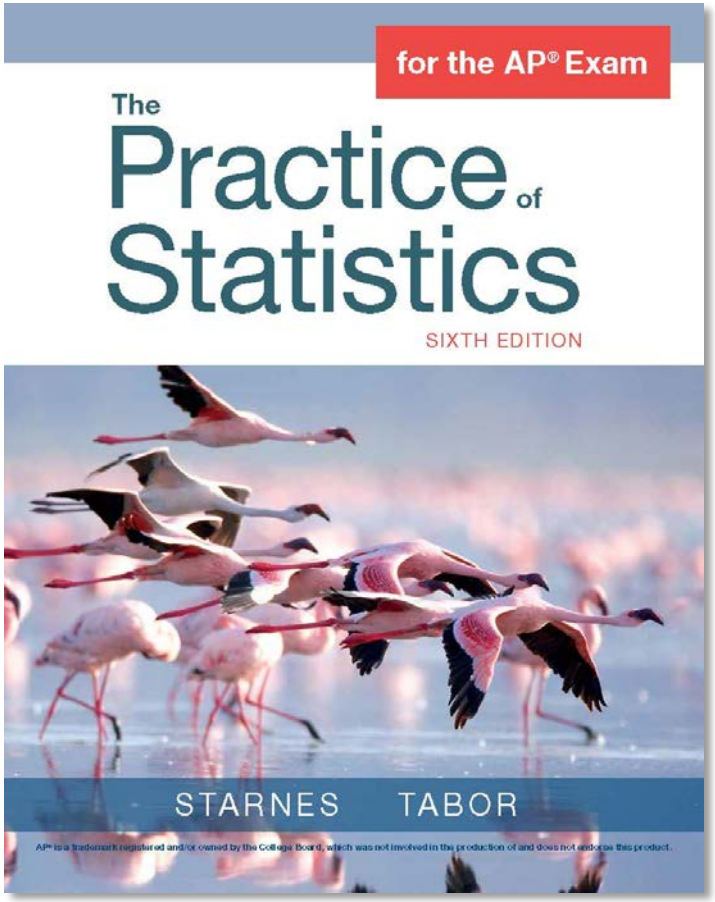
Advice from the Authors

The Practice of Statistics includes the essential content and skills in the new AP® Statistics Course Framework



"As always, you'll have the flexibility to organize the course content as you like."

The College Board

The Big Picture

How College Board's new UNITS align to the TPS organization

Unit	College Board Unit Title	TPS 6e Chapter
1	Exploring One-Variable Data	Chapters 1 and 2
2	Exploring Two-Variable Data	Chapter 3 plus Section 12.2
3	Collecting Data	Chapter 4
4	Probability, Random Variables, and Probability Distributions	Chapters 5 and 6
5	Sampling Distributions	Chapter 7 plus small subsection of 10.1 and 10.2
6	Inference for Categorical Data: Proportions	Sections 8.1, 8.2, 9.1, 9.2, 10.1
7	Inference for Quantitative Data: Means	Sections 8.3, 9.3, 10.2, 10.3
8	Inference for Categorical Data: Chi-Square	Chapter 11
9	Inference for Quantitative Data: Slopes	Section 12.1

Recommendations: See TPS 6e alignment with new CED document.

Unit by Unit

Unit	CB Unit Title	TPS 6e Chapter

1	Exploring One-Variable Data	**Chapter 1 Data Analysis**
		• Introduce new graph type - mosaic plot
		• Key terms to include:
		  • discrete vs. continuous variables
		  • descriptive statistics vs. inferential statistics
		  • statistic vs. parameter
		  • unimodal, bimodal, approximately uniform
		  • variance vs. standard deviation
		Chapter 2 Modeling Distributions of Data
		• Key terms to include:
		  • percentile (less than *or equal to*)
		  • empirical rule (68–95–99.7 rule)

PACING: follow suggested pacing in the TPS Teacher's Edition
Chapter 1: 9 days **Chapter 2:** 7 days

Personal Progress Check 1: Use after completion of Chapters 1 and 2

Unit by Unit

Unit	CB Unit Title	TPS 6e Chapter

2	Exploring Two-Variable Data	***Note:*** **TPS covers bivariate categorical data in Section 1.1.**
		Chapter 3 Describing Relationships *plus*
		Section 12.2 Transforming to Achieve Linearity
		• Key terms to include:
		  • univariate, bivariate
		  • unusual points: high leverage, outlier, influential points
		• Simplified formula for regression line: $\hat{y} = a + bx$
		• Move Section 12.2 forward as a third section in Chapter 3.

PACING: follow suggested pacing in the TPS Teacher's Edition
Chapter 3: 8 days **Section 12.2:** 2 days

Personal Progress Check 2: Use after completion of Chapter 3 and Section 12.2

Unit by Unit

Unit	CB Unit Title	TPS 6e Chapter

3	Collecting Data	**Chapter 4 Collecting Data**
		• Key terms to include:
		  • systematic random sampling
		  • homogeneous vs. heterogeneous
		  • prospective vs. retrospective observational study

PACING: follow suggested pacing in the TPS Teacher's Edition

Chapter 4: 11 days

Personal Progress Check 3: Use after completion of Chapter 4

Unit by Unit

Unit	CB Unit Title	TPS 6e Chapter

4	Probability, Random Variables, and Probability Distributions	**Chapter 5 Probability: What Are the Chances?**
		• Key terms to include:
		  • random process, trial
		  • empirical probability
		  • disjoint (mutually exclusive)
		  • joint probability
		Chapter 6 Random Variables
		• Key terms to include:
		  • probability distribution vs. population distribution; parameter
		  • cumulative probability distribution
		  • linear transformation vs. linear combination
		  • 10% condition and independent observations
		• Geometric distribution: Shape, Center, Variability

PACING: follow suggested pacing in the TPS Teacher's Edition

Chapter 5: 8 days **Chapter 6:** 9 days

Personal Progress Check 4: Use after completion of Chapters 5 and 6

Unit by Unit

Unit	CB Unit Title	TPS 6e Chapter

5	Sampling Distributions	***Note:* TPS covers continuous random variables in Chapter 6.**
		Chapter 7 Sampling Distributions *plus*
		• Section 10.1 - *Only the subsection*: The Sampling Distribution of a Difference Between Two Proportions with corresponding exercises
		TPS6 (pp 621-624)
		• Section 10.2 - *Only the subsection*: The Sampling Distribution of a Difference Between Two Means with corresponding exercises
		TPS6 (pp 645-648)
		• Key terms to include:
		  • point estimator
		  • randomization distribution
		  • 10% condition and SD of sampling distribution
		  • independent observations vs. independent samples

PACING: Add 2 days to cover the new content on sampling distributions of differences in proportions and means. **Chapter 7:** 9 days.

Personal Progress Check 5: Use after completion of Chapter 7 and subsections

Unit by Unit

Author Advice: Teach chapters 8, 9, 10 in order. Assign Progress Checks as stated below.

Unit	CB Unit Title	TPS 6e Chapter
6	Inference for Categorical Data: Proportions	Section 8.1 Confidence Intervals: The Basics Section 8.2 Estimating a Population Proportion Section 9.1 Significance Tests: The Basics Section 9.2 Tests About a Population Proportion Section 10.1 Comparing Two Proportions
7	Inference for Quantitative Data: Means	Section 8.3 Estimating a Population Mean Section 9.3 Tests About a Population Mean Section 10.2 Comparing Two Means Section 10.3 Comparing Two Means: Paired Data

PACING: follow suggested pacing for chapters 8, 9, 10 in the TPS Teacher's Edition

Personal Progress Checks 6 and 7: Use Unit 6 assessment after Section 10.1. Use Unit 7 assessment after Section 10.3.

Unit by Unit

Author Advice: Teach chapters 8, 9, 10 in order. Assign Progress Checks in Chapter 10.

Unit	CB Unit Title	TPS 6e Chapter
6	Inference for Categorical Data: Proportions	**Chapter 8 Estimating with Confidence** • Confidence interval: Interval estimate of plausible values for a parameter *based on sample data* • Confidence level = capture rate *when conditions met* • Conditions for inference about a proportion/mean (1)Observations in sample are independent (2) Sampling distribution is approximately Normal • Random o 10% • Large Counts (Proportions) vs. Normal/Large Sample (Means) • statistic ± (critical value)(standard error of statistic) • Using CI for proportion to get CI for other parameters • Margin of error proportional to $1/\sqrt{n}$
7	Inference for Quantitative Data: Means	

PACING: follow suggested pacing for chapters 8, 9, 10 in the TPS Teacher's Edition

Unit by Unit

Author Advice: Teach chapters 8, 9, 10 in order. Assign Progress Checks in Chapter 10.

Unit	CB Unit Title	TPS 6e Chapter
6	Inference for Categorical Data: Proportions	**Chapter 9 Testing a Claim** • Conditions for inference about a proportion/mean (1) Observations in sample are independent (2) Sampling distribution is approximately Normal • Random o 10% • Large Counts (Proportions) vs. Normal/Large Sample (Means) • Standardized test statistic $= \frac{\text{statistic}-\text{parameter}}{\text{standard deviation (error) of statistic}}$ • *P*-value = probability of getting evidence for H_a as strong or stronger than the observed evidence when H_0 is true. • Assuming probability model is true (conditions met)
7	Inference for Quantitative Data: Means	

PACING: follow suggested pacing for chapters 8, 9, 10 in the TPS Teacher's Edition

Unit by Unit

Author Advice: Teach chapters 8, 9, 10 in order. Assign Progress Checks as stated below.

Unit	CB Unit Title	TPS 6e Chapter
6	Inference for Categorical Data: Proportions	**Chapter 10 Comparing Two Populations or Treatments** • Conditions for inference about a difference in proportions/means (1)Independence • Of samples • Of observations in each sample (2) Sampling distribution is approximately Normal • Random (Independent random samples vs random assignment) o 10% (Sampling only) • Large Counts (Proportions) vs. Normal/Large Sample (Means) Check Large Counts condition using pooled proportion of successes $\hat{p}_C$ for a test of H_0: $p_1 - p_2 = 0$ • Randomization distribution of difference in proportions/means in experiments modeled by sampling distribution if conditions met • Use df from technology for two-sample *t* procedures
7	Inference for Quantitative Data: Means	

PACING: follow suggested pacing for chapters 8, 9, 10 in the TPS Teacher's Edition

Personal Progress Checks 6 and 7: Use Unit 6 assessment after Section 10.1. Use Unit 7 assessment after Section 10.3.

Unit by Unit

Author Advice: Consider combining Chapter 11 and Section 12.1 for efficiency.

Unit	CB Unit Title	TPS 6e Chapter
8	Inference for Categorical Data: Chi Square	**Chapter 11: Inference for Distributions of Categorical Data** • Chi-square statistic measures how far observed counts are from expected counts, relative to expected counts. • Conditions for chi-square tests (1) Independence (2) Sampling distribution is approximately chi-square • Random o 10% • Large Counts • Emphasize *P*-value interpretation

PACING: follow suggested pacing in the TPS Teacher's Edition

Chapter 11: 6 days

Personal Progress Check 8: Use after completion of Chapter 11

Unit by Unit

Author Advice: Consider combining Chapter 11 and Section 12.1 for efficiency.

Unit	CB Unit Title	TPS 6e Chapter
9	Inference for Quantitative Data: Slopes	**Section 12. 1 Inference for Linear Regression** • Sample (estimated) regression line: $\hat{y} = a + bx$ • Population (true) regression line: $\mu_y = \alpha + \beta x$ • Normal condition: At each *x* value, the distribution of *y* values is approximately Normal OR $n \geq 30$

PACING: follow suggested pacing in the TPS Teacher's Edition

Section 12. 1 3 days

Personal Progress Check 9: Use after completion of Section 12.1

The Big Picture: Course Skills

Skill 1	Skill 2	Skill 3	Skill 4
Selecting Statistical Methods *Select methods for collecting and/or analyzing data for statistical inference.*	**Data Analysis** *Describe patterns, trends, associations, and relationships in data.*	**Using Probability and Simulation** *Explore random phenomena.*	**Statistical Argumentation** *Develop an explanation or justify a conclusion using evidence from data, definitions, or statistical inference.*
1.A Identify the question to be answered or problem to be solved. Chapters 1–12	**2.A** Describe data presented numerically or graphically. Chapters 1, 2, 3 and Section 12.2	**3.A** Determine relative frequencies, proportions, or probabilities using simulation or calculations. Chapters 1, 5, 6, 7	**4.A** Make an appropriate claim or draw an appropriate conclusion. Chapters 1–12
1.B Identify key and relevant information to answer a question or solve a problem. Chapters 1–12	**2.B** Construct numerical or graphical representations of distributions. Chapters 1, 2, 3	**3.B** Determine parameters for probability distributions. Chapters 6 and 7	**4.B** Interpret statistical calculations and findings to assign meaning or assess a claim. Chapters 1–12
1.C Describe an appropriate method for gathering and representing data. Gathering data: Chapter 4 Representing data: Chapters 1, 2, 3 and Section 12.2	**2.C** Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response. Chapters 1, 2, 3 and Section 12.2	**3.C** Describe probability distributions. Chapters 6 and 7	
	2.D Compare distributions or relative positions of points within a distribution. Chapters 1 and 2		

The Big Picture: Course Skills

Inference

Skill 1	Skill 2	Skill 3	Skill 4
Selecting Statistical Methods *Select methods for collecting and/or analyzing data for statistical inference.*	**Data Analysis** *Describe patterns, trends, associations, and relationships in data.*	**Using Probability and Simulation** *Explore random phenomena.*	**Statistical Argumentation** *Develop an explanation or justify a conclusion using evidence from data, definitions, or statistical inference.*
1.D Identify an appropriate inference method for confidence intervals. Chapters 8, 10, 12		**3.D** Construct a confidence interval, provided conditions for inference are met. Chapters 8, 10, 12	**4.C** Verify that inference procedures apply in a given situation. Chapters 8–12
1.E Identify an appropriate inference method for significance tests. Chapters 9, 10, 11, 12		**3.E** Calculate a test statistic and find a p-value, provided conditions for inference are met. Chapters 9, 10, 11, 12	**4.D** Justify a claim based on a confidence interval. Chapters 8, 9, 10, 12
1.F Identify null and alternative hypotheses. Chapters 9, 10, 11, 12			**4.E** Justify a claim using a decision based on significance tests. Chapters 9, 10, 11, 12

- Skill Categories are assessed on both sections of the AP exam.
  - Multiple choice questions weighted by Skill Category
  - Free response questions specified by Skill Category
- AP Question Bank and Personal Progress Check items tagged by skill.