type: none"> <li>● this unit on one-variable statistics allows students to practice data collection and analysis to set a tone for understanding quantities in context.</li> <li>● gathering and displaying data, measuring data distribution, and interpreting statistical results encourages students to collaborate, communicate, and explore new tools and routines.</li> <li>● there are common patterns/shapes formed from normal distribution</li> <li>● spreadsheets can be used to organize and understand data</li> <li>● data can be manipulated</li> <li>● data can be analyzed</li> </ul>	<b>Essential Questions</b> <ul style="list-style-type: none"> <li>● How can data be displayed in order to inform decision making?</li> <li>● In what ways can data be analyzed to inform decision making?</li> <li>● How can we effectively communicate the results of statistical analysis in order to inform others of our findings?</li> </ul>
	Acquisition	

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<p>and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p><b>HSS-ID.A.1</b> Represent data with plots on the real number line (dot plots, histograms, and box plots).</p> <p><b>HSS-ID.A.2</b> 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.</p>	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> <li>• how to tell the difference between numerical and categorical data.</li> <li>• how to use a dot plot, histogram, or box plot to represent data.</li> <li>• how to describe the shape of a distribution using the terms "symmetric, skewed, uniform, bimodal, and bell-shaped."</li> <li>• how to calculate mean absolute deviation, interquartile range, mean, and median for a set of data.</li> <li>• how to determine basic relationships between cell values in a spreadsheet by changing the values and noticing what happens in another cell.</li> <li>• how to use a spreadsheet as a calculator to find solutions to word problems.</li> <li>• how to use the shape of a distribution to compare the mean and median.</li> <li>• how to arrange data sets in order of variability given graphic representations.</li> <li>• how to describe standard deviation as a measure of variability.</li> <li>• how to use technology to compute the standard deviation.</li> <li>• how to tell how an outlier will impact the mean, median, IQR, or standard deviation.</li> <li>• how to compare and contrast situations using measures of center and measures of variability.</li> <li>• how to collect data from an experiment and compare the results using measures of center and measures of variability.</li> </ul>	<p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> <li>• tell statistical questions from non-statistical questions and can explain the difference.</li> <li>• find the five-number summary for data</li> <li>• graphically represent the data I collected and critique the representations of others.</li> <li>• use a graphical representation of data to suggest a situation that produced the data pictured.</li> <li>• create graphic representations of data and calculate statistics using technology.</li> <li>• describe how an extreme value will affect the mean and median.</li> <li>• use standard deviation to say something about a situation.</li> <li>• find values that are outliers, investigate their source, and figure out what to do with them.</li> </ul> <p>Mathematical Practices:</p> <ul style="list-style-type: none"> <li>• make sense of problems and persevere in solving them.</li> <li>• reason abstractly and quantitatively.</li> <li>• construct viable arguments and critique the reasoning of others.</li> <li>• model with mathematics.</li> <li>• use appropriate tools strategically.</li> <li>• attend to precision.</li> <li>• look for and make use of structure.</li> <li>• look for and express regularity in repeated reasoning.</li> </ul>
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