Unit One: Exploring Data: Ch. 1 (10 Days)

Big Ideas: Analyzing Categorical Data, Displaying Quantitative Data

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Topics	Assessments	Standards(All from College Board)
Chapter 1 Introduction 1.1 Bar Graphs and Pie Charts, Graphs: Good and Bad 1.1 Two-Way Tables and Marginal Distributions, Relationships Between Categorical Variables: Conditional Distributions, Organizing a Statistical Problem 1.2 Dotplots, Describing Shape, Comparing Distributions, Stemplots 1.2 Histograms, Using Histograms Wisely 1.3 Measuring Center: Mean and Median, Comparing Mean and Median, Measuring Spread: IQR, Identifying Outliers 1.3 Five Number Summary and Boxplots, Measuring Spread: Standard Deviation, Choosing Measures of Center and Spread	Homework for each section Quizzes as needed Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook Unit 1 PPC (Personal Progress Check on AP Classroom) Chapter 1 Test	Constructing and interpreting graphical displays of distributions of univariate data (dotplot, stemplot, histogram, cumulative frequency plot) 1. Center and spread 2. Clusters and gaps 3. Outliers and unusual features 4. Shape Summarizing distributions of univariate data. 1. Measuring center: median, mean 2. Measuring spread: range, IQR, st. deviation. 3. Measuring position: quartiles, percentiles, st. scores 4. Using boxplots Comparing distributions of univariate data 1. Comparing center and spread 2. Comparing clusters and gaps 3. Comparing outliers and unusual features 4. Comparing shape Exploring categorical data – comparing distributions using bar charts.

Unit Two: Modeling Distributions of Data: Ch. 2 (8 Days)

Big Ideas: Describing locations in a distribution, normal distributions

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Topics	Assessments	Standards (CB)
2.1 Introduction, Measuring Position: Percentiles, Cumulative Relative Frequency Graphs, Measuring Position: z-scores 2.1 Transforming Data, Density Curves 2.2 Normal Distributions, The 68-95-99.7 Rule, The Standard Normal Distribution 2.2 Normal Distribution Calculations 2.2 Assessing Normality	Homework for each section. Quizzes as needed Z-score worksheet and LTF worksheets on bar graphs and histograms. Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook Chapter 2 Test Unit 2 AP Personal Progress Check	Cumulative relative frequency graph Summarizing distributions of univariate data The effect of changing units on summary measures The normal distribution a) Properties of b) Using tables c) As a model for measurements

Unit Three: Describing Relationships: Ch. 3 (9 Days)

Big Ideas: Scatterplots and Correlation, Least-Squares Regression

Topics	Assessments	Standards (CB)
Chapter 3 Introduction Activity: CSI Stats 3.1 Explanatory and response variables 3.1 Displaying relationships: scatterplots 3.1 Interpreting scatterplots 3.1 Measuring linear association: correlation 3.1 Facts about correlation 3.2 Least-squares regression 3.2 Interpreting a regression line 3.2 Prediction 3.2 Residuals and the least-squares regression line 3.2 Calculating the equation of the least-squares regression line 3.2 How well the line fits the data: residual plots 3.2 How well the line fits the data: the role of r^2 in regression 3.2 Interpreting computer regression output 3.2 Correlation and regression wisdom 12.2 Transforming to make linear (aligned with 6e In the text)	Homework for each section Quizzes as needed Cookie Activity Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 2 Chapter 3 Test	Exploring bivariate data a) Analyzing patterns in scatterplot b) Correlation and linearity c) Least Squares regression line d) Residual plots, outliers, and influential points

Unit Four: Designing Studies: Ch. 4 (12 Days)

Big Ideas: Sampling and Surveys, Experiments, Using Studies Wisely

Topics	Assessments	Standards
4.1 Introduction, Sampling and Surveys, How to Sample Badly, How to Sample Well: Random Samples 4.1 Other Sampling Methods 4.1 Inference for Sampling, Sample Surveys: What Can Go Wrong? 4.2 Observational Studies vs. Experiments, The Language of Experiments, How to Experiment Badly 4.2 How to Experiment Well, Three Principles of Experimental Design 4.2 Experiments: What Can Go Wrong? Inference for Experiments 4.2 Blocking, Matched Pairs Design 4.3 Scope of Inference, the Challenges of Establishing Causation	Homework for each section Quizzes as needed Jelly Blubbers Activity Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 3 Chapter 4 Test	Methods of Data Collection a) Census b) Sample survey c) Experiment d) Observational study Planning and conducting surveys a) Characteristics of a well-designed and well-conducted survey b) Populations, samples, and random selection c) Sources of bias and confounding including the placebo effect and blinding d) Completely randomized design e) Randomized block design including matched pairs design Generalizability of results and types of conclusions that can be drawn from observational studies, experiments and surveys

Unit Five: Probability: Ch. 5 (10 Days)

Big Ideas: Randomness, Prob. And Simulation, Prob. Rules, Cond. Probability and Independence

Topics	Assessments	Standards
5.1 Introduction, The Idea of Probability, Myths about Randomness 5.1 Simulation 5.2 Probability Models, Basic Rules of Probability 5.2 Two-Way Tables and Probability, Venn Diagrams and Probability 5.3 What is Conditional Probability?, Conditional Probability and Independence, Tree Diagrams and the General Multiplication Rule 5.3 Independence: A Special Multiplication Rule, Calculating Conditional Probabilities	Homework for each section Quizzes as needed LTF Probability packet Mutually Exclusive and Independence handout Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook Chapter 5 Test	Exploring Categorical Data a) Marginal and Joint frequencies for two-way tables b) Conditional relative frequencies for two-way tables Probability a) Interpreting probability, including long-run relative frequency interpretation b) Law of large numbers concept c) Addition rule, Mult. Rule, conditional probability and independence d) Simulation of random behavior and probability distributions

Unit Six: Random Variables: Ch. 6 (10 Days)

Big Ideas: Discrete and Continuous Random Var., Transforming and combining, Binomial and Geometric

Topics	Assessments	Standards
6.1 Discrete random Variables, Mean (Expected Value) of a Discrete Random Variable 6.1 Standard Deviation (and Variance) of a Discrete Random Variable, Continuous Random Variables 6.2 Linear Transformations 6.2 Combining Random Variables, Combining Normal Random Variables 6.3 Binomial Settings and Binomial Random Variables, Binomial Probabilities 6.3 Mean and Standard Deviation of a Binomial Distribution, Binomial Distributions in Statistical Sampling 6.3 Geometric Random Variables	Homework for each section Quizzes as needed Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 4 Chapter 6 Test	Probability a) Discrete random variables and their probability distributions, including binomial and geometric b) Mean and standard deviation of a random variable and linear transformation of a random variable. Combining Independent random variables a) Notion of independence versus dependence b) Mean and standard deviation for sums and differences of independent random variables

Unit Seven: Sampling Distributions: Ch. 7 (8 Days)
Big Ideas: Sampling Dist., Sample proportions, sample means

Topics	Assessments	Standards
7.1 Parameters and Statistics 7.1 Sampling Variability, Describing Sampling Distributions 7.2 The Sampling Distribution of $\hat{p}$, Using the Normal Approximation for $\hat{p}$, 7.3 The Sampling Distribution of $\overline{x}$: Mean and Standard Deviation, Sampling from a Normal Population 7.3 The Central Limit Theorem 10.1 and 10.2 (aligned with 6e text) – The sampling distribution of diff. between two prop. and means.	Homework for each section Quizzes as needed German Tank problem Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 5 Chapter 7 Test	Sampling Distribution a) Sampling distribution of a sample proportion b) Sampling distribution of a sample mean c) Central limit theorem d) Simulation of sampling distributions

End of 1st Semester

Unit Eight: Estimating with Confidence: Ch. 8 (8 days)

Big Ideas: Confidence intervals, Est. a population proportion, est. a pop. mean

Topics	Assessments	Standards
8.1 The Idea of a Confidence Interval, Interpreting Confidence Levels and Confidence Intervals, Constructing a Confidence Interval 8.1 Using Confidence Intervals Wisely, 8.2 Conditions for Estimating *p*, Constructing a Confidence Interval for *p* 8.2 Putting It All Together: The Four-Step Process, Choosing the Sample Size 8.3 When σ Is Known: The One-Sample *z* Interval for a Population Mean, When σ Is Unknown: The *t* Distributions, Constructing a Confidence Interval for μ 8.3 Using *t* Procedures Wisely	Homework for each section Quizzes as needed Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook Chapter 8 Test	Sampling Distributions a) t distribution Estimation a) Estimating population parameters and margins of error b) Properties of point estimators, including unbiasedness and variability c) Logic of confidence intervals, meaning of conf. level and conf. intervals, properties of conf. intervals. d) Large-sample confidence interval for a proportion e) Confidence interval for a mean f) Confidence interval for a diff. between two means (unpaired and paired) g)

Unit Nine: Testing a Claim: Ch. 9 (9 days)

Big Ideas: Significance tests, test about pop. Proportion , test about pop. mean

Topics	Assessments	Standards
9.1 The Reasoning of Significance Tests, Stating Hypotheses, Interpreting *P*-values, Statistical Significance 9.1 Type I and Type II Errors, Planning Studies: The Power of a Statistical Test 9.2 Carrying Out a Significance Test, The One-Sample *z* Test for a Proportion 9.2 Two-Sided Tests, Why Confidence Intervals Give More Information 9.3 Carrying Out a Significance Test for μ, The One Sample *t* Test, Two-Sided Tests and Confidence Intervals 9.3 Inference for Means: Paired Data, Using Tests Wisely	Homework for each section Quizzes as needed Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook Chapter 9 Test	Tests of significance a) Logic of significance testing, null and alternative hypotheses, P-values, one and two-sided tests, concepts of Type I and Type II errors, concept of power b) Large sample test for proportion c) Test for a mean d) Test for a difference between two means (paired)

Unit Ten: Comparing Two Populations or Groups: Ch. 10 (9 days)

Big Ideas: Comparing Two Proportions, Comparing two means

Topics	Assessments	Standards
10.1 The Sampling Distribution of a Difference Between Two Proportions 10.1 Confidence Intervals for $p_1 - p_2$	Homework for each section Quizzes as needed Is Yawning Contagious activity	Sampling Distributions a) Sampling dist. Of a difference between two independent sample proportions

10.1 Significance Tests for $p_1 - p_2$, Inference for Experiments 10.2 Activity: Does Polyester Decay?, The Sampling Distribution of a Difference Between Two Means 10.2 The Two-Sample *t*-Statistic, Confidence Intervals for $\mu_1 - \mu_2$ 10.2 Significance Tests for $\mu_1 - \mu_2$, Using Two-Sample *t* Procedures Wisely	Weight Loss Experiment Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 6 and 7 Chapter 10 Test	b) Sampling dist. Of a difference between two independent sample means Estimation a) Large sample confidence interval for a difference between two proportions Tests for significance a) Large sample test for a difference between two proportions b) Test for a difference between two means (unpaired)

Unit Eleven: Inference for Distributions of Categorical Data: Ch. 11 (7 days)

Big Ideas: Chi-Square Goodness of Fit Tests, Inference for Relationships

Topics	Assessments	Standards
11.1 Comparing Observed and Expected Counts: The Chi-Square Statistic, The Chi-Square Distributions and *P*-values 11.1 The Chi-Square Goodness-of-Fit Test, Follow-Up Analysis 11.2 Comparing Distributions of a Categorical Variable, Expected Counts and the Chi-Square Statistic, The Chi-Square Test for Homogeneity, Follow-Up Analysis, Comparing Several Proportions	Homework for each section Quizzes as needed Candy Man activity Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 8 Chapter 11 Test	Sampling Distributions a) Chi-square Distributions Tests of significance a) Chi-square test for goodness of fit, homogeneity of proportions, and independence (one and two-way tables)

11.2 The Chi-Square Test of Association/Independence, Using Chi-Square Tests Wisely		

Unit Twelve:Regression: Ch. 12 (8 days)
Big Ideas: Inference for Linear Regression, Transforming to achieve Linearity

Topics	Assessments	Standards
12.1 The Sampling Distribution of *b*, Conditions for Regression Inference 12.1 Estimating Parameters, Constructing a Confidence Interval for the Slope 12.1 Performing a Significance Test for the Slope 12.2 Transforming with Powers and Roots 12.2 Transforming with Logarithms	Homework for each section Linear regression review sheet LTF LSRL packet Quizzes as needed Review from text Practice Test from text (optional) MC and Frappy from Strive for 5 workbook AP PPC Unit 9 Chapter 12 Test	Estimation a) Confidence interval for the slope for a least squares regression line Tests of significance a) Test for a slope of a least-squares regression line

Remaining time before the AP Exam is used to practice the AP exams released by the College Board and improve student skills relative to the exam. Free Response questions are available to be assigned digitally through AP Classroom. After the exam, we spend 5-7 days reviewing the questions that were on the exam (once allowed by CB).