

AP* Statistics gives students hands-on experience collecting, analyzing, graphing, and interpreting real-world data. They will learn to effectively design and analyze research studies by reviewing and evaluating real research examples taken from daily life. The next time they hear the results of a poll or study, they will know whether the results are valid. As the art of drawing conclusions from imperfect data and the science of real-world uncertainties, statistics plays an important role in many fields. The equivalent of an introductory college-level course, AP Statistics prepares students for the AP exam and for further study in science, sociology, medicine, engineering, political science, geography, and business.

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Length: Two Semesters

UNIT 1: DESCRIBING DATA

LESSON 1: WHAT IS STATISTICS?

Discuss: Introductions

Introduce yourself to your classmates and your instructor.

Duration: 0 hr 15 min Scoring: 10 points

Discuss: Errors in Ads (and Other Claims)

Discuss ads containing statistical errors, abuses, and misleading statements.

Duration: 0 hr 30 min Scoring: 10 points

Study: Welcome to Statistics

Explore the history of statistics. Examine the main types of statistics and the types of data used in statistics.

Duration: 0 hr 50 min

Practice: Welcome to Statistics

Answer questions about the history of statistics, the main types of statistics and the types of data used in statistics.

Duration: 0 hr 30 min

Quiz: Types of Data, Types of Statistics

Answer questions on differentiating between counts vs. measures (that is,

discrete vs. continuous data), numerical vs. categorical data, and inferential vs. descriptive statistics.

Duration: 0 hr 50 min

Scoring: 10 points

Practice: Identifying Types of Data and Statistics

Apply your knowledge to explain why a given study is descriptive or inferential and to identify categorical and numerical data.

Duration: 1 hr Scoring: 25 points

LESSON 2: DISPLAYING DISTRIBUTIONS WITH GRAPHS

Quiz: Variables and Distributions

Answer questions to familiarize yourself with statistical terms such as variable and distribution.

Duration: 1 hr Scoring: 10 points

Practice: What Can You Tell From Graphs?

Use information from various kinds of graphs to answer questions.

Duration: 1 hr Scoring: 25 points

Discuss: Choosing Appropriate Graphs

Discuss which type of graph is best for displaying a given data set and why.

Duration: 0 hr 30 min Scoring: 10 points

Study: Introduction to Frequency Data and Their Graphs

Explore the different kinds of frequency plots, including histograms, relative frequency plots, cumulative frequency plots, cumulative relative frequency plots, and bar graphs.

Duration: 0 hr 50 min

Practice: Introduction to Frequency Data and Their Graphs

Answer questions about the different kinds of frequency plots, including histograms, relative frequency plots, cumulative frequency plots, cumulative relative frequency plots, and bar graphs.

Duration: 0 hr 30 min

Quiz: Matching Graphs and Tables

Answer questions based on tables and graphs. Match tables with graphs derived from the same data.

Duration: 0 hr 50 min Scoring: 10 points

Practice: Introduction to Stem-and-Leaf Plots

Research stem-and-leaf plots and back-to-back stem-and-leaf plots. Practice creating them.

Duration: 1 hr

Quiz: Stem-and-Leaf Plots

Answer questions about stem-and-leaf plots.

Duration: 0 hr 50 min Scoring: 10 points

Study: Histograms, and Making Them on the TI-83

See how histograms are related to stem-and-leaf plots. Create histograms on the TI-83 graphing calculator.

Duration: 1 hr

Practice: Histograms, and Making Them on the TI-83

Answer questions about how histograms are related to stem-and-leaf plots and about histograms on the TI-83 graphing calculator.

Duration: 0 hr 30 min

Discuss: Histograms

Discuss how best to display data with a histogram.

Duration: 0 hr 30 min Scoring: 10 points

Quiz: Identifying Shapes of Distributions

Answer questions about uniformly distributed distributions, bimodal distributions, symmetric and mound-shaped distributions, distributions skewed to the left or to the right, clusters, gaps, and outliers.

Duration: 1 hr Scoring: 10 points

LESSON 3: DESCRIBING DISTRIBUTIONS USING NUMBERS**Study: Populations and Samples, Parameters and Statistics**

Examine the distinction between a population and a sample, and between a parameter and a statistic. Go over the basics of random sampling.

Duration: 0 hr 50 min

Practice: Populations and Samples, Parameters and Statistics

Answer questions about the distinction between a population and a sample, and between a parameter and a statistic.

Duration: 0 hr 30 min

Quiz: Populations, Samples, Parameters, Statistics

Answer questions about whether a given data set is a sample or a population and about whether a value is a statistic or a parameter.

Duration: 0 hr 40 min Scoring: 10 points

Study: Measures of Central Tendency

See how to calculate the three measures of center (the mean, the median, and the mode). Explore the strengths and weaknesses of each.

Duration: 0 hr 50 min

Practice: Measures of Central Tendency

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Answer questions about how to calculate the three measures of center (the mean, the median, and the mode). Answer questions about the strengths and weaknesses of each.

Duration: 0 hr 30 min

Practice: Differences Between Mean and Median

Calculate means and medians for different distributions (some with outliers), and answer questions about the differences between them.

Duration: 1 hr 30 min Scoring: 25 points

Study: Measuring Variation

Explore a technique for measuring variation: the standard deviation. Go over the distinction between the population standard deviation and the sample standard deviation.

Duration: 0 hr 50 min

Practice: Measuring Variation

Answer questions about a technique for measuring variation: the standard deviation, and the distinction between the population standard deviation and the sample standard deviation.

Duration: 0 hr 30 min

Practice: Standard Deviation and Variance

Calculate standard deviations and variances.

Duration: 1 hr 30 min

Scoring: 25 points

LESSON 4: FIVE-NUMBER SUMMARIES

Study: Box-and-Whisker Plots and the Five-Number Summary

Go over box-and-whisker plots and the five-number summary (minimum, Q1, median, Q3, and maximum). Learn the definition of *outlier*.

Duration: 0 hr 50 min

Practice: Box-and-Whisker Plots and the Five-Number Summary

Answer questions about box-and-whisker plots and the five-number summary (minimum, Q1, median, Q3, and maximum). Learn the definition of *outlier*.

Duration: 0 hr 30 min

Quiz: Box-and-Whisker Plots and the Five-Number Summary

Construct box-and-whisker plots and modified box-and-whisker plots. Answer questions about the minimum, Q1, median, Q3, maximum, and outliers.

Duration: 0 hr 50

min Scoring: 10 points

Practice: Box-and-Whisker Plots and Modified Box-and-Whisker Plots on the TI-83

See how to create a standard and modified box-and-whisker plots on the TI-83 and interpret the results.

Duration: 0 hr 30 min

Practice: Working With Box-and-Whisker Plots

Create multiple box-and-whisker plots on the TI-83 graphing calculator. Compare and contrast the distributions based on these plots.

Duration: 1 hr 30 min Scoring: 25 points

Discuss: Five-Number Summaries on MINITAB

Discuss distributions illuminated by related box-and-whisker plots and their MINITAB output. Learn how to read MINITAB output for five-number summaries and box-and-whisker plots.

Duration:

0 hr 30 min Scoring: 10 points

LESSON 5: MORE ON DESCRIBING DISTRIBUTIONS**Practice: Averages in Skewed Data**

Graph skewed data on the TI-83 and calculate the mean and median. Repeat with a skewed left distribution.

Duration: 0 hr 30 min

Quiz: Estimating Distribution Shape, Using Measures of Central Tendency

Answer questions about how a sample can be used to estimate the shape of the distribution. See how to decide which measures of central tendency and variation are most appropriate to use with differently shaped distributions.

Duration: 1 hr Scoring: 10 points

Practice: Changes in Units of Measurement

Explore changes in measures of center and spread resulting from changes in unit (using conversions between Celsius and Fahrenheit).

Duration: 0 hr 30 min

Practice: Distributions of Data

Bring together terms and symbols for characterizing a distribution, write about characteristics of different distributions in these terms, and offer theories about why the distributions are shaped as they are.

Duration: 2 hr Scoring: 25 points

Quiz: Important Concepts From This Unit

Answer questions to clarify your knowledge of some important concepts in statistics.

Duration: 1 hr Scoring: 15 points

LESSON 6: WRAP-UP**Discuss: What Is Interesting? What Is Confusing?**

Discuss basic statistics, graphs, five-number summaries,

distributions, and any concepts about which you are unclear.

Duration: 0 hr 30 min Scoring: 10 points

Review: Describing Data

Review your studies of basic statistics, graphs, five-number summaries, and distributions.

Duration: 3 hr 30 min

Test (CS): Describing Data

Take a test about the basics of statistics.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Describing Data

Take a test about the basics of statistics.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 7: DIAGNOSTIC

Diagnostic: Describing Data

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 34

points

UNIT 2: THE NORMAL DISTRIBUTION

LESSON 1: INTRODUCTION TO THE NORMAL DISTRIBUTION

Discuss: Performance Comparisons

Discuss performance comparisons between two unrelated distributions, such as scoring averages in baseball and basketball. Show distributions for scoring averages in two sports.

Duration: 0 hr 30 min

Scoring: 10 points

Study: The Normal Curve

Explore the characteristics and uses of one of the most important distributions in statistics: the bell-shaped (or normal) distribution.

Duration: 0 hr 50 min

Practice: The Normal Curve

Answer questions about the characteristics and uses of one of the most important distributions in statistics: the bell-shaped (or normal) distribution.

Duration: 0 hr 30 min

Brainbuilder: Properties of Normal Distributions

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Manipulate graphs of normal curves and explore their properties.

Change means and standard deviations to see the effect on the shape of the curve. Think of areas under the curve as proportions, relative frequencies, and probabilities.

Duration: 1 hr

Practice: RandNorm on the TI-83

Use the RandNorm function on a TI-83 to draw a sample. Store the data in a list, then create a histogram from the data and discuss whether the data appears "normal."

Duration: 0 hr 30 min

LESSON 2: STANDARDIZED SCORES

Study: Raw and Standardized Scores

Explore the standard normal distribution. See how to find areas in a normal distribution and in a standard normal distribution.

Duration: 0 hr 50 min

Practice: Raw and Standardized Scores

Answer questions about the standard normal distribution. See how to find areas in a normal distribution and in a standard normal distribution.

Duration: 0 hr 30 min

Brainbuilder: x-Values and z-Scores

Manipulate graphs of normal curves to find areas, proportions, and probabilities.

Duration: 1 hr

Practice: Using a Normal Curve Table

Translate raw scores to percentiles and areas (and vice versa) using a normal distribution table.

Duration: 0 hr 50 min

Quiz: x-Values, z-Scores, and Areas on the TI-83

Answer questions that require you to convert normal distribution scores using the TI-83 graphing calculator.

Duration: 0 hr 50 min Scoring: 10 points

LESSON 3: DETERMINING IF A DATA SET IS NORMAL

Study: Checking a Data Set for Normalcy

See how to check for normalcy using either the empirical rule or a normal quantile plot. Also, see how to use a TI-83 to make a quantile plot.

Duration: 0 hr 50 min

Practice: Checking a Data Set for Normalcy

Answer questions about how to check for normalcy using either the empirical rule or a normal quantile plot. Also, see how to use a TI-83 to make a quantile plot.

Duration: 0 hr 30 min

Quiz: Empirical Rule and Quantile Plots

Answer questions about testing a data set for normalcy using the empirical rule and normal quantile plots.

Duration: 1 hr Scoring: 15 points

Practice: Checking for Normalcy

Use the empirical rule to determine if a given data set is normal. Use a TI-83 to do a normal quantile plot, and decide if it is close to a normal distribution.

Duration: 1 hr Scoring: 25 points

Quiz: Aspects of the Normal Distribution

Answer questions about terms and properties associated with the normal distribution.

Duration: 0 hr 50 min Scoring: 20 points

LESSON 4: WRAP-UP**Discuss: What Is Interesting? What Is Confusing?**

Discuss the normal distribution, and any concepts about which you are unclear.

Duration: 0 hr 30 min Scoring: 10 points

Review: The Normal Distribution

Review your studies of the normal distribution.

Duration: 3 hr 30 min

Test (CS): The Normal Distribution

Take a test about the normal distribution.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): The Normal Distribution

Take a test about the normal distribution.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 5: DIAGNOSTIC**Diagnostic: The Normal Distribution**

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min

Scoring: 36 points

UNIT 3: BIVARIATE DATA

LESSON 1: INTRODUCTION TO BIVARIATE DATA

Discuss: Shoe Size vs. Height

Using data provided, plot shoe size and height to see if there's a pattern. Discuss your findings.

Duration: 0 hr 30 min Scoring: 10 points

Practice: Scatterplots and Bivariate Data

Go over the distinction between categorical and quantitative variables. Create scatterplots and explore the distinction between the explanatory variable and the response variable.

Duration: 0 hr 30 min

LESSON 2: THE LEAST-SQUARES REGRESSION LINE

Study: Least-Squares Regression Line

Explore the least-squares regression line (a model for data that may be linearly associated).

Duration: 0 hr 50 min

Practice: Least-Squares Regression Line

Answer questions about the least-squares regression line (a model for data that may be linearly associated).

Duration: 0 hr 30 min

Practice: Exploring LSR With the TI-83

Use the TI-83 to explore the meaning of the least-squares regression and find lines of best fit. Learn about residuals and how to calculate them on the TI-83.

Duration: 0 hr 50 min

Study: Residuals

Explore residuals in linear regression and see how to compute them with a TI-83.

Duration: 0 hr 50 min

Practice: Residuals

Answer questions about residuals in linear regression and see how to compute them with a TI-83.

Duration: 0 hr 30 min

Practice: Linear Regression Lines

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Given bivariate data, produce a scatterplot and produce a linear regression line and its residual plot by using the TI-83. Explain why a line is or is not a good model for the given data.

Duration: 0 hr 50 min

Scoring: 25 points

LESSON 3: THE CORRELATION COEFFICIENT

Study: Pearson: Correlation Coefficient

Explore Pearson's correlation coefficient. See what scatterplots look like for various r 's, and see how to obtain r on a TI-83. Examine the relationship between r and the slope of the regression line.

Duration: 0 hr 50 min

Practice: Pearson: Correlation Coefficient

Answer questions about Pearson's correlation coefficient. See what scatterplots look like for various r 's, and see how to obtain r on a TI-83. Examine the relationship between r and the slope of the regression line.

Duration: 0 hr 30 min

Discuss: Exploring Correlation Coefficient: r

Use the TI-83 to explore correlation coefficients for different distributions. Move, create, and delete points to see the effects on Pearson's r . Discuss your findings.

Duration: 0 hr 30 min Scoring: 10 points

Practice: r on the TI-83

Given some bivariate real-world data, use the TI-83 STAT functions to find the linear regression line and the correlation coefficient r .

Duration: 0 hr 30 min

Study: The Meaning of r -Squared

Explore r -squared (also called the coefficient of determination), which gives the proportion of the variation in a response variable that is explained by the explanatory variable.

Duration: 0 hr 50 min

Practice: The Meaning of r -Squared

Answer questions about r -squared (also called the coefficient of determination), which gives the proportion of the variation in a response variable that is explained by the explanatory variable.

Duration: 0 hr 30 min

Practice: Finding and Interpreting r and r -Squared

Given some real-world bivariate data, use the TI-83 STAT functions to find the linear regression line, r , and r -squared. Explain the meaning of r , r -squared, and the slope of the regression line in the context of each problem.

Duration: 1 hr

Study: Uses of the Regression Line

Explore correlation, residual plots, and linear regression predictions. Examine the distinction between interpolation and extrapolation.

Duration: 0 hr 50 min

Practice: Uses of the Regression Line

Answer questions about correlation, residual plots, and linear regression predictions. Examine the distinction between interpolation and extrapolation.

Duration: 0 hr 30 min

Practice: Relation of Shoe Size to Height

Determine whether the correlation is strong for a data set. Calculate the r and find the linear regression line. Determine whether there is evidence that the variables are related.

Duration: 0 hr 30

min

Practice: Regression Lines and Bivariate Statistics

Given real-world bivariate data, use the TI-83 STAT functions to find the linear regression line and its slope. Explain and interpret the meaning of the slope (the regression coefficient). Explain the meaning of r and r -squared.

Duration: 2 hr Scoring: 25 points

Study: How to Read MINITAB Output

See how to read MINITAB output for scatterplots, linear regression lines, correlation coefficients and r -squared, residual plots, and other bivariate statistics.

Duration: 0 hr 50 min

Practice: How to Read MINITAB Output

Answer questions about how to read MINITAB output for scatterplots, linear regression lines, correlation coefficients and r -squared, residual plots, and other bivariate statistics.

Duration: 0 hr 30 min

Discuss: Correlation vs. Causation

Consider bivariate data sets (along with stories about how the data sets were gathered) and discuss whether the data sets may or may not show a cause-and-effect relationship.

Duration: 0 hr 30 min

Scoring: 10 points

LESSON 4: INFLUENTIAL POINTS AND OUTLIERS**Study: Influential Points and Outliers**

Explore the effects of outliers and influential points on a linear regression.

Duration: 0 hr 50 min

Practice: Influential Points and Outliers

Answer questions about the effects of outliers and influential points on a linear

regression.

Duration: 0 hr 30 min

Practice: Bivariate Statistics and Outliers

Use the TI-83 to explore the effects of outliers on the least-squares line regression and on the correlation coefficient. Then use the TI-83 to explore a set of bivariate data.

Duration: 1 hr

Quiz: Aspects of Linear Regression

Answer questions about scatterplots, variables, linear regression, residuals, r , r^2 , outliers, influential points, interpolation, and extrapolation.

Duration: 0 hr 50 min Scoring: 15 points

LESSON 5: TRANSFORMATIONS TO ACHIEVE LINEARITY

Study: Transformations to Achieve Linearity

Explore data sets that are not linearly associated, and see how to transform the data in such sets to achieve linear association.

Duration: 0 hr 50 min

Practice: Transformations to Achieve Linearity

Answer questions about data sets that are not linearly associated, and see how to transform the data in such sets to achieve linear association.

Duration: 0 hr 30 min

Practice: Transformations to Achieve Linearity

Use the TI-83 STAT functions to practice the methods to straighten exponential, power, and logarithmic associations.

Duration: 1 hr 30 min Scoring: 25 points

Practice: Straightening Relationships

Practice regression techniques.

Duration: 1 hr

LESSON 6: CATEGORICAL BIVARIATE DATA: TWO-WAY TABLES

Discuss: Comparing Groups in a Table

Discuss questions such as the following: Does a sports team perform better at home or away? Is there a relationship between education and military service?

Duration: 0 hr 30 min Scoring: 10 points

Study: How to Interpret a Two-Way Table

Examine marginal frequencies, row and column percents, and conditional distributions.

Duration: 0 hr 50 min

Practice: How to Interpret a Two-Way Table

Answer questions about marginal frequencies, row and column percents, and conditional distributions.

Duration: 0 hr 30 min

Brainbuilder: Creating Two-Way Tables

Use a data set to create a two-way table with row and column percents. Create joint frequencies and marginal frequencies and answer questions about the conclusions you can draw.

Duration: 1 hr

Discuss: A Paradox

Discuss how strange things can happen when data or statistics are combined.

Duration: 0 hr 30 min

Scoring: 10 points

Quiz: Simpson: Paradox and Confounding

Answer questions about Simpson's paradox.

Duration: 0 hr 50 min Scoring:

10 points

LESSON 7: WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss bivariate data, the least-squares regression line, the correlation coefficient, influential points and outliers, categorical bivariate data, two-way tables, and any concepts about which you are unclear.

Duration: 0 hr 30 min Scoring: 10 points

Review: Bivariate Data: Regression Analysis and Two-Way Tables

Review your studies of bivariate data.

Duration: 3

hr 30 min

Test (CS): Bivariate Data

Take a test about bivariate data.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Bivariate Data

Take a test about bivariate data.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 8: DIAGNOSTIC

Diagnostic: Bivariate Data: Regression Analysis and Two-Way Tables

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 48 points

UNIT 4: PLANNING A STUDY

LESSON 1: METHODS OF DATA COLLECTION--EXPERIMENTS AND STUDIES

Study: Vocabulary of Data Collection

Explore data-collection terms and concepts such as sample, census, anecdotal evidence, available data, design for producing data, and observational study vs. experiment.

Duration: 0 hr 50 min

Practice: Vocabulary of Data Collection

Explore data-collection terms and concepts such as sample, census, anecdotal evidence, available data, design for producing data, and observational study vs. experiment.

Duration: 0 hr 30 min

Quiz: Data Collection

Answer questions about methods of data collection and state whether they will yield valid results. Differentiate between an observational study and an experiment.

Duration: 1 hr Scoring: 10 points

Study: Vocabulary of Experiments and Surveys

Explore experiment terminology and the three principles of experimental design.

Duration: 0 hr 50 min

Practice: Vocabulary of Experiments and Surveys

Explore experiment terminology and the three principles of experimental design.

Duration: 0 hr 30 min

Practice: Aspects of Experiments

Given an experimental design, identify terms associated with experiments. Identify elements of effective and flawed design.

Duration: 0 hr 50 min

Quiz: Designs for Experiments

Answer questions about completely randomized design vs. randomized match-paired design vs. randomized block design.

Duration: 1 hr 30 min Scoring: 10 points

Practice: Choosing the Design of an Experiment

Design an experiment to test a given researchable issue.

*Duration: 1
hr 30 min Scoring: 25 points*

LESSON 2: METHODS OF DATA COLLECTION--SURVEYS

Study: Types of Samples for Surveys

Explore the types of samples for surveys, including: simple random sample, census, stratified random sample, convenience sample, systematic sample and cluster sample, representative sample as opposed to a random sample, and self-selected sample.

Duration: 0 hr 50 min

Practice: Types of Samples for Surveys

Explore the types of samples for surveys, including: simple random sample, census, stratified random sample, convenience sample, systematic sample and cluster sample, representative sample as opposed to a random sample, and self-selected sample.

Duration: 0 hr 30 min

Practice: Generating Random Samples

Using the random number generator on a TI-83, randomly allocate subjects to two or more groups, so that the groups have equal size or their placement is independent.

Duration: 0 hr 50 min

Study: Bias in Surveys/Transition to Inference

Explore the types of bias in surveys, including the following: under-coverage, non-response, response bias, voluntary response, wording of a question, order of questions, and sampling bias.

Duration: 1 hr

Practice: Bias in Surveys/Transition to Inference

Explore the types of bias in surveys, including the following: under-coverage, non-response, response bias, voluntary response, wording of a question, order of questions, and sampling bias.

Duration: 0 hr 30 min

Quiz: Factors Causing Bias

Answer questions about the various causes of bias in observational studies and experiments.

Duration: 1 hr Scoring: 10 points

Quiz: Aspects of Studies

Answer questions about terms related to experimental and observational studies.

Duration: 1

hr Scoring: 10 points

LESSON 3: WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss methods of data collection, including experiments, studies, and surveys, and any concepts about which you are unclear.

Duration: 0 hr 30 min Scoring: 10 points

Review: Planning a Study

Review your studies of methods of data collection.

Duration: 3 hr 30 min

Test (CS): Planning a Study

Take a test about methods of data collection.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Planning a Study

Take a test about methods of data collection.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 4: DIAGNOSTIC**Diagnostic: Planning a Study**

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 34 points

UNIT 5: PROBABILITY

LESSON 1: WHAT IS PROBABILITY?**Study: Range of Probabilities**

See that the range of probabilities is between 0 and 1, and that probabilities can be estimated from past events, from the theoretical definition of probability (equally likely outcomes), or from an intuition based on previous experience.

Duration: 0 hr 50 min

Practice: Range of Probabilities

See that the range of probabilities is between 0 and 1, and that probabilities can be estimated from past events, from the theoretical definition of probability (equally likely outcomes), or from an intuition based on previous experience.

Duration: 0 hr 30 min

Discuss: What Do You Mean by That?

Discuss which words denote what probabilities. Associate words like *might*, *maybe*, *certain*, *probably*, *possibly*, *unlikely*, and *very likely* with a single probability or a range of probabilities from 0 to 1.

Duration: 0 hr 30 min Scoring: 10 points

Practice: What Is Probability?

Consider probability in terms of relative frequencies. Look at examples and answer questions.

Duration: 0 hr 30 min

Quiz: Calculating Probabilities

Answer questions that require you to calculate probabilities from a given data set.

Duration: 0 hr 50 min Scoring: 10 points

LESSON 2: INTRODUCTION TO THE BASIC RULES OF PROBABILITY

Study: Concepts of Probability

Explore basic concepts of probability, such as sample space, outcome, and event.

Duration: 0 hr 50 min

Practice: Concepts of Probability

Explore basic concepts of probability, such as sample space, outcome, and event.

Duration: 0 hr 30 min

Quiz: Basic Concepts of Probability

Answer questions about the basic concepts of probability.

Duration: 1 hr Scoring:

10 points

Study: The Rules of Probability and an Introduction to Conditional Probability

Explore conditional probability, and learn some rules for solving probability problems.

Duration: 0 hr 50 min

Practice: The Rules of Probability and an Introduction to Conditional Probability

Explore conditional probability, and learn some rules for solving probability problems.

Duration: 0 hr 30 min

Practice: Using the Rules of Probability

Apply the rules for calculating conditional probabilities and the probabilities of combined events.

Duration: 1 hr 30 min Scoring: 25 points

LESSON 3: MORE ON CONDITIONAL PROBABILITIES AND THE PROBABILITIES OF COMBINED EVENTS

Practice: Practice With Laws of Probability

Apply probability laws.

Duration: 1 hr

Study: Conditional Probabilities and Tree Diagrams

Explore conditional and combined probability using tree diagrams and two-way tables.

Duration: 0 hr 50 min

Practice: Conditional Probabilities and Tree Diagrams

Explore conditional and combined probability using tree diagrams and two-way tables.

Duration: 0 hr 30 min

Practice: Tree Diagrams and Probabilities

Use tree diagrams to find probabilities.

Duration: 1 hr

Quiz: Calculating Conditional Probabilities Graphically

Answer questions about conditional probability using tree-diagrams or two-way tables.

Duration: 1 hr Scoring: 10 points

LESSON 4: PROBABILITY DISTRIBUTIONS**Study: Random Variables: Discrete and Continuous**

Explore random variables. Consider discrete vs. continuous random variables, and see how they're used in probability. Examine probability distributions for random variables, density curves, and see why $P(x) = 0$ for any individual number.

Duration: 0 hr 50 min

Practice: Random Variables: Discrete and Continuous

Explore random variables. Consider discrete vs. continuous random variables, and see how they're used in probability. Examine probability distributions for random variables, density curves, and see why $P(x) = 0$ for any individual number.

Duration: 0 hr 30 min

Practice: Discrete Probability Distributions

Use the TI-83 to do virtual random experiments (such as die rolls, coin flips, and candy samples) and see their histograms. Convert probability tables into histograms and vice versa. Create probability histograms from given facts.

Duration: 1 hr

Quiz: Aspects of Random Variables

Answer questions about discrete random variables, continuous random variables, density curves, probability distributions, and probability histograms.

Duration: 0 hr 50 min Scoring: 15 points

LESSON 5: MEANS AND VARIANCES OF RANDOM VARIABLES

Discuss: Dice Games

Given the rules of various dice games, rank them by which you'd prefer to play (from a statistical point of view). Discuss your ranking.

Duration: 0 hr 30 min Scoring: 10 points

Study: Mean and Variances of Random Variables

Go over expected value or expectation. Examine the rules for means and the effect of an $a + bx$ transformation. Look at the rules for variances (and standard deviations).

Duration: 0 hr 50 min

Practice: Mean and Variances of Random Variables

Go over expected value or expectation. Examine the rules for means and the effect of an $a + bx$ transformation. Look at the rules for variances (and standard deviations).

Duration: 0 hr 30 min

Practice: Computing Means and Variances

Apply your knowledge of how to compute means and variances.

Duration: 1 hr Scoring: 25 points

Quiz: Games and Real-World Problems

Answer questions that require you to apply probability rules to problems and games.

Duration: 0 hr 50 min Scoring: 10 points

LESSON 6: REVIEW AND EXAM

Discuss: What Is Interesting? What Is Confusing?

Discuss probability, including conditional probabilities, probabilities of combined events, probability distributions, and means and variances of random variables, and any concepts about which you are unsure.

Duration: 0 hr 30 min Scoring: 10 points

Review: Probability

Review your studies of probability.

Duration: 3 hr 30 min

Review: AP Statistics

Review your studies of basic statistics.

Duration: 4 hr

Exam: Probability

Take a test about basic statistics.

Advanced Placement > AP Statistics

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Duration: 0 hr 55 min Scoring: 100 points

Final Exam: Semester Exam

Take a test about basic statistics.

Duration: 0 hr 55 min Scoring: 100 points

LESSON 7: DIAGNOSTIC

Diagnostic: Probability

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 39 points

UNIT 6: BINOMIALS AND DISTRIBUTIONS

LESSON 1: INTRODUCTION TO INFERENCE STATISTICS

Study: Introduction to Inferential Statistics

Explore an overview of intervals, significance, inference and various applications.

Duration: 0 hr 50 min

Practice: Introduction to Inferential Statistics

Explore an overview of intervals, significance, inference and various applications.

Duration: 0 hr 30 min

Discuss: Uses of Inferential Statistics

Discuss how and where you've seen inferential statistics used.

Duration: 0 hr 30

min Scoring: 10 points

LESSON 2: BINOMIAL DISTRIBUTIONS

Study: Binomial Situations (Events)

Consider the definition of a binomial setting, and use the binomial calculations to solve problems. Examine binomial settings involving *at least*, *at most*, and *between*. Explore the TI-83 to do binomial problems.

Duration: 0 hr 50 min

Practice: Binomial Situations (Events)

Consider the definition of a binomial setting, and use the binomial calculations to

solve problems. Examine binomial settings involving *at least*, *at most*, and *between*. Explore the TI-83 to do binomial problems.

Duration: 0 hr 30 min

Quiz: Binomial Settings and Binomial Probabilities

Solve binomial problems with and without the TI-83.

Duration: 1 hr

Scoring: 10 points

Study: The Normal Approximation to the Binomial

Consider the normal approximation to the binomial distribution.

Explore the cumbersome nature of calculating binomial probabilities exactly. Look at continuity correction.

Duration: 0 hr 50

min

Practice: The Normal Approximation to the Binomial

Consider the normal approximation to the binomial distribution.

Explore the cumbersome nature of calculating binomial probabilities exactly. Look at continuity correction.

Duration: 0 hr 30

min

Quiz: Binomial Problems

Work on binomial problems and consider the criteria for using the normal approximation.

Compare answers obtained with the normal approximation to the binomial to those obtained with the exact binomial.

Duration: 1 hr Scoring: 10 points

Practice: Binomial Problems Using Two Methods

Work on binomial, individual, and interval problems using both the normal approximation to the binomial and, on the TI-83, the exact binomial.

Duration: 1 hr Scoring: 25 points

LESSON 3: GEOMETRIC DISTRIBUTION

Discuss: When Are You Most Likely to Get Your First Red Candy?

Discuss average waiting-time problems.

Duration:

0 hr 30 min Scoring: 10 points

Study: Geometric Probability Distributions

Look at geometric distributions. These are skewed distributions modeling the probability of getting doubles before a certain roll of dice, or the average waiting-time to get a certain answer to a polling question.

Duration: 0 hr 50 min

Practice: Geometric Probability Distributions

Look at geometric distributions. These are skewed distributions modeling

the probability of getting doubles before a certain roll of dice, or the average waiting-time to get a certain answer to a polling question.

Duration: 0 hr 30 min

Quiz: Geometric Distribution Problems

Consider geometric distribution problems with and without the TI-83.

Duration:

1 hr Scoring: 10 points

LESSON 4: SAMPLING DISTRIBUTIONS: MEANS AND PROPORTIONS

Discuss: Which Is More Likely?

Consider the question, "Which is more likely, that the next person you see will be taller than 6' 6 or that the next five people you see will have an average height above 6' 6?"

Duration: 0 hr 30 min Scoring: 10 points

Study: Sampling Distributions and the Central Limit Theorem

Go over sampling distributions and the sampling distribution of a sample mean. Study the mean and standard deviation of the sampling distribution of the mean. Explore the Central Limit Theorem.

Duration: 0 hr 50 min

Practice: Sampling Distributions and the Central Limit Theorem

Go over sampling distributions and the sampling distribution of a sample mean. Study the mean and standard deviation of the sampling distribution of the mean. Explore the Central Limit Theorem.

Duration: 0 hr 30 min

Practice: Sampling Distributions

Practice using the Central Limit Theorem to predict the means, standard deviations, and shapes of sampling distributions.

Duration: 1 hr

Practice: Sampling Distributions

Use the TI-83 to create sampling distributions. Calculate their means and standard deviations.

Duration: 1 hr Scoring: 25 points

Study: Sample Proportions

Look at the derivation of the mean and standard deviation of a sample proportion, based on the binomial.

Duration: 0 hr 50 min

Practice: Sample Proportions

Look at the derivation of the mean and standard deviation of a sample proportion, based on the binomial.

Duration: 0 hr 30 min

Practice: Sampling Distribution of p -Hat

Work on problems based on the mean and standard deviation of a sampling distribution of p -hat. Get additional practice dealing with the sampling distribution of means.

Duration: 1 hr Scoring: 25 points

Quiz: Important Concepts From This Unit

Review the concepts of sampling distribution, the Central Limit Theorem, and sampling distributions for the sample mean and p -hat.

Duration: 1 hr Scoring: 10 points

LESSON 5: UNIT WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss concepts you find interesting or confusing in an informal setting.

Duration: 0 hr 30 min Scoring: 10 points

Review: Binomial Situations and Sampling Distributions

Review your studies of binomial situations and sampling distributions.

Duration: 3 hr 30 min

Test (CS): Binomial Situations and Sampling Distributions

Take a 20-minute test covering inferential statistics, binomial distributions, geometric distribution, and means and proportions.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Binomial Situations and Sampling Distributions

Take a 30-minute test covering inferential statistics, binomial distributions, geometric distribution, and means and proportions.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 6: DIAGNOSTIC

Diagnostic: Binomial Situations and Sampling Distributions

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 31 points

UNIT 7: INTRODUCTION TO INFERENCE

LESSON 1: CONFIDENCE INTERVALS FOR MEANS

Discuss: Guessing an Estimate

Discuss how comfortable you are with guessing numbers within certain intervals. As the intervals widen, does your comfort level increase?

Duration: 0 hr 30 min Scoring: 10 points

Study: Using Sample Means to Estimate Population Means

Consider how to estimate the mean of a population using a sample. Examine confidence intervals and the general form of a confidence interval. Find critical z-values for various confidence levels by using tables and the TI-83 InvNorm function.

Duration: 0 hr 50 min

Practice: Using Sample Means to Estimate Population Means

Consider how to estimate the mean of a population using a sample. Examine confidence intervals and the general form of a confidence interval. Find critical z-values for various confidence levels by using tables and the TI-83 InvNorm function.

Duration: 0 hr 30 min

Quiz: Confidence Intervals

Estimate population means, creating 95% and 99% confidence z-intervals for means. Find critical z-values for non-standard confidence levels.

Duration: 1 hr Scoring: 10 points

Practice: Confidence Intervals

Build an understanding of the term *statistical confidence*.

Duration: 1 hr

Quiz: Finding Desired Sample Sizes

Look at how to find the desired sample size to create a z-interval with a given margin of error and confidence level. Consider the relationship between sample size, confidence level, and margin of error.

Duration: 1 hr Scoring: 10 points

Practice: Creating Intervals

Create intervals for means using the formula and the TI-83 STAT TESTS function. Calculate the sample size n necessary to produce a given margin of error and a certain confidence level.

Duration: 1 hr Scoring: 25 points

LESSON 2: STATISTICAL SIGNIFICANCE AND P-VALUE

Discuss: How Good Is the Guess?

Discuss the following scenario: A psychic says she knows what time of day you were born. She tells you her guess and she's right! How would you quantify how good her guess is?

Duration: 0 hr 30 min

Scoring: 10 points

Study: The Definition of P-Value

Explore the concepts of *statistical significance* and *significance levels*. Consider what it means to say that a finding is different enough from what was expected that we can reject it as chance variation.

Duration:
0 hr 50 min

Practice: The Definition of P-Value

Explore the concepts of *statistical significance* and *significance levels*. Consider what it means to say that a finding is different enough from what was expected that we can reject it as chance variation.

Duration: 0 hr 30 min

Quiz: Working With P-Values and Statistical Significance

Find P -values for different distributions. Determine statistical significance.

Duration: 1 hr Scoring: 10 points

LESSON 3: SIGNIFICANCE AND HYPOTHESIS TESTING: MEANS

Discuss: What Is an Impressive Prediction?

Look at cases where people make successful predictions. How do you know whether the successful prediction was just luck?

Duration: 0 hr 30 min Scoring: 10 points

Study: The Hypothesis-Testing Procedure

Look at the hypothesis-testing procedure and null and alternative hypotheses. Consider one- and two-sided hypotheses, and how to compute a P -value.

Duration: 0 hr 50 min

Practice: The Hypothesis-Testing Procedure

Look at the hypothesis-testing procedure and null and alternative hypotheses. Consider one- and two-sided hypotheses, and how to compute a P -value.

Duration: 0 hr 30 min

Practice: Hypothesis Tests for Means

Perform hypothesis tests for means and then support the conclusion.

Duration: 1
hr

Practice: More Hypothesis Tests for Means

Apply your knowledge of significance and hypothesis testing to answer the questions in this Assignment.

Duration: 1 hr Scoring: 25 points

Study: Two-Sided Significance Tests and Confidence Intervals

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Consider the relationship between two-tailed significance tests and confidence intervals. See examples of how a confidence interval for means can solve a two-tailed significance test for means.

Duration: 0 hr 50 min

Practice: Two-Sided Significance Tests and Confidence Intervals

Consider the relationship between two-tailed significance tests and confidence intervals. See examples of how a confidence interval for means can solve a two-tailed significance test for means.

Duration: 0 hr 30 min

Quiz: Two-Sided Significance Tests and Confidence Intervals

Work on parallel problems: a confidence interval and its corresponding significance test. Observe that the same conclusions are reached with each method.

Duration: 1 hr Scoring:

10 points

LESSON 4: ERRORS IN HYPOTHESIS TESTING

Discuss: Innocent or Guilty?

Discuss the following scenario: A person is on trial. If your hypothesis is that the person is innocent, what kinds of errors can you make if you declare the person guilty or innocent?

Duration: 0 hr 30 min Scoring: 10 points

Study: The Power of the Test, Type I and Type II Errors

Look at two types of errors in hypothesis testing. Consider several concepts, including the power of a test, the relationship between significance level and a Type I error, and the relationship between power and a Type II error.

Duration: 0 hr 50 min

Practice: The Power of the Test, Type I and Type II Errors

Look at two types of errors in hypothesis testing. Consider several concepts, including the power of a test, the relationship between significance level and a Type I error, and the relationship between power and a Type II error.

Duration: 0 hr 30 min

Practice: Dangers of Type I and Type II Errors

Look at various situations and determine the dangers inherent in making Type I and Type II errors.

Duration: 1 hr

Practice: Computing Probabilities for Type I and Type II Errors

Look at hypothesis-testing situations and compute the probabilities of Type I errors, Type II errors, and the power of the test. Emphasis is on the concepts of errors and power rather than on computation, although some computation will be done.

Duration: 1 hr Scoring: 25 points

Quiz: Concepts of Hypothesis and Significance Testing

Test of your understanding of concepts such as point estimate, P -value, null hypothesis, alternative hypothesis, statistical significance, result, conclusion, one-tailed, two-tailed, Type I and Type II errors.

Duration: 1 hr Scoring: 10 points

LESSON 5: UNIT WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss concepts you find interesting or confusing in an informal setting.

Duration: 0 hr 30 min Scoring: 10 points

Review: Introduction to Inference: Confidence Intervals and Hypothesis Testing

Review your studies of confidence intervals and hypothesis testing.

Duration: 3 hr 30 min

Test (CS): Introduction to Inference

Take a 20-minute test covering confidence intervals for means, statistical significance and P -value, means, and errors in hypothesis testing.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Introduction to Inference

Take a 30-minute test covering confidence intervals for means, statistical significance and P -value, means, and errors in hypothesis testing.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 6: DIAGNOSTIC

Diagnostic: Introduction to Inference: Confidence Intervals and Hypothesis Testing

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 36 points

UNIT 8: T DISTRIBUTION FOR MEANS

LESSON 1: CONFIDENCE INTERVALS AND HYPOTHESIS TESTING FOR A SINGLE MEAN

Study: The t Distributions

Examine what to do when you don't know the population standard deviation. Look at the

important assumptions necessary to use the t distribution and notice how to use the t tables and the TI-83 for the t distribution.

Duration: 0 hr 50 min

Practice: The t Distributions

Examine what to do when you don't know the population standard deviation. Look at the important assumptions necessary to use the t distribution and notice how to use the t tables and the TI-83 for the t distribution.

Duration: 0 hr 30 min

Practice: Creating Confidence Intervals

Create 90%, 95%, and 99% confidence t intervals for means. Practice doing this using the TI-83.

Duration: 1 hr

Quiz: Concepts Relating to Confidence t Intervals

Create t intervals for means using the formula and the TI-83 STAT TESTS function. Calculate the sample size n needed to produce a given margin of error and a certain confidence level.

Duration: 1 hr Scoring: 10 points

Practice: Hypothesis Testing With the t Distribution

Follow the steps for conducting hypothesis tests (both one- and two-sided) using the t distribution. Consider the relationship between confidence intervals and significance tests. Look at power and Type I and Type II errors.

Duration: 1 hr

Practice: t Intervals and Hypothesis Tests

Apply the calculations for t intervals and hypothesis tests from start to finish using realistic data sets. Justify use of the t procedures.

Duration: 1 hr Scoring: 25 points

LESSON 2: CONFIDENCE INTERVALS FOR THE DIFFERENCE BETWEEN TWO MEANS

Study: Inference for Matched-Pairs Situations

Look at when data should and should not be analyzed as a matched-pairs situation. Explore the hypothesis-testing procedures and t intervals for matched-pairs data.

Duration: 0 hr 50 min

Practice: Inference for Matched-Pairs Situations

Look at when data should and should not be analyzed as a matched-pairs situation. Explore the hypothesis-testing procedures and t intervals for matched-pairs data.

Duration: 0 hr 30 min

Quiz: Matched Pairs or Not?

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Identify situations in which it's appropriate to use matched-pairs analysis.

Duration: 1 hr

Scoring: 10 points

Practice: t Intervals and Hypothesis Tests With Matched Pairs Data

Look at how to use TI-83 LISTS and STAT

TESTS to create confidence intervals and to conduct hypothesis tests for paired data.

Duration: 1 hr

Quiz: Matched Pairs Confidence Intervals and t Tests

Solve problems using matched-pairs t tests.

Duration: 1 hr

Scoring: 10 points

LESSON 3: CONFIDENCE INTERVALS AND HYPOTHESIS TESTS FOR TWO INDEPENDENT SAMPLES

Study: t Intervals for Two Independent Samples

Use t intervals for two independent samples, and compute degrees of freedom using the conservative method, the software method, and pooled variances.

Duration: 0 hr 50 min

Practice: t Intervals for Two Independent Samples

Use t intervals for two independent samples, and compute degrees of freedom using the conservative method, the software method, and pooled variances.

Duration: 0 hr 30 min

Quiz: t Intervals for Two Independent Samples

Compute and interpret t intervals for two independent samples.

Duration: 1 hr Scoring: 10 points

Practice: t Intervals for Two Independent Samples

Practice techniques taught in this lesson. Create 90%, 95%, and 99% confidence t intervals for mean differences when the population standard deviation is unknown. Use a table to produce critical t values.

Duration: 1 hr Scoring: 25 points

Study: Hypothesis Test for the Difference of Two Independent Samples

Look at how to do significance testing for the difference of two independent samples. Compare different methods for computing degrees of freedom, including the conservative method, pooling variances, and software.

Duration: 0 hr 50 min

Practice: Hypothesis Test for the Difference of Two Independent Samples

Look at how to do significance testing for the difference of two independent samples. Compare different methods for computing degrees of freedom, including the conservative method, pooling variances, and software.

Duration: 0 hr 30 min

Quiz: Two-Sample t Tests

Work on two-sample t tests using the formula, tables, and the TI-83. Compare results using different degrees of freedom.

Duration: 1 hr Scoring: 10 points

Practice: More Two-Sample t Tests

Work on two-sample t tests for means, using the formula and tables. Solve the same problems using confidence intervals.

Duration: 1 hr

Quiz: Confidence Intervals and Significance Testing for Means

Test your understanding of various significance tests.

Review uses of confidence intervals.

Duration: 1 hr Scoring: 10 points

LESSON 4: UNIT WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss concepts you find interesting or confusing in an informal setting.

Duration: 0 hr 30 min Scoring: 10 points

Review: t Distribution for Means

Review your studies of t distribution for means.

Duration: 3 hr 30 min

Test (CS): t Distribution for Means

Take a 20-minute test covering confidence intervals and hypothesis testing for a single mean and for two independent samples, and the difference between two means.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): t Distribution for Means

Take a 30-minute test covering confidence intervals and hypothesis testing for a single mean and for two independent samples, and the difference between two means.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 5: DIAGNOSTIC

Diagnostic: t Distribution for Means

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min
Scoring: 37 points

UNIT 9: INFERENCE FOR PROPORTIONS

LESSON 1: CONFIDENCE INTERVALS AND HYPOTHESIS TESTS FOR A SINGLE POPULATION PROPORTION

Study: Confidence Interval for a Single Population Proportion

Look at confidence intervals for a single population proportion and sample size for a given margin of error.

Duration: 0 hr 50 min

Practice: Confidence Interval for a Single Population Proportion

Look at confidence intervals for a single population proportion and sample size for a given margin of error.

Duration: 0 hr 30 min

Practice: Creating z-Intervals for a Single Population Proportion

Create 90%, 95%, and 99% z-intervals for problems using the formula and table or the InvNorm function on the TI-83.

Duration: 1 hr

Quiz: Finding the Sample Size for a Given Margin of Error for a Single Population Proportion

Practice finding the sample size for a given margin of error.

Duration: 1 hr Scoring: 10 points

Practice: Confidence Intervals for a Single Population Proportion

Apply various techniques to solve problems and create intervals for proportions using the formula and the TI-83 STAT TESTS function. Calculate the sample size n needed to produce a given confidence interval.

Duration: 1 hr Scoring: 25 points

Study: Significance Testing for Proportions

Examine one- and two-tailed significance-testing problems.

Duration: 0 hr
50 min

Practice: Significance Testing for Proportions

Examine one- and two-tailed significance-testing problems.

Duration: 0
hr 30 min

Practice: One- and Two-Tailed Significance Tests for a Single Population Proportion

Perform one- and two-tailed significance tests for proportions. Work on parallel problems: a confidence interval for proportions and its corresponding

two-tailed significance test. Justify that the conclusions match.

Duration: 1 hr

Quiz: More One- and Two-Tailed Significance Tests for a Single Population Proportion

Perform one- and two-tailed significance tests for proportions.

Duration: 1 hr Scoring: 10 points

LESSON 2: THE DIFFERENCE BETWEEN TWO PROPORTIONS

Study: Differences Between Two Proportions

Look at confidence intervals and significance testing for the difference between two proportions. Compare differences in computation of standard error. Study how to use the TI-83 to test for a difference between two proportions.

Duration: 0 hr 50 min

Practice: Differences Between Two Proportions

Look at confidence intervals and significance testing for the difference between two proportions. Compare differences in computation of standard error. Study how to use the TI-83 to test for a difference between two proportions.

Duration: 0 hr 30 min

Practice: Differences Between Two Proportions

Create 90%, 95%, and 99% confidence intervals and do significance tests for the differences between proportions.

Duration: 1 hr Scoring: 25 points

Practice: Significance Tests for One and Two Proportions

Choose confidence intervals and do significance tests on one- and two-proportion problems.

Duration: 1 hr

Quiz: Inference for Means and Proportions

Identify elements of confidence intervals or significance tests needed in a variety of situations.

Duration: 1 hr Scoring: 10 points

LESSON 3: UNIT WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss concepts you find interesting or confusing in an informal setting.

Duration: 0 hr 30 min Scoring: 10 points

Review: Inference for Proportions

Review your studies of inference for proportions.

Duration: 3 hr 30 min

Test (CS): Inference for Proportions

Take a 20-minute test covering confidence intervals and hypothesis tests for a single population proportion and the difference between two proportions.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Inference for Proportions

Take a 30-minute test covering confidence intervals and hypothesis tests for a single population proportion and the difference between two proportions.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 4: DIAGNOSTIC

Diagnostic: Inference for Proportions

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min

Scoring: 34 points

UNIT 10: INFERENCE FOR TABLES AND LEAST-SQUARES

LESSON 1: ONE-WAY TABLES: CHI-SQUARE FOR GOODNESS-OF-FIT

Discuss: Roll of the Die

Discuss the following scenario: You're given the results of a single die rolled 60 times: how many ones, twos, threes, and so on came up? Try to decide if the die is fair. (How far can outcomes deviate from what's expected by chance alone?)

Duration: 0 hr 30 min Scoring: 10 points

Study: Chi-Square for Goodness-of-Fit

Explore inference for univariate categorical data. Look at the chi-square statistic and the chi-square distribution, how to use them to test whether data fit expected values, and the assumptions needed to use the chi-square statistic.

Duration: 0 hr 50 min

Practice: Chi-Square for Goodness-of-Fit

Explore inference for univariate categorical data. Look at the chi-square statistic and the chi-square distribution, how to use them to test whether data fit expected values, and the assumptions needed to use the chi-square statistic.

Duration: 0 hr 30 min

Practice: Goodness-of-Fit on the TI-83

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Use the lists on the TI-83 to compute a chi-square value for goodness-of-fit.

Duration: 1 hr

Quiz: Using Chi-Square for Goodness-of-Fit

Perform chi-square significance tests involving goodness-of-fit on problems involving dice, spinners, birthdays in different months, and the like.

Duration: 1 hr Scoring: 10 points

LESSON 2: TWO-WAY TABLES: CHI-SQUARE FOR ASSOCIATION OR INDEPENDENCE

Study: Expected Values as an Ideal for Independence

Study inference for bivariate categorical data in two-way tables.

Look at the chi-square test for association or independence and the assumptions needed to use the test.

Duration: 0 hr 50

min

Practice: Expected Values as an Ideal for Independence

Study inference for bivariate categorical data in two-way

tables. Look at the chi-square test for association or independence and the assumptions needed to use the test.

Duration:

0 hr 30 min

Practice: Chi-Square Hypothesis Tests for Association or Independence

Perform complete chi-square hypothesis

tests for association or independence. Look at the assumptions needed to use chi-square.

Duration: 1 hr Scoring: 25

points

LESSON 3: INFERENCE FOR THE LEAST-SQUARES LINE

Study: Inference for the Least-Squares Line

Explore the linear regression line for a sample as an estimator of the

least-square line for a population. Study and use the standard error of the slope, and the t test for the slope of a regression line.

Duration: 0 hr 50 min

Practice: Inference for the Least-Squares Line

Explore the linear regression line for a sample as an estimator of the

least-square line for a population. Study and use the standard error of the slope, and the t test for the slope of a regression line.

Duration: 0 hr 30 min

Quiz: t Test for the Slope of the Regression Line

Choose a linear regression line from paired data as an estimate of the population regression line. Do t tests for the slope of the regression line.

Duration: 1 hr Scoring: 10 points

Practice: TI-83 and MINITAB Output for Inference for the Least-Squares Line

Practice doing a t test on your TI-83 for the slope of the regression line. Look at how to read MINITAB output for regression.

Duration: 1 hr

Practice: Inference for the Least-Squares Line

Given paired data, do a hypothesis test for the slope of the regression line using the TI-83. Read MINITAB output for regression and use this for a hypothesis test for the slope of the regression line.

Duration: 1 hr Scoring: 25 points

LESSON 4: UNIT WRAP-UP

Discuss: What Is Interesting? What Is Confusing?

Discuss concepts you find interesting or confusing in an informal setting.

Duration: 0 hr 30 min Scoring: 10 points

Review: Inference for One- and Two-Way Tables and for Least-Squares Lines

Review your studies of inference for one- and two-way tables and for least square lines.

Duration: 3 hr 30 min

Test (CS): Inference for Tables and Least-Squares

Take a 20-minute test covering one-way tables, two way tables, and inference for the least-squares line.

Duration: 0 hr 20 min Scoring: 48 points

Test (TS): Inference for Tables and Least-Squares

Take a 30-minute test covering one-way tables, two way tables, and inference for the least-squares line.

Duration: 0 hr 30 min Scoring: 52 points

LESSON 5: DIAGNOSTIC

Diagnostic: Inference for One- and Two-Way Tables and for Least-Squares Lines

Test your understanding of the key concepts covered.

Duration: 0 hr 45 min Scoring: 35 points

UNIT 11: FINAL PREPARATION FOR THE AP STATISTICS EXAM

LESSON 1: GENERAL PREPARATION STRATEGIES

Study: How to Prepare for the AP Statistics Exam

Study how to assess where you are in your preparations for the Exam, and plan how to best prepare based on your self-assessment.

Duration: 0 hr 50 min

Practice: Action Plan

Write an action plan for preparing for the AP Statistics Exam.

Duration: 1 hr Scoring: 25 points

Discuss: Statistics as a Cohesive Whole

Create a map that ties together the concepts covered in the statistics course. Discuss an example of how statistics is used, and list the most important concepts from the statistics course used in your example.

Duration: 1 hr Scoring: 10 points

Quiz: Interpreting MINITAB Output

Review how MINITAB or other software packages may be used on the AP Exam.

Duration: 2 hr Scoring: 10 points

LESSON 2: STRATEGIES AND PRACTICE FOR MULTIPLE-CHOICE AND FREE-RESPONSE QUESTIONS

Quiz: AP-Style Multiple-Choice Questions, Part 1

Practice answering AP-style multiple-choice questions.

Duration: 2

hr 30 min Scoring: 20 points

Practice: AP-Style Free-Response Practice, Part 1

Practice with AP-style free-response questions and study how they are scored.

Duration: 2 hr 30 min

Quiz: AP-Style Multiple-Choice Questions, Part 2

Practice Answering AP-style multiple-choice questions.

Duration: 2

hr 30 min Scoring: 20 points

Practice: AP-Style Free-Response Practice, Part 2

More practice with AP-style free-response questions.

Duration: 2 hr

LESSON 3: PUTTING IT TOGETHER: PRACTICE EXAM AND MIXED PRACTICE

Practice: Full-Length Practice Exam

Take a full-length practice exam and study how AP Exams are scored by scoring yourself.

Duration: 5 hr Scoring: 25 points

Practice: Mixed Practice with Multiple-Choice and Free-Response Questions

Answer items similar to the practice exam (the format is different and you don't need to do it in one sitting).

Duration: 5 hr

Study: Final Wrap-Up for AP Exam

Take note of some things to think about on the Exam. Apply some final preparation suggestions.

Duration: 0 hr 50 min

LESSON 4: FINAL EXAM

Exam: AP Statistics

Take the Final Exam. Good luck!

Duration: 1 hr 30 min Scoring: 80 points

Final Exam: AP Statistics

Take the Final Exam. Good Luck!

Duration: 1 hr 30 min Scoring: 112 points

LESSON 1: TEST-TAKING TIPS