**PACING GUIDE**

**COURSE:** **GRADE(S):**

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| **MONTH** | **UNIT** | **STANDARDS/SKILLS** | **ASSESSMENTS**  What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered? | **CONTENT**  Topics being covered? What do students need to know? (*nouns*) | **ACTIVITIES**  w/Integration of Technology & Career Ready Practices |
| September-November | 1 | MA.K-12.2  MA.K-12.5  MA.9-12.S-IC  MA.9-12.S-ID.A  MA.9-12.S-ID.B | • Quiz: displaying quantitative data  • quiz: experiments  • quiz: least-squares regression  • quiz: normal distributions  • quiz: percentiles and location in a distribution  • test: describing relationships  • test: designing studies  • test: exploring data  • test:modeling distributions of data | Comparing distributions  Bar graphs and Pie charts  Describing shape  How to experiment well: the randomized comparative experiment  Relationships between categorical variables: conditional distributions  Simpson's paradox  assessing normality  blocking  calculating the equations of the least squares line  choosing measures of center and spread  comparing the mean and the median  correlation and regression wisdom  cumulative relative: frequency graphs  data ethics  density curves  describing density curves  displaying relationships: scatterplots  dot plots  experiments: what can go wrong  explanatory and response variables  facts about correlation  histograms  how to experiment badly  how to sample badly  how to sample well: random sampling  how well the line fits the data: residual plots  how well the line fits the data: the role of r-squared in regression  identifying outliers  inference for experiments  inference for sampling  interpreting Graphs: good and bad  interpreting a regression line  interpreting computer regression output  interpreting scatterplots  matched pairs design  measuring center: the mean  measuring center: the median  measuring linear association: correlation  measuring position: percentiles  measuring position: z-scores  measuring spread: the interquartile range: (IQR)  measuring spread: the standard deviation  normal distribution calculations  numerical summaries with technology  observational study v. experimental study  organizing a statistical problem  other sampling methods  prediction  residuals and the least-squares regression line  sample surveys: what can go wrong?  scope of inference  stemplots  the 68-95-99.7 rule  the challenges of establishing causation  the five-number summary and boxplots  the idea of a sample survey  the language of experiment  the standard normal distribution rule  the three principles of experimental design  transforming data  two-way tables and marginal distributions  using histograms wisely | cum. freq graph  dot plots  Normal Curve  Graphing data  manipulating data  experiments  sampling and surveys  scatterplots and correlation  M&M Lab  Skittles Lab |
| November-January | 2 | MA.9-12.S-IC.A  MA.9-12.S-MD  MA.K-12.7  MA.9-12.S-MD.B  MA.9-12.S-CP  MA.K-12.1 | • quiz: binomial and geometric variables  • quiz: discrete and continuous variables  • quiz: probability rules  • quiz: venn diagrams and tree diagrams  • test: probability  • test: random variables  • test: random variables | Binomial distributions in statistical sampling  Continuous random variables  Geometric random variables  Independence: a special multiplication rule  Parameters and statistics  Probability models  Venn diagrams and probability  basic rules of probability  binomial settings and binomial random variables  binomial probabilities  calculating conditional  probability  combining normal random variables  combining random variables  conditional probability and independence  describing sampling  distributions  discrete random variables  linear transformations  mean (expected value)  of a discrete random variable  mean and standard deviation of a binomial distribution  myths about randomness  sampling from a normal distribution  sampling variability  simulation  standard deviation (and variance) of a discrete random variable  the central limit theorem  the idea of probability  the sampling  distribution of p  the sampling distribution of x: mean  and standard deviation  tree diagrams and the general multiplication rule  two-way tables and probability  using the normal approximation for p  what is conditional  probability | data investigations  probability rules  randomness, probability, and simultaions  conditional probability and independence  transforming and combining random variables  basketball shots simulation  combining random variables  random number generator  simulations |
| January-February | 3 | MA.K-12.3  MA.K-12.4  MA.9-12.S-IC  MA.9-12.S-MD  MA.9-12.S-ID | Quiz: Sample means  Quiz: estimating a population proportion  Quiz: sample proportions  Test: Estimating with confidence  Test: Sampling  Distribution  quiz: estimating a population mean | Choosing the sample size  carrying out a significance test  carrying out a significance test for mean  choosing the sample size  conditions for estimating p  confidence interval for u1-u2  confidence intervals for  the p1 - p2  constructing a confidence interval  constructing a confidence interval for p  construction a confidence interval for the mean  inference for  experiments  inference for means: paired data  interpreting confidence levels and confidence intervals  interpreting p-values  planning studies:The power of a statistical test  putting it all together  : the P.A.N.I.C process  significance tests for p1-p2  significance tests for u1-u2  stating the hypothesis  statistical significance  . the idea of a confidence interval  the one-sample t test  the one-sample z test for a proportion  the reasoning of significance tests  the sampling distribution of a difference between two proportions  the sampling distribution of a difference of two means  the two-sample t statistic  two-sided tests  two-sided tests and confidence intervals  type 1 and type II errors  using confidence intervals wisely  using t procedures wisely  using tests wisely  using two-sample t tests wisely  when standard deviation  is known: the t distributions  when the standard deviation is known: the one-sample z interval for a population mean  why confidence intervals give more information | data investigations  sample means  what is a sampling distribution  estimating a population  mean  confidence interval activity  one sample  t-test  one sample z-test  population proportion |
| February/March | 4 | MA.K-12.5  MA.9-12.S-IC  MA.K-12.6  MA.K-12.8 | Quiz: GOF  Quiz: comparing two means  Quiz: comparing two proportions  Quiz: inference for relationships  Quiz: test about a population proportion  Quiz: tests about a population mean  Test: Inference for Distributions of Categorical Data  Test: comparing two populations or groups  Test: testing a claim | carrying out a test  comparing distributions of a categorical variable  comparing observed and expected counts: the chi-square statistic  comparing several proportions  conditions for regression inference  constructing a confidence interval for slope  estimating the parameters  expected counts and the chi-square statistic  follow up analysis  performing a significance test for the slope  relationships between two categorical variables  sampling distribution for b  the chi-square distribution and p-values  the chi-square test for association/independence  the chi-square test for homogeneity  transforming with logarithms  transforming with powers and roots  using chi-square tests wisely | AP Sample questions  comparing two means  comparing two proportions  goodness of fit  inference of relationships  tests about a population mean  tests about a population proportion |
| April/May | 5 | MA.9-12.S-ID.C  MA.K-12.2  MA.K-12.3  MA.K-12.5  MA.9-12.S-IC  MA.9-12.S-MD  MA.9-12.S-ID  MA.K-12.6  MA.K-12.7  MA.9-12.S-CP  MA.9-12.S-ID.B  MA.K-12.8  MA.K-12.1 | AP Statistics Test  AP practice test free response 2013  AP practice test free response 2014  AP practice test free response 2015  AP practice test free response 2016  AP practice test free response 2017  AP practice test multiple choice 2013  AP practice test multiple choice 2014  AP practice test multiple choice 2015  AP practice test multiple choice 2016  AP practice test multiple choice 2017 | Choosing the Correct Inference Procedure  Participate in Mock AP Exams  Participate in Mock Grading Sessions  Practice Free Response Questions  Practice Multiple Choice Questions  Review Grading and Strategies for Success  Study sessions | Choosing the Correct Inference Procedure  Participate in Mock AP Exams  Participate in Mock Grading Sessions  Practice Free Response Questions  Practice Multiple Choice Questions  Review Grading and Strategies for Success  Study sessions  AP Sample questions  collegeboard practice tests  data investigations  powerpoint: jep final review |
| May/June | 6 | MA.9-12.S-ID.C  MA.K-12.2  MA.K-12.3  MA.K-12.5  MA.9-12.S-IC  MA.9-12.S-MD  MA.9-12.S-ID  MA.K-12.6  MA.K-12.7  MA.9-12.S-CP  MA.9-12.S-ID.B  MA.K-12.8  MA.K-12.1 | "A Civil Action" Project  End of year project  Wii bowling project | "A Civil Action" Project  End of year project  Wii bowling project | "A Civil Action" Project  End of year project  Wii bowling project |