



# Honors Algebra 2 UNIT PLANNER



<b>Unit title</b>	<b>Inferences and Conclusions from Data (DOE Unit 7)</b>	<b>Unit duration</b>	<b>3.5 Weeks</b>
<b>Essential Questions (OR GUIDING QUESTIONS?)</b>			
<ul style="list-style-type: none"> <li>• How do I choose summary statistics that are appropriate to the data distribution?</li> <li>• How can I find a standard deviation?</li> <li>• How do I decide if the normal distribution describes a set of data?</li> <li>• When do I use the normal distribution to estimate probabilities?</li> <li>• How can I find the sampling distribution of a sample proportion?</li> <li>• How can I find the sampling distribution of a sample mean?</li> <li>• How do I use theoretical and empirical results to determine if a treatment was effective?</li> <li>• How does the way I collected data effect the conclusions that can be drawn?</li> <li>• How do I use statistics to explain the variability and randomness in a set of data?</li> <li>• How do I interpret the margin of error of a confidence interval?</li> <li>• How do I use a margin of error to find a confidence interval?</li> </ul>			
<b>Assessments</b>			
<p>Common Formative Unit Assessment(s) Common Summative Unit Assessment</p>			
<b>Content Standards</b>			
<p><b><u>Interpreting Categorical and Quantitative Data</u></b>  <b><u>Summarize, represent, and interpret data on a single count or measurement variable</u></b>  <b>MGSE9-12.S.ID.2</b> Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, <del>mean absolute deviation</del>, standard deviation) of two or more different data sets.  <b>MGSE9-12.S.ID.4</b> 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 procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.</p> <p><b><u>Making Inferences and Justifying Conclusions</u></b>  <b><u>Understand and evaluate random processes underlying statistical experiments</u></b>  <b>MGSE9-12.S.IC.1</b> Understand statistics as a process for making inferences about population parameters based on a random sample from that population.  <b>MGSE9-12.S.IC.2</b> Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. <i>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?</i></p>			

**Make inferences and justify conclusions from sample surveys, experiments, and observational studies**

**MGSE9-12.S.IC.3** Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

**MGSE9-12.S.IC.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.

**MGSE9-12.S.IC.5** Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

**MGSE9-12.S.IC.6** Evaluate reports based on data. *For example, determining quantitative or categorical data; collection methods; biases or flaws in data.*

**Learning Activities and Experiences**

Topic	Resource	Content Addressed	Standards Addressed
Review and Introduction	Math Award (DOE Learning Task)	<ul style="list-style-type: none"> <li>Calculate the mean absolute deviation, variance and standard deviation of two sets of data</li> <li>Compare center and spread of two or more different data sets</li> <li>Interpret differences to draw conclusions about data</li> </ul>	ID.2
Samples and Studies	<b>11-1 Statistical Questions and Variables</b> Pearson enVision pg. 551 - 557	<ul style="list-style-type: none"> <li>Define and recognize a statistical question</li> <li>Define and identify the type of statistical variable that is represented by a question or the data represented by a graph.</li> <li>Distinguish between quantities such as population/sample and parameter/statistic for the purpose of descriptive modeling.</li> </ul>	IC.1, IC.2, IC.3, IC.6
	<b>11-2 Statistical Studies &amp; Sampling</b> Pearson enVision pg. 558 - 564	<ul style="list-style-type: none"> <li>Identify experiments, sample surveys, and observational studies.</li> <li>Recognize bias in sampling methods.</li> <li>Identify a sampling method that provides a random sample from a population.</li> </ul>	IC.1, IC.2, IC.3, IC.6
	<p><b>Additional Resources:</b> DOE Framework Tasks:</p> <ul style="list-style-type: none"> <li>And You Believed That? Learning Task</li> <li>How Tall are our Students? Practice Task</li> </ul>		
Data Distributions	<b>11-3 Data Distributions</b> Pearson enVision pg. 565 - 572	<ul style="list-style-type: none"> <li>Find measures of center and spread, such as median, mean, interquartile range, and standard deviation.</li> <li>Compare data sets using statistical measures that are appropriate for the distribution of the data.</li> </ul>	ID.2
	<b>11-4 Normal Distributions</b> Pearson enVision pg. 573 - 580	<ul style="list-style-type: none"> <li>Fit a normal distribution to data.</li> <li>Compare and evaluate data values during z-scores.</li> <li>Use technology to calculate the area under the standard normal distribution curve.</li> </ul>	ID.4

	<p><b>3 Act Task Mark and Recapture</b>  <b>Pearson enVision pg. 597</b></p>	<ul style="list-style-type: none"> <li>Students apply their knowledge of statistics gained in the unit to a real world situation.</li> </ul>	
	<p><b>Additional Resources:</b>          DOE Framework Tasks:</p> <ul style="list-style-type: none"> <li>Empirical Rule</li> <li>Let's Be Normal</li> <li>How Confident are you Learning</li> <li>Final Grade Culminating Task</li> <li>Cost of Quality</li> </ul>		
Margin of Error	<p><b>11-5 Margin of Error</b>  <b>Pearson enVision pg. 581 - 588</b></p>	<ul style="list-style-type: none"> <li>Evaluate reports by estimating population parameters.</li> <li>Use multiple samples to make an inference about a population.</li> <li>Calculate the margin of error for quantitative or categorical data.</li> </ul>	IC.2, IC.4
<b>Personalized Learning and Differentiation</b>			
<p>Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.</p> <ul style="list-style-type: none"> <li>-SWD/504- Accommodations provided</li> <li>-ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports</li> <li>-Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring</li> <li>-Extensions- Enrichment Tasks and Projects</li> </ul>			
<b>Resources</b>			
<p>DOE Curriculum Framework</p> <p>Standard Normal Probabilities Table</p>			