NEW MILFORD PUBLIC SCHOOLS
New Milford, Connecticut

Practical Math – Applications of Statistics
JUNE 2016

Approved by BOE November 2016

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Authors of Course Guide

Deborah Murnan

New Milford’s Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

Practical Math – Applications of Statistics

The goal of this a ½ year course is to provide a fundamental understanding of statistics. Topics include: mean, median, mode, range of a set of data, frequency distributions, histograms, graphs of data, standard deviation of a set of data, percentiles, quartiles, Z-scores, normal distribution, applications associated with these topics, and the use of calculators and computers.

Pacing Guide

Unit Title	# of Weeks
1. Vocabulary, frequency tables and graphs	4
2. Applications of Measures of central tendencies, including charts and graphs	3
3. Using the graphing calculator to find the measures of central tendencies	2
4. Applications of usual values	2
5. Applications of Percentiles	2
6. Outliers and boxplots	2
7. Applications of z-scores and the normal curve	3
8. Review and Final exam	2

Committee Member(s): Deborah Murnan Unit Title: Unit 1 – Vocabulary, frequency tables and graphs	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 4

Identify Desired Results

Common Core Standards

- CCSS.MATH.CONTENT.HSS.ID.A.1
  Represent data with plots on the real number line (dot plots, histograms, and box plots).
- CCSS.MATH.CONTENT.6.SP.B.4
  Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- CCSS.MATH.CONTENT.HSS.IC.B.3
  Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Data can be gathered and classified through a variety of methods • Data can be presented in both chart and graph form • Data gathered inappropriately can cause a bias in the conclusions • The way that data is collected, organized and displayed influences interpretation. • The purpose of sampling is to provide sufficient information so that population characteristics may be inferred. • Data are collected for a purpose and have meaning in a context. • Graphical displays of data may be analyzed informally. • Poor data collection can lead to misleading and meaningless conclusions. • Graphs produce visual displays of data in meaningful ways.	• What are the keys to data classification and experimental design • How can graphs be used to communicate information and/or misinformation • What can cause results to be biased • What is required to plan and conduct a survey? • What are sampling techniques and how do they reduce bias? • What are different methods by which data can be displayed? • What are the various methods of data collection? • How does data collection affect conclusions for a problem? • What are the differences between controlled experiments and observational studies? • What considerations should be made when designing an experiment? • How do graphs enhance the display of data?

	• How does one know which graph is appropriate to use for a given set of data?

Expected Performances
What students should know and be able to do

Students will know the following:

- How to obtain and generate data
- How to graph the data as a first step in analyzing data
- How to interpret numerical summaries and graphical displays of data
- How to display the distribution of a quantitative variable with a stem plot, dot plot or a histogram
- How to display the distribution of a qualitative variable with a bar graph, pie chart or frequency polygon
- How to make a time plot of data that may vary over time

Students will be able to do the following:

- Identify the methods for gathering data
- Identify common sources of bias in surveys and experiments
- Summarize the distribution of a categorical variable with a frequency table
- Display the distribution of a categorical variable with a bar or pie chart
- Display the distribution of a quantitative variable with a stem plot, dot plot or a histogram
- Describe the distribution of a quantitative variable in terms of its shape, center and spread.

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
- Respect

Technology Competencies

- Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem solving, self-directed learning, and extended learning activities.
- Students use the internet as a way to gather data
- Students specifically use spreadsheets(i.e. Microsoft excel) to enter data and create graphs

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will introduce statistical vocabulary and provide sampling models to which they apply • Teacher discusses sampling techniques which may cause data to be biased • Teacher demonstrates how to organize data into frequency tables and identify the various frequency	• Students should identify sampling techniques as they relate to ‘real world’ situations • Students should create their own frequency tables • Students should review given data to determine the appropriate graph • Students should create their own

tables used • Teacher will introduce line graphs: time-series, ogive and frequency polygon • Teacher will introduce bar graphs and histograms • Teacher will introduce other graphs: dot plot, stem plot, pie chart • Teacher will provide information as to when it is appropriate to use each type of graph • Teacher will discuss scales on the graph and how graphs can be made to be misleading	graphs based on given data • Students will gather data from a variety of sources and create appropriate graphs • Students will enter data into a spreadsheet and use the software to create a graph.

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: produce an appropriate graph of data gathered Role: Career counselor Audience: High school seniors Situation: gather data about salaries for a specific career Product or Performance: a comparison, in graphic form, of salaries for a specific career in comparison to a variety of locations within the United States. Standards for Success: An appropriate graph representative of the data gathered.	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses.

Suggested Resources

- Bureau of Labor statistics website: http://bls.com online
- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Supplemental worksheets
- Graphing Calculator

- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 2 – Applications of the Measures of Central Tendencies	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 3

Identify Desired Results

Common Core Standards

- CC.9-12.S.ID.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.
- CC.9-12.S.IC.3
  Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Measures of central tendency describe how the data cluster or group. • Measures of dispersion describe how the data spread (disperse) around the center of the data. • Data are collected for a purpose and have meaning within a context	• Why is data collected and analyzed? • How do people use data to influence others? • How can predictions be made based on data • Why is data collected? • How are measures of central tendency used? • What is meant by the spread of the data?

Expected Performances
What students should know and be able to do

Students will know the following:

- The basic properties of the median and the mean of a data set
- That the standard deviation summarizes how spread out all the data are around the mean.

Students will be able to do the following:

- Calculate the mean, median, mode, midrange and standard deviation for a set of data
- Select and use appropriate statistical methods to analyze data
- Apply statistical calculations to real-world situations

Character Attributes
• Perseverance • Integrity • Responsibility • Honesty • Cooperation • Respect
Technology Competencies
• Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem solving, self-directed learning, and extended learning activities. • Students use the internet as a way to gather data • Students use graphing calculators to enter data and retrieve calculations

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will review measures of center • Teacher will discuss the concept of skewed versus normal data • Teacher will introduce the weighted mean formulas and provide applications of them • Teacher will introduce the concept of standard deviation and the sample standard deviation formula. • Teacher will provide examples of the mean and standard deviation formulas involving frequency distributions	• Students should calculate the measures of center for a variety of data sets • Students should calculate the weighted mean for grade related data sets • Students should calculate the mean for a frequency distribution

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: gather data, produce an appropriate graph and make appropriate calculations for the data Role: Realtor Audience: Home buyers Situation: gather data about housing prices in a specific area and calculate measures of center for the data	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group

Product or Performance: Present the results of the survey to prospective home buyers to give them an understanding of the housing prices in that area. Standards for Success: Accurate calculations and a knowledgable presentation of the data gathered	work, and responses.

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Housing prices website http://zillow.com Online
- Supplemental worksheets
- Graphing Calculator
- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 3 –Using the graphing calculator to calculate measures of central tendencies	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 2

Identify Desired Results

Common Core Standards

- CC.9-12.S.ID.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.

Enduring Understandings	Essential Questions

Generalizations of desired understanding via essential questions (Students will understand that …)	Inquiry used to explore generalizations
• Measures of central tendency describe how the data cluster or group. • Measures of dispersion describe how the data spread (disperse) around the center of the data. • Data are collected for a purpose and have meaning within a context	• Why is data collected and analyzed? • How do people use data to influence others? • How can predictions be made based on data • Why is data collected? • How are measures of central tendency used? • What is meant by the spread of the data?

Expected Performances
What students should know and be able to do

Students will know the following:

- The basic properties of the median and the mean of a data set
- That the standard deviation summarizes how spread out all the data are around the mean.

Students will be able to do the following:

- Calculate the mean, median, mode, midrange and standard deviation for a set of data
- Select and use appropriate statistical methods to analyze data
- Apply statistical calculations to real-world situations

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
- Respect

Technology Competencies

- Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem solving, self-directed learning, and extended learning activities.
- Students use the internet as a way to gather data
- Students use graphing calculators to enter data and retrieve calculations

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will demonstrate how to enter a data list in the graphing calculator and how to retrieve the mean and standard deviation calculations	• Students should calculate the mean, weighted mean and sample standard deviation on a variety of data sets and then rework them using technology in order to see the benefits of using technology with respect to time spent doing calculations and how it relates to productivity

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses.

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Housing prices website http://zillow.com Online
- Supplemental worksheets
- Graphing Calculator
- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 4 – Applications of usual values	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 2

Identify Desired Results

Common Core Standards

- CC.9-12.S.IC.1
  Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- CC.9-12.S.IC.3
  Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
- CCSS.MATH.CONTENT.HSS.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.
- CCSS.MATH.CONTENT.HSS.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).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• That the mean and standard deviation can be used to determine if an observation is 'usual' • That the concept of 'usual' has many real applications	• When is an observation considered 'usual' • How does the concept of 'usual' apply to real data

Expected Performances
What students should know and be able to do

Students will know the following:

- How to determine a range of usual values for a set of data
- How to determine if a specific value is usual for the given set of data

Students will be able to do the following:

- Calculate a range of usual values for a set of data
- Determine whether or not an observation is 'usual'

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
- Respect

Technology Competencies

- Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem

solving, self-directed learning, and extended learning activities.

- Students use the internet as a way to gather data
- Students use graphing calculators to enter data and retrieve calculations

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will discuss normal data and how it relates to the normal curve and percentiles; specifically the empirical rule, range rule of thumb and Chebyshev's theorem • Teacher will provide applications of usual values	• Students will use mean and standard deviations of normal and skewed data to determine the ranges of 'usual values' • Students will identify a given value in a data set as usual or unusual

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses.

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Graphing Calculator
- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 5 – Applications of Percentiles	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 2

Identify Desired Results

Common Core Standards

- CC.9-12.S.IC.1
  Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- CC.9-12.S.IC.3
  Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
- CCSS.MATH.CONTENT.HSS.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.
- CCSS.MATH.CONTENT.HSS.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).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• That a data set can be divided into percentiles/quartiles to more specifically interpret the data • The percentiles of a data set are used in the calculations of usual values and outliers. • Each percentile has a specific value associated with it • Each value in a data set has a percentile associated with it.	• How is a data set divided into percentiles? • How do the percentiles aid in the determination of outliers and usual values? • How do you determine the percentile of a specific value? • How do you find the value at a specific percentile?

Expected Performances
What students should know and be able to do

Students will know the following:

- How to divide a data set into quartiles
- How to find the value at a given percentile
- How to find the percentile for a given value

Students will be able to do the following:

- Calculate which value lies at a specific percentile
- Calculate the percentile for a specific value
- Calculate the 4 quartiles for a data set

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
- Respect

Technology Competencies

- Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem solving, self-directed learning, and extended learning activities.
- Students use the internet as a way to gather data
- Students use graphing calculators to enter data and retrieve calculations

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will explain the concept of quartiles and how to calculate them, focusing specifically on the 1st and 3rd quartiles. • Teacher will explain the concept of percentiles and the formulas to find a percentile for a specific value in the data set. • Teacher will explain how to find the value at a specific percentile • Teacher will provide applications of percentiles	• Students should be able to calculate the percentile of a value and find the value at a specific percentile • Students should be able to calculate the values at the 1st and 3rd quartiles

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print

- Graphing Calculator
- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 6 - Outliers and boxplots	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 2

Identify Desired Results

Common Core Standards

- CC.9-12.S.IC.1
  Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- CC.9-12.S.IC.3
  Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
- CCSS.MATH.CONTENT.HSS.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.
- CCSS.MATH.CONTENT.HSS.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).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• An outlier in a data set influences the measures of central tendencies • A boxplot is a graphic representation of the 4 quartiles of a data set • An outlier is a value that is more than 1.5 IQR above the 3rd quartile or 1.5 IQR below the 1st quartile	• What is an outlier and how does it influence a data set? • Do all dispersions contain an outlier? • How is a boxplot used to represent data?

Expected Performances
What students should know and be able to do

Students will know the following:

- How to calculate the values that are used to determine if a given value is an outlier
- How to find the 5 number summary
- How to construct a box plot using the 5 number summary

Students will be able to do the following:

- Use the 1.5 IQR rule to identify possible outliers and identify outliers in boxplots
- To create a 5-number summary of a variable
- To construct a box plot by hand from a 5-number summary

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
  Respect

Technology Competencies

- Students use technology tools (i.e., calculators, smart boards, data collection probes, videos, educational software, their own personal devices) for problem solving, self-directed learning, and extended learning activities.
- Students use the internet as a way to gather data
- Students use graphing calculators to enter data and retrieve calculations

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher will introduce the concept of outliers and use the 1.5 IQR formula to determine the existence of outliers in a data set.
- Teacher explains how to create a boxplot and how it is affected by the existence of outliers in the data set
- Teacher will demonstrate how to set up a boxplot using formulas to calculate the 5 number summary and how to find the same information using the graphing calculator
- Teacher will provide applications of outliers and boxplots

Learning Activities:

- Students should use calculations of the 5 number summary to create boxplots
- Students should use the 1.5 IQR formula to determine the existence of outliers in a data set

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Graphing Calculator
- Personal Device

Committee Member(s): Deborah Murnan Unit Title: Unit 7 - Z-scores and the normal curve	Course/Subject: Practical Math Statistics Grade Level: 12th grade # of Weeks: 3

Identify Desired Results

Common Core Standards

- CCSS.MATH.CONTENT.HSS.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.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• The normal distribution curve is a family of symmetrical curves defined by the mean and the standard deviation. • Areas under the curve represent probabilities associated with continuous distributions. • The normal curve is a probability distribution and the total area under the curve is 1. • The distribution of outcomes of many real life events can be approximated by the normal curve	• What is a normal curve? • How is the probability of an event calculated? • What are the properties of a normal probability distribution? • How does the standard deviation and mean affect the graph of the normal distribution? • Why is an understanding of the normal curve essential to statistics? • In what situations can the normal curve be applied to data? • How can one recognize a normal (bell shape) distribution.

Expected Performances
What students should know and be able to do

Students will know the following:

- How to calculate a z-score
- The total area under a normal curve is 1
- A portion of the area under a normal curve represents the probability for a specific observation
- The z-score formula can be used to find the probability for a specific observation
- Normal probabilities have a variety of real world applications

Students will be able to do the following:

- Calculate a z –score
- Use the z-score formula to find a normal probability for a specific observation

Character Attributes

- Perseverance
- Integrity
- Responsibility
- Honesty
- Cooperation
- Respect

Technology Competencies

- Students specifically learn to use the normal cdf , normal pdf and invnorm functions on the TI-83/84 plus graphing calculator to find normal probabilities
- Students use graphing calculator to enter data and calculate numerical descriptors

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
• Teacher will explain how to use the z-score formula • Teacher will demonstrate how to	• Students will practice finding z-scores and probabilities use the z-score chart • Students will complete a variety of

use the z-score chart to find values for specific probabilities • Teacher will provide applications of z- scores	application problems using the formulas and charts and then rework them using technology in order to see the benefits of using technology with respect to time spent doing calculations and how it relates to productivity

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: To make a recommendation to a project leader about the measurements suggested for an item being manufactured for the company Role: Research assistant Audience: project manager Situation: Varies, depending upon what industry is chosen Product or Performance: A recommendation of suggested measurements for an item being produced by the company (ie. Helmet size, bed size, clothing sizes, etc…) Standards for Success: An appropriate written explanation of the data gathered, including appropriate calculations and a final concluding recommendation.	• Monitoring class work through board work, group work, questioning, walk-throughs • Check for understanding via going over homework using white boards or the Smartboard. • Quizzes • Test (may include 10-20 multiple choice, 15-30 regular answer) • Participation in class discussion, group work, and responses

Suggested Resources

- Triola, Mario. *Elementary Statistics*. Pearson/Addison Wesley, 2007. Print
- Bock, Velleman, De Veaux. *Stats Modeling the World*. Pearson/Addison Wesley, 2007. Print
- Graphing Calculator
- Personal Device