SUBJECT: AP STATISTICS	GRADE: 9-12
Unit 1: Exploring and Understanding Data	**Time Frame: Summer work**

UNIT OVERVIEW

This unit will show students how to define and recognize categorical, quantitative and ordinal variables. Furthermore, students will learn how to analyze distributions for center, spread, clusters, gaps, and shape. Finally, students will learn how to calculate range, interquartile range, variance and standard deviation.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	• CC.2.1.HS.F.3 • CC.2.1.HS.F.5 • CC.2.2.HS.C.2 • CC.2.4.HS.B.1 • CC.2.4.HS.B.2 • CC.2.4.HS.B.3 • CC.2.4.HS.B.5 • CC.2.4.HS.B.6 • CC.2.4.HS.B.7
COMPETENCIES	**LEARNING TARGETS**
Graphing I can create and interpret graphs as visual representations of the relationship between quantities.	Find the Center and Spread • I can find the center and spread of data. (K1MAB7Q1) Find Clusters and Gaps • I can find clusters and gaps throughout data sets. (K1MAB7Q3) Find the Center (Mean and Median) • I can find the center (mean and median) of data. (K1MAB7Q5)

	Determine the Z-Scores ● I can determine the z-scores of data. (K1MAB7Q8) Create Boxplots ● I can create boxplots. (K1MAB7Q9) Determine the Outliers ● I can determine the outliers in data. (K1MAB7Q4) Determine the Spread (SDev and IQR) ● I can determine the spread (standard deviation and interquartile range) of data. (K1MAB7Q6) Find the Quartiles and Percentiles ● I can find the quartiles and percentiles of data. (K1MAB7Q7) Create Frequency Tables and Bar Charts ● I can create frequency tables and bar charts. (K1MAB7Q18) Compare Distributions ● I can compare distributions of data. (K1MAB7Q11) Contingency Tables Marginal and Conditional Frequencies ● I can create and decipher contingency tables including marginal and conditional relative frequencies. (K1MAB7Q19) Segmented Bar Graphs and Independence ● I can create segmented bar graphs and independence. (K1MAB7Q20)

SUBJECT: AP STATISTICS	**GRADE: 9-12**
Unit 2: Regression	**Time Frame: 4-5 Weeks**

UNIT OVERVIEW	
This unit will show students how to create and analyze scatterplots, identify explanatory and response variables. Additionally, students will learn how to calculate and graph Least Squares Regression Lines with correlation coefficients as well as check residual plots.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
• Collaboration and Teamwork 9-12: Regression Mini-Presentation (S1C) • Critical Thinking and Problem Solving 9-12: Regression Mini-Presentation (S4C)	• CC.2.1.HS.F.3 • CC.2.2.HS.D.7 • CC.2.2.HS.C.2 • CC.2.2.HS.C.3 • CC.2.2.HS.C.6 • CC.2.4.HS.B.1 • CC.2.4.HS.B.2 • CC.2.4.HS.B.3 • CC.2.4.HS.B.5
COMPETENCIES	**LEARNING TARGETS**
Graphing I can create and interpret graphs as visual representations of the relationship between quantities.	Analyze Patterns in Scatterplots • I can analyze patterns in scatterplots. (K1MAB7Q12) Create the Least Squares Regression Line • I can create the least squares regression line. (K1MAB7Q13) Explain the Correlation and % of Variability • I can explain the correlation and percent of variability. (K1MAB7Q14) Create and Decipher Residual Plots • I can create and decipher residual plots. (K1MAB7Q15) Outliers, High Leverage Points, Influential Points • I can find outliers, high leverage points, and influential points of data. (K1MAB7Q16) Develop Transformations to Achieve Linearity • I can develop transformations to achieve linearity. (K1MAB7Q17)

SUBJECT: AP STATISTICS	GRADE: 9-12
Unit 3: Surveys and Experiments	**Time Frame: 4-5 Weeks**

UNIT OVERVIEW
This unit will show students how to use techniques such as stratifying, blocking, and multi staging appropriately. Furthermore, students will learn how to define and recognize elements of experiments as well as design experiments without bias.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	• CC.2.4.HS.B.5

COMPETENCIES	LEARNING TARGETS
Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	Decipher the Census • I can decipher the census. (K1MAB10Q1) Create Samples and Surveys • I can create samples and surveys (K1MAB10Q2) Create Randomness and Representative Sampling • I can create randomness and representative sampling. (K1MAB10Q3) Find the Sources of Bias • I can find the sources of bias. (K1MAB10Q4) Decipher Sampling Methods of data • I can decipher sampling methods of data. (K1MAB10Q5) Create Characteristics of an Experiment • I can create characteristics of an experiment. (K1MAB10Q6) Create Random Assignments in data

	• I can create random assignments in data. (K1MAB10Q7) Locate Treatments, Factors, and Levels • I can locate treatments, factors, and levels. (K1MAB10Q8) Locate Control Groups, Blinding, and Placebos • I can locate control groups, blinding, and placebos. (K1MAB10Q9) Locate Confounding Variables • I can locate confounding variables. (K1MAB10Q10) Distinguish between Blocking and Matching • I can distinguish between blocking and matching as well as its use. (K1MAB10Q11) Create Conclusions Involving Causation • I can create conclusions involving causation. (K1MAB10Q12)

SUBJECT: AP STATISTICS	**GRADE: 9-12**
Unit 4: Probability	**Time Frame:** 4-5 Weeks

UNIT OVERVIEW

This unit will show students how to apply multiplication and addition principles of probability as well as define discrete and continuous random variables. Moreover, this unit will show students how to calculate mean, variance, and standard deviation of discrete probability distributions as well as use Binomial and Geometric probability distributions.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
• Collaboration and Teamwork 9-12: Binomial Mini-Presentation (S1C) • Critical Thinking and Problem Solving 9-12: Binomial Mini-Presentation (S4C)	• CC.2.4.HS.B.6 • CC.2.4.HS.B.7

COMPETENCIES	**LEARNING TARGETS**
Probability I can use counting strategies and calculate the probability of events.	Apply The Law of Large Numbers ● I can apply the law of large numbers. (K1MAB11Q1) Apply Add and Mult Rules Including Conditional and Joint ● I can apply the addition and multiplication rules of probability including conditional and joint. (K1MAB11Q2) Apply Binomial and Geometric Probability ● I can apply binomial and geometric probability. (K1MAB11Q3) Create the Mean and Standard Deviation of Prob Models ● I can create the mean and standard deviation of probability models. (K1MAB11Q4) Create Simulations ● I can create simulations. (K1MAB11Q5) Reverse the Condition of data ● I can reverse the condition of data. (K1MAB11Q6) Apply The Normal Model ● I can apply the normal model. (K1MAB11Q7) Find and Decipher Sampling Distributions ● I can find and decipher sampling distributions. (K1MAB11Q8) Find and Apply The Central Limit Theorem ● I can find and apply the Central Limit theorem. (K1MAB11Q9)

SUBJECT: AP STATISTICS	**GRADE: 9-12**

Unit 5: Sampling Distributions	**Time Frame: 7-8 Weeks**
UNIT OVERVIEW	
Students will learn how to define sampling distribution as well as develop the Central Limit Theorem. Furthermore, students will learn how to calculate confidence intervals for proportions, test hypotheses involving proportions, and recognize statistical significance.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
● Honesty, Integrity and Responsibility 9-12: Student conference regarding assignments (D3C) ● Resilience and Grit 9-12: Student conference regarding taking advantage of opportunities for improvement (D4C) ● Collaboration and Teamwork 9-12: Student conference regarding collaboration (S1C)	● CC.2.1.HS.F.3 ● CC.2.4.HS.B.1 ● CC.2.4.HS.B.4 ● CC.2.4.HS.B.5
COMPETENCIES	**LEARNING TARGETS**
Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	Apply Standard Deviation for Sampling Distributions ● I can find and apply standard deviation for sampling distributions. (K1MAB10Q13) Find Conditions/Assumptions of data ● I can find conditions/assumptions of data. (K1MAB10Q14) Find Confidence Intervals for One and Two Proportions ● I can find confidence intervals for one and two proportions. (K1MAB10Q15) Find Logic and Process of Hypothesis Testing ● I can find logic and process of hypothesis testing. (K1MAB10Q18) Find Type I and II Errors and Power ● I can find type I and II errors and power. (K1MAB10Q19)

	Create Hypothesis Tests for One and Two Proportions ● I can create hypothesis tests for one and two proportions. (K1MAB10Q20) Create Intervals and Tests for Paired Data ● I can create intervals and tests for paired data. (K1MAB10Q22) Apply The Normal Model ● I can apply the normal model. (K1MAB11Q7) Find and Decipher Sampling Distributions ● I can find and decipher sampling distributions. (K1MAB11Q8) Find and Apply The Central Limit Theorem ● I can find and apply the Central Limit theorem. (K1MAB11Q9)

SUBJECT: AP STATISTICS	**GRADE: 9-12**
Unit 6: Inferences for Means	**Time Frame: 4-5 Weeks**
UNIT OVERVIEW	
In this Unit, students will learn how to calculate and analyze confidence intervals for means as well as test hypotheses involving means. Additionally, students will learn how to conduct simple t-tests, matched pairs t-tests, and differences of means t-tests.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
● Collaboration and Teamwork 9-12: Sampling Distribution Mini- Presentation (S1C) ● Critical Thinking and Problem Solving 9-12: Sampling Distribution Mini- Presentation (S4C)	● CC.2.4.HS.B.1 ● CC.2.4.HS.B.4 ● CC.2.4.HS.B.5

COMPETENCIES	LEARNING TARGETS
Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	Find and apply The t-Distributions ● I can find and apply the t-distributions. (K1MAB10Q16) Find Confidence Intervals for One and Two Means ● I can find confidence intervals for one and two means. (K1MAB10Q17) Find Logic and Process of Hypothesis Testing ● I can find logic and process of hypothesis testing. (K1MAB10Q18) Create Hypothesis Tests for One and Two Means ● I can create hypothesis tests for one and two means. (K1MAB10Q21) Create Intervals and Tests for Paired Data ● I can create intervals and tests for paired data. (K1MAB10Q22)

SUBJECT: AP STATISTICS	**GRADE: 9-12**
Unit 7: Chi Square Testing	**Time Frame: 3 Weeks**
UNIT OVERVIEW	
In this Unit, students will learn how to conduct c^2 tests for goodness of fit, homogeneity and independence. Furthermore, students will conduct hypothesis tests for regression of slope.	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
	● CC.2.1.HS.F.3
COMPETENCIES	**LEARNING TARGETS**

Measurement, Data, and Statistics I can collect, represent, analyze, and interpret data.	Chi-Square Goodness of Fit, Homogeneity, Independence ● I can create Chi-Square tests for goodness of fit, homogeneity, and independence. (K1MAB10Q23) Develop and decipher the Inference of Regression ● I can develop and decipher the inference of regression. (K1MAB10Q24)

SUBJECT: AP STATISTICS	**GRADE: 9-12**
Unit Title: AP EXAM REVIEW	**Time Frame: Rest of School Year**
UNIT OVERVIEW	
The remainder of the year involves review for the AP Exam and a final project, presented during finals week, which requires students to apply multiple facets of the curriculum to an original statistical study	
LRG SKILLS AND DISPOSITIONS	**PA STANDARDS**
● Critical Thinking and Problem Solving 9-12: END OF YEAR PROJECT (S4C) ● Collaboration and Teamwork 9-12: END OF YEAR PROJECT (S1C) ● Honesty, Integrity and Responsibility 9-12: END OF YEAR PROJECT (D3C)	CC.2.2.D CC.2.3.A CC.2.4.A CC.2.4.B CC.2.1.HS.C CC.2.1.HS.D CC.2.4.HS.A CC.2.4.HS.B
COMPETENCIES	**LEARNING TARGETS**