



Mathematics | AP Statistics



Weeks	ORGANIZING THEME/TOPIC	CONTENT	FOCUS STANDARDS & SKILLS
8	I. <i>Exploring Data</i>	<ul style="list-style-type: none"> ➤ Constructing and interpreting graphical displays of displays of univariate data (stem plots, dotplots, histogram, cumulative frequency) ➤ Shape, Outliers, Center, Spread ➤ Summarizing distributions of univariate data ➤ Measuring center: mean, median, range, IQR, quartiles, percentiles, standardized scores, standard deviation ➤ Comparing distributions of univariate data: dotplots, back-to-back stem plots, and parallel boxplots ➤ Exploring bivariate data: scatterplots, correlation, linearity, least squares regression line, residual plots, outliers, influential points, transformations to achieve linearity ➤ Exploring categorical data: frequency tables, bar charts, marginal and joint frequencies for two-way tables, conditional relative frequencies and association, comparing distributions using bar charts 	<p>Represent Data with Plots (S-ID-1) Center and Spread (S-ID-2)</p> <p>Differences in shape, center, spread and outliers (S-ID-3)</p> <p>Represent data on 2 quantitative variables (S-ID-6abc)</p> <p>Interpret Linea models (S-ID-7, 8, 9)</p> <p>Summarize categorical data for 2 categories (s-ID-5)</p>

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3	II. Sampling & Experimentation	<ul style="list-style-type: none"> ➤ Overview of methods of data collection: census, sample survey, experiment, observational study ➤ Planning and conducting surveys: population samples and random selection, sources of bias, sampling methods (SRS, cluster, stratified) ➤ Planning and conducting experiments: treatments, control groups, experimental units, random assignments, replication; sources of bias and confounding including placebo effect and blinding; completely randomized design; randomized block design including matched pairs ➤ Generalizability of results and types of conclusions that can be drawn from observational studies, experiments, and surveys 	Recognize purpose and differences among sample surveys, experiment and observational studies (S-ID-3)
8	III. Anticipating Patterns: Exploring Random Phenomena using Probability and Simulation	<ul style="list-style-type: none"> ➤ Interpreting probability including long-run relative frequency interpretation ➤ Law of Large Numbers concept ➤ Addition rule, multiplication rule, conditional probability and independence ➤ Discrete random variables and their probability distributions including binomial and geometric ➤ Simulation of random behavior and probability distributions ➤ Mean (expected value) and standard deviation of a random variable and linear transformation of a random variable ➤ Notion of independence vs. dependence ➤ Mean and standard deviation for sums and differences of independent random variables ➤ Normal Distributions (properties, tables, models) 	<p>Understand independence and conditional probability, and use to interpret data (S-CP-1-5)</p> <p>Use rules of probabilities to compute probabilities of compound events. (S-CP-6-8)</p> <p>Calculate expected values and use them to solve problems. (S- MD-1-4)</p> <p>Use probability to evaluate outcomes of decisions (S-MD-5-7)</p> <p>Decide if specified model is consistent with simulation results. (S-IC-2)</p> <p>Use mean and standard deviations of a data set to fit a normal distribution and estimate areas under a normal curve (S-ID-4)</p>

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		<ul style="list-style-type: none"> ➤ Sampling Distributions (sample proportion, sample mean, Central Limit Theorem, simulation, t-distribution, chi-square distribution) 	
16	IV. Inference	<ul style="list-style-type: none"> ➤ Estimation: Confidence Intervals (mean, proportion, paired mean, unpaired mean, two proportion, slope), confidence levels, margin of error ➤ Tests of Significance: Null and Alternative hypotheses, p-value, one- and two-sided tests, Type I and Type II error, power. (proportion, two-proportion, mean, unpaired means, paired means, two sample, chi square test for goodness of fit, homogeneity, independence, slope of least squares regression) 	<p>Understand and evaluate random processes underlying statistical experiments. (S-IC-1)</p> <p>Make inferences and justify conclusions from sample surveys, experiments and observational studies (S-IC-4-6)</p>