



Saddlebrook Preparatory School

Curriculum Map - Scope and Sequence:  
High School Probability and Statistics

Purpose of Planning	Unit One Q1, W1 - 2	Unit Two Q1, W3 - 7	Unit Three Q1, W8 – Q2, W3	Unit Four Q2, W4 - 8	Unit Five Q3, W1 - 4
<b>Unit Topic and Overview:</b>	Introduction to Statistics	Descriptive Statistics	Probability	Discrete Probability Distributions	Normal Probability Distributions
<b>Prerequisite Student Knowledge</b> *What should students have previously mastered prior to this unit?	Students should have a general idea of what statistics and probability are from previous math courses and personal experiences from reading.	Students should know how to graph in two-dimensions from previous algebra courses.	Students should know how to operate with fractions and know how to convert between fractions and decimals.	Students should know how to calculate probabilities from the previous unit.	Students should know how to calculate probabilities from unit three.
<b>Essential Knowledge &amp; Student Expectations</b> *What are the anticipated learning outcomes for students?	Students understand the different types of data, ways that data can be collected, the two branches of statistics, and the basics of experimental design.  <u>Essential Question:</u> What is statistics and how is data categorized?	Students will be able to organize data using tables and graphs, and determine and analyze measures of central tendencies, measures of variation, and measures of position.  <u>Essential Question:</u> What are the ways in which data can be organized into tables and/or graphs, and which are more useful in certain instances?	Students will know the definition of probability, how to use counting methods to calculate probabilities and how to calculate probabilities of simple and compound events.  <u>Essential Question:</u> What is probability and how is it applied across disciplines?	Students will know what a random variable is and how to calculate mean and variance for the Binomial, Geometric and Poisson probability distributions.  <u>Essential Question:</u> What constitutes a discrete probability distribution and how do we calculate probabilities for them?	Students will be able to use a table or technology to determine probabilities for the Normal Probability Distribution and understand the Standard Normal Probability Distribution.  <u>Essential Question:</u> What types of events are normally distributed and how do we calculate the probabilities of these events?



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<b>Multi-Media Links:</b> *Videos, presentations, any and all supplemental online material.	<a href="#">Khan Academy</a>  <a href="#">Online Textbook</a>  Teacher Facebook page				
<b>Instructional Practices:</b> * Various Instructional Modalities, including Technology used	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice)	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice)	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice)	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice)	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice)



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<p><b>Assessments:</b> *Types and Measurements of Mastery</p>	<p><b>Informal Assessments:</b> Teacher questioning/class discussion, practice problems <b>Formal Assessments:</b> Unit test, quizzes, assignments, bell work, homework, class work.  80% of students will average a score of 80% on unit assessments.</p>	<p><b>Informal Assessments:</b> Teacher questioning/class discussion, practice problems <b>Formal Assessments:</b> Unit test, quizzes, assignments, bell work, homework, class work.  80% of students will average a score of 80% on unit assessments.</p>	<p><b>Informal Assessments:</b> Teacher questioning/class discussion, practice problems <b>Formal Assessments:</b> Unit test, quizzes, assignments, bell work, homework, class work.  80% of students will average a score of 80% on unit assessments.</p>	<p><b>Informal Assessments:</b> Teacher questioning/class discussion, practice problems <b>Formal Assessments:</b> Unit test, quizzes, assignments, bell work, homework, class work, final exam.  80% of students will average a score of 80% on unit assessments.</p>	<p><b>Informal Assessments:</b> Teacher questioning/class discussion, practice problems <b>Formal Assessments:</b> Unit test, quizzes, assignments, bell work, homework, class work.  80% of students will average a score of 80% on unit assessments.</p>
<p><b>Interdisciplinary Lessons &amp; Projects:</b> *State additional content areas and title all lesson(s) and project(s)</p>	<p>Assignment: Find a recent study online and determine the type of study, the type of data, and the methods used to categorize the data.  Multidisciplinary</p>	<p>Assignment: Collect data on pulse rates over several days and create a frequency distribution, a frequency histogram, and calculate mean, median, mode, variance, standard deviation and quartiles.  Health, Sports Science</p>	<p>Experiment: Experimentally determine whether a game show contestant should change their original guess in the Monty Hall problem. Then examine and discuss some variations of the problem.  Entertainment, Games</p>	<p>Assignment: Use a binomial probability distribution to determine the optimal number of reservations to book on a flight that has 168 seats using the experimental probability of a person with a reservation not showing up.  Business</p>	<p>Assignment: Examine a data set for the lengths of petals of Wild Irises and verify the Central Limit Theorem by calculating probabilities.  Biology</p>
<p><b>Honors Course Differentiation(s):</b></p>	<p>-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q1 project</p>	<p>-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q1 project</p>	<p>-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q2 project</p>	<p>-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q2 project</p>	<p>-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q3 project</p>



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<b>Links to CCSS/NGSSS Curriculum Standards:</b>	<p>The following links will be used to incorporate the CCSS and other applicable standards:</p> <ul style="list-style-type: none"> <li>• The <a href="#">Common Core State Standard</a> expectations in high school.</li> <li>• The <a href="#">K-12 English LA and Content Area Writing Standards</a></li> <li>• The <a href="#">K-12 Reading Standards</a></li> <li>• The <a href="#">K-12 Mathematics Standards</a></li> <li>• The <a href="#">K-12 NGSSS Science &amp; Social Studies Standards</a></li> </ul>				



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Purpose of Planning	Unit Six Q3, W5 - 8	Unit Seven Q3, W9 – Q4, W3	Unit Eight Q4, W4 – 6	Unit Nine Q4, W7 - 9	
<b>Unit Topic and Overview:</b>	<b>Confidence Intervals</b>	<b>Hypothesis Testing</b>	<b>Testing Differences</b>	<b>Correlation and Regression</b>	
<b>Prerequisite Student Knowledge</b> *What should students have previously mastered prior to this unit?	Students need to know the difference between a sample and a population, and understand that estimations inherently have errors.	Students need to know the difference between a sample and a population, and understand that estimations inherently have errors.	Students need to know the difference between a sample and a population, and understand that estimations inherently have errors.	Students need to know what constitutes a linear relationship between two variables, and equations and graphs of lines.	
<b>Essential Knowledge &amp; Student Expectations</b> *What are the anticipated learning outcomes for students?	Students will be able to construct an interval of values of a sample statistic that has a fixed probability of containing the associated population parameter.  <u>Essential Question:</u> How do we use probability and the error involved in using a sample to find an estimate for a population parameter?	Students will be able to use probabilistic methods to accept or reject a certain hypothesis by looking at sample data that is relative to the claim.  <u>Essential Question:</u> How can we accept or reject a claim about a population by looking at an appropriate sample?	Students will be able to use hypothesis testing to determine whether two dependent or independent population parameters are statistically different.  <u>Essential Question:</u> How do we perform hypothesis testing on two samples to determine if the related populations are statistically different?	Students will be able to create a scatter plot and calculate a correlation coefficient for two variable data, and, if a correlation exists, be able to determine an equation that is the “best fit” model for the data.  <u>Essential Question:</u> How do we determine if there is a statistically significant correlation between two variables and, if so, how can we obtain an approximation?	



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<b>Interdisciplinary Lessons &amp; Projects:</b> *State additional content areas and title all lesson(s) and project(s)	Assignment: Find the year-to-date percent return for a sample of 50 mutual funds at <a href="http://finance.yahoo.com/funds/lists/">http://finance.yahoo.com/funds/lists/</a> . Then determine a 95% and a 99% confidence interval for the mean annual percent return for all mutual funds and interpret.  <p style="text-align: center;">Finance</p>	Assignment: Use hypothesis testing to test the claim that more people prefer Pepsi over Coke in a blind taste test. Interpret the results.  <p style="text-align: center;">Sociology, Business</p>	Assignment: Use hypothesis testing on differences to determine if the claim that mean length of a hospital stays is different today than it was ten years ago using sample data. Interpret the results.  <p style="text-align: center;">Health, Medicine</p>	Assignment: <b>Tennis</b> - Use current data to determine if there is a correlation between ranking and various service statistics. <b>Golf</b> - Use current data to determine if there is a correlation between ranking and various accuracy statistics.  <p style="text-align: center;">Sports</p>	
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