



MIDLAND PARK PUBLIC SCHOOLS
Midland Park, New Jersey
CURRICULUM

Statistics

Aligned to NJSL Standards

Superintendent of Schools:

Marie C. Cirasella, Ed.D.

Director of Curriculum, Instruction, & Assessment:

Melissa Quackenbush

*Approved by the Midland Park Board of Education on
May 16, 2017*

CCCS born on 9/2016
NJSL born on 5/2017

Statistics

Course Description

Probability and Statistics is a full year study designed primarily as a preparation course for college, technical school or junior college. The key components in probability are probability terms, the concept of the probability of an event, predicting and determining probabilities, expected value, the relationship between theoretical and experimental probabilities, and compound events. In statistics, the key components are data collection, organization, representation, sampling, central tendency, variance and correlation, and analysis and inference.

Course topics will include the study of introduction to statistics, summarizing and graphing data, statistics for describing, exploring, and comparing data, probability, discrete probability distributions, normal probability distributions, estimates and sample sizes, hypothesis testing, inferences from two samples, and correlation and regression. Graphing calculators, Excel, GeoGebra and real life applications are used throughout the course to develop conceptual understanding and analysis of data.

By the end of the course students will be sensible, critical users of probability and statistics, able to apply the processes and principles developed in this course to real-world problems. Students should not think that those people who did not win the lottery yesterday have a greater chance of winning today! They should not believe an argument merely because various statistics are offered. Rather, they should be able to judge whether the statistics are meaningful and are being used appropriately.

Suggested Course Sequence

Unit 1: *Collecting and Organizing Data*: 4-5 weeks

Unit 2: *Measuring Center and Spread*: 6-7 weeks

Unit 3: *Correlation and Regression*: 5-6 weeks

Unit 4: *Probability*: 8 weeks

Unit 5: *Normal Probability Distributions*: 8 weeks

Unit 6: *Confidence Intervals & Hypothesis Testing*: 5 weeks

Pre-Requisites: Algebra I and Algebra 2

Unit Overview

Content Area: Statistics CP

Unit Title: Collecting and Organizing Data

Grade Level: 12

Unit Summary: Students understand the different types of data, ways that data can be collected, the two branches of statistics, and the basics of experimental design.

Interdisciplinary Connections: Assignment: Find a recent study online and determine the type of study, the type of data, and the methods used to categorize the data.

21st Century

Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills

Learning Targets

Standards (Content and Technology):

CPI#:	Statement:
S-IC.B.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
S-ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
8.1.12.C.1	Develop an innovative solution to a real world problem or issue in collaboration with peers a experts, and present ideas for feedback through social media or in an online community.
8.1.12.E.1	Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

Unit Essential Question(s):

- How can collecting and organizing data clarify what the data is revealing?
- What is statistics and how is data categorized?

Unit Enduring Understandings:

- Appropriate statistical methods are necessary to become intelligent consumers.
- The collection, organization, and display of data are used to answer questions.

Unit Learning Targets/Objectives:

Students will...

- Identify variable types in a study and understand a population versus a sample.
- Explore the nature of data and the advantages and disadvantages of types of sampling.
- Design, carry out, and state conclusions for a statistical experiment.
- Create appropriate means of displaying data.
- Interpret data from graphs.
- Discuss shape of a distribution.
- Use mathematics to analyze data.
- Utilize technology to display data.

Evidence of Learning

Formative/Summative Assessments:

Collect and Grade • Constructed Response • Cooperative learning • Exit Slip • Group work • In-Class Check • Informal Assessment • Journal/Learning Log • Maintenance of a notebook • Open-ended questions • Oral participation/Discussion skills • Oral presentations • Peer/Self-Assessment • Performance Assessment • Portfolio • Presentation • Projects • Quizzes and Tests • Rubric • Standardized testing • Student created puzzles • Student-constructed bulletin boards • Teacher observation • Written homework

Resources/Materials (copy hyperlinks for digital resources):

• Graphs

https://www.youtube.com/results?search_query=pareto+chart+statistics

<https://www.youtube.com/watch?v=qHW3bo5SH0g>

<https://www.youtube.com/watch?v=qHW3bo5SH0g>

https://www.khanacademy.org/math/pre-algebra/applying-math-reasoningtopic/reading_data/v/u08-l1-t2-we3-stem-and-le-plots

https://www.youtube.com/results?search_query=pie+chart

https://www.youtube.com/results?search_query=pareto+chart+statistics

<http://tube.geogebra.org/search/results/uid/3AFIbWBcm>

https://www.youtube.com/results?search_query=graph+historam+with+geogebra

Special Education Students

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

At-Risk Students

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedur
- Consult with classroom teacher(s) for specific behavior inter
- Provide rewards as necessary

Gifted and Talented Students

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- Build on students' intrinsic motivations
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English Language Learners

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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Intro to Statistics (1.1-1.5)	Review and Preview	1 day
	Statistical Thinking	4 days

	Types of Data	4 days
	Critical Thinking	4 days
	Collecting Sample Data	6 days
Teacher Notes:		
Additional Resources		

Content Area: Statistics CP

Unit Title: Measuring Center and Spread

Grade Level: 12

Unit Summary: 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.

Interdisciplinary

Connections: Collect Data on pulse rates over several days and create a frequency distribution, a frequency histogram, and calculate the mean, median, mode, variance, standard deviation and quartiles. What does this data tell us about what is actually happening?

21st Century

Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills

Standards (Content and Technology):

CPI#:	Statement:
S-ID.A.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.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
S-ID.B.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.
8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results.

Unit Essential Question(s):

- When will you use the common measures of central tendency and spread, and how will they help you solve problems?
- What are the ways in which data can be organized into tables and/or graphs, and which are more useful in certain instances?

Unit Enduring Understandings:

- Real-world situations can be represented using mathematical models to analyze quantitative relationships.
- The choice of data display can affect the visual message communicated.

Unit Learning Targets/Objectives:

Students will...

- Compute mean, median, mode, range, standard deviation and variance from raw data.
- Compute weighted averages and trimmed means.
- Discuss spread using the coefficient of variation.
- State and apply Chebyshev's theorem to estimate spread of raw data.
- Create box-and-whisker plots using quartiles and the five number summary by hand and by using different technologies.

Formative Assessments:

Unit test, quizzes, assignments, bell work, homework, class work.

Summative/Benchmark Assessment(s):

Teacher questioning/class discussion, practice problems

Resources/Materials (copy hyperlinks for digital resources):

- Descriptive Statistics

<https://www.khanacademy.org/math/probability/descriptive-statistics>

https://www.youtube.com/results?search_query=find+mean+median+mode+range+with+ti+84

https://www.youtube.com/results?search_query=find+mean+median+mode+range+with+ti+nspire

https://www.youtube.com/results?search_query=find+boxplot+with+ti+nspire

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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Summarizing and Graphing Data (2.1-2.5)	Review and Preview	1 day
	Frequency Distributions	4 days
	Histograms	4 days
	Statistical Graphics	5 days
	Critical Thinking: Bad Graphs	2 days

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Statistics for describing, exploring, and comparing data (3.1-3.4)	Review and Preview	1 day
	Measures of Center	6 days
	Measures of Variation	5 days
	Measures of Relative Standing and Boxplots	3 days

Teacher Notes:

Additional Resources

Unit Overview

Content Area: Statistics CP

Unit Title: Correlation and Regression

Grade Level: 12

Unit Summary: 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.

Interdisciplinary Connections: Assignment: Tennis - Use current data to determine if there is a correlation between ranking and various service statistics. Golf - Use current data to determine if there is a correlation between ranking and various accuracy statistics.

21st Century

Themes and Skills: Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills

Learning Targets

Standards (Content and Technology):

CPI#:	Statement:
S-ID.B.6.a	Fit a function to the data (including with the use of technology); 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, quadratic, and exponential models.
S-ID.C.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.
S-ID.B.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.
8.1.5.A.6	Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data.
8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.

Unit Essential Question(s):

- How can I organize and interpret paired data to predict future events?
- How do we determine if there is a statistically significant correlation between two variables and, if so, how can we obtain an approximation?

Unit Enduring Understandings:

- Computing fluently and making reasonable estimates increases the ability to solve realistic problems encountered in everyday life.
- The choice of data display can affect the visual message communicated.

Unit Learning Targets/Objectives:

Students will...

- Construct scatter diagrams from data and estimate a line of best-fit on a graph.
- Compute the correlation coefficient using technology and investigate its meaning relevant to the data.
- Solve for and graph the least-squares line.
- Collect data from everyday life to create a prediction equation.

Evidence of Learning

Formative Assessments:

Unit test, quizzes, assignments, bell work, homework, class work.

Summative/Benchmark Assessment(s):

Teacher questioning/class discussion, practice problems

Resources/Materials (copy hyperlinks for digital resources):

- Find correlation and regression

https://www.youtube.com/results?search_query=correlation+and+regression+in+statistics

https://www.youtube.com/results?search_query=correlation+and+regression+ti+inspire

<http://www.geogebraTube.org/search/results/uid/8oQC2sCx6D>

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Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Correlation & Regression	Review and Preview	2-3 days
	Correlation	2-3 days
	Regression	4-5 days

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	Variation and Prediction Intervals	4-5 days
	Multiple Regressions	4-5 days
	Models	4-5 days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Content Area: Statistics CP

Unit Title: Probability

Grade Level: 12

Unit Summary: 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

Interdisciplinary

Connections: 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.

21st Century

Themes and Skills: Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills

Standards (Content and Technology):

CPI#:	Statement:
S-CP.A.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
S-CP.A.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
S-CP.A.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
S-CP.A.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.
S-CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer. Use the rules of probability to compute probabilities of compound events.
S-CP.B.6	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
S-CP.B.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
S-CP.B.8	Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)$, and interpret the answer in terms of the model.
S-CP.B.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
S-MD.A.1	Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
S-MD.A.2	Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.

8.1.12.C.1	Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
8.1.12.D.5	Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.
Unit Essential Question(s): <ul style="list-style-type: none"> • What is probability and how is it applied across disciplines? • How can I use probability to make predictions about the outcome of events? 	Unit Enduring Understandings: <ul style="list-style-type: none"> • Probability can be used to make decisions, predictions, or choices. • Proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
Unit Learning Targets/Objectives: <i>Students will...</i> <ul style="list-style-type: none"> • Describe the concept of the probability of an event. • Determine the probabilities of dependent and independent events. • Find conditional probability. • Use two-way tables to estimate probability. • Use probability rules to find probability. • Create experiments to determine if expected probabilities occur in real life situations. • Distinguish a discrete random variable from a continuous random variable and find its mean and standard deviation. • Find binomial probability using formula, technology, or distribution table. • Apply binomial probability to make predictions of success or failure. 	
Formative Assessments: Unit test, quizzes, assignments, bell work, homework, class work.	
Summative/Benchmark Assessment(s): Teacher questioning/class discussion, practice problems	
Resources/Materials (copy hyperlinks for digital resources):	
Use a graphing calculator/geogebra/ videos to: <ul style="list-style-type: none"> • Find probability. https://www.youtube.com/results?search_query=find+probability+addition+rule https://www.youtube.com/results?search_query=find+probability+multiplication+rule https://www.youtube.com/results?search_query=find+complements+and+conditional+probability https://www.youtube.com/results?search_query=probability+through+simulation https://www.youtube.com/results?search_query=counting+principle https://www.youtube.com/results?search_query=permutation+and+combination https://www.youtube.com/results?search_query=permutation+and+combination+using+calculator https://www.youtube.com/results?search_query=permutation+and+combination+using+ti+inspire • Find Probability distributions. https://www.youtube.com/results?search_query=random+variables https://www.youtube.com/results?search_query=binomial+probability+distribution 	

https://www.youtube.com/results?search_query=mean+variance+standard+deviation+binomial+probability+distribution
https://www.youtube.com/results?search_query=poisson+distribution
<http://www.geogebra.org/search/results/uid/4CEJGqEOH7>

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Gifted and Talented Students

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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
General Probability	Review and Preview	1 days
	Basic Concepts of Probability	4 days
	Addition Rule	3 days
	Multiplication Rule: Basics	3 days
	Multiplication Rule: Complements and Conditional Probability	3 days
	Probability through Simulations	3 days
	Counting	3 days
Discrete Probability Distributions	Review and Preview	1 days
	Random Variables	6 days

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	Binomial Probability Distributions	5 days
	Mean, Variance, and Standard Deviation for the Binomial Distribution	5 days
Teacher Notes:		
Additional Resources Click links below to access additional resources used to design this unit:		

Content Area: Statistics CP	
Unit Title: Normal Probability Distributions	
Grade Level: 12	
Unit Summary: 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.	
Interdisciplinary	
Connections: Assignment: Examine a data set for the lengths of petals of Wild Irises and verify the Central Limit Theorem by calculating probabilities.	
21st Century	
Themes and Skills: Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills	
Standards (Content and Technology):	
CPI#:	Statement:
S-ID.A.4	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 a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
S-MD.A.1	Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
S-ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data (including with the use of technology); 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, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals, including with the use of technology. c. Fit a linear function for a scatter plot that suggests a linear association.
S-IC.A.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
S-IC.B.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
S-IC.B.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.
8.1.8.E.1	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
8.1.5.F.1	Apply digital tools to collect, organize, and analyze data that support a scientific finding.
Unit Essential Question(s): <ul style="list-style-type: none"> What types of events are normally distributed and how do we calculate the probabilities of these events? What is normal distribution and how can it help me understand the distribution of data? 	Unit Enduring Understandings: <ul style="list-style-type: none"> Measurable attributes of objects and the units, systems, and processes of measurement are powerful tools for making sense of the world around them. Measurements are determined by using appropriate techniques, tools, and formulas.
Unit Learning Targets/Objectives: <i>Students will...</i> <ul style="list-style-type: none"> Describe properties of a normal curve graph. 	

- Apply Empirical rule to approximate distributions
- Convert raw data to standard normal and find areas under the standard normal curve.
- Utilize technology to solve for probability in real world problems.
- Construct relative frequency distributions from raw data.
- Develop an understanding of the Central Limit Theorem and its applicability to sampling distributions and probability.

Formative Assessments:

Unit test, quizzes, assignments, bell work, homework, class work.

Summative/Benchmark Assessment(s):

Teacher questioning/class discussion, practice problems

Resources/Materials (copy hyperlinks for digital resources):

Use a graphing calculator/geogebra/ videos to:

- Find normal probability Distributions.

https://www.youtube.com/results?search_query=stanard+normal+distribution

https://www.youtube.com/results?search_query=applicion+of+normal+distribution

https://www.youtube.com/results?search_query=central+lmit+theorem

https://www.youtube.com/results?search_query=normal+as+an+approximation+to+binomial

https://www.youtube.com/results?search_query=assessing+normaillity+in+statistics

<http://www.geogebra.org/search/results/uid/ZUIZkefdAN>

- Estimate and find sample size for population parameters

https://www.youtube.com/results?search_query=estimate+population+proportion

https://www.youtube.com/results?search_query=estimate+population+mean

https://www.youtube.com/results?search_query=estimate+population+variance+statistics

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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Normal Probability Distributions	Review and Preview	1 days
	The Standard Normal Distribution	4 days
	Applications of Normal Distribution	4 days
	Sampling Distributions and Estimators	4 days
	The Central Limit Theorem	4 days
	Normal as Approximation to Binomial	4 days
	Determining Normality	4 days
Estimates and Sample Sizes	Review and Preview	1 days
	Estimating a Population Proportion	5 days
	Estimating a Population Mean (sigma known)	3 days
	Estimating a Population Mean (sigma unknown)	3 days
	Estimating a Population Variance	3 days
Teacher Notes:		
Additional Resources		
Click links below to access additional resources used to design this unit:		

Content Area: Statistics CP

Unit Title: Confidence Intervals & Hypothesis Testing

Grade Level: 12

Unit Summary: 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. 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.

Interdisciplinary

Connections:

Assignment: Find the year-to-date percent return for a sample of 50 mutual funds at

<http://finance.yahoo.com/funds/lists/> . Then determine a 95% and a 99% confidence interval for the mean annual percent return for all mutual funds and interpret.

Assignment: Use hypothesis testing to test the claim that more people prefer Pepsi over Coke in a blind taste test. Interpret the results.

21st Century

Themes and Skills: Themes and Skills: Creativity and Innovation, Critical Thinking and Problem Solving, Collaboration and Communication, Literacy Life and Career Skills

Standards (Content and Technology):

CPI#:	Statement:
S-IC.B.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
S-IC.B.6	Evaluate reports based on data.
S-IC.B.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.
8.1.8.F.1	Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results

Unit Essential Question(s):

- How do we use probability and the error involved in using a sample to find an estimate for a population parameter?
- How can we accept or reject a claim about a population by looking at an appropriate sample?

Unit Enduring Understandings:

- Inferences and predictions from data are used to make critical and informed decisions.
- The collection, organization, and display of data are used to answer questions.

Unit Learning Targets/Objectives:

Students will...

- Compute confidence intervals from raw data.
- Calculate appropriate sample sizes based on raw data to estimate μ .
- Conduct an experiment in a real-world context to estimate μ .
- To identify hypotheses in order to support or refute a claim.
- Test data with formulas to draw conclusions about data.
- Evaluate types of testing errors.
- Conduct an experiment to verify hypotheses.
- Use technology to analyze data.

Formative Assessments:

Unit test, quizzes, assignments, bell work, homework, class work.

Summative/Benchmark Assessments:

Teacher questioning/class discussion, practice problems

Resources/Materials (copy hyperlinks for digital resources):

• **Test a claim**

https://www.youtube.com/results?search_query=hypothesis+testing+statistics

https://www.youtube.com/results?search_query=test+claim+about+proportion

https://www.youtube.com/results?search_query=test+claim+about+mean

https://www.youtube.com/results?search_query=test+claim+about+variation

<http://www.geogebraTube.org/search/results/uid/6Rm5JpOUmP>

• **Test a claim about two samples**

https://www.youtube.com/results?search_query=inferences+about+two+proportions

https://www.youtube.com/results?search_query=inferences+about+two+means

https://www.youtube.com/results?search_query=comparing+variation+in+two+samples

Special Education Students

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

English Language Learners

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

At-Risk Students

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

Gifted and Talented Students

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Confidence Intervals	Review and Preview	1 day
	Computation of Confidence Intervals	2 days
	Interpretation of Confidence Intervals	2 days
	Calculating Appropriate Sample Sizes	2 days
Hypothesis Testing	Review and Preview	1 day
	Basics of Hypothesis Testing	4 days
	Test a Claim about a Proportion	4 days
	Test a Claim about a Mean (μ known)	3 days
	Test a Claim about a Mean (μ unknown)	2 days
	Test a Claim about Variation	2 days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit: