



Mathematics Advanced Placement Statistics

Unit 1: Exploring Data		1 st 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Displaying distributions with graphs: dot plots, histograms, stem plots, time plots.</p> <p>Extensive use of the calculator to input data (into lists) and interpreting and communicating graphical results. measures of center and spread.</p> <p>Describing distributions with numbers: measures of center and spread.</p>	<p>Histograms and dot plots</p> <p>Stem and leaf plots</p> <p>Plots using TI-83</p> <p>Mean and median</p> <p>Five number summary</p> <p>Descriptive interpretation of Distributions</p> <p>Standard deviation and Variance</p> <p>Frequency and cumulative distribution</p> <p>Tables</p>	<p>What should a numeric summary include to describe any distribution?</p> <p>What are the different formats to display distributions and when would each one be used?</p> <p>What are the different ways to describe center?</p> <p>What is an outlier?</p> <p>How are mean and standard deviation affected by extrema?</p>	<p>"Pulse Rate" Activity; pg22 #1.12a-d (Table/calc); pg27 #1.18a-b (Stem/time plots); pg28 #1.21,22,23 (Table/calc); Take Home Quiz 1.1A. pg42 #1.32; pg43 #1.34 (Minitab Lab); pg48 #1.38 (stem plot); pg50 #1.40 (calc/graphs); Classwork Quiz 1.2C; Chpt. 1 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 2: The Normal Distribution		1 st 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Distinguish between normal and non-normal distributions, density curves and apply the 68-95-99.7 rule; sigma (σ) and mu (μ).</p> <p>Use models for z-scores and standard normal tables; assess normality using normal probability plots.</p>	<p>Density curves</p> <p>Normal distributions</p> <p>Standard-Normal (Z-Score)</p> <p>Z-Table</p> <p>Assessing normality</p>	<p>What are the properties of a density curve?</p> <p>What are the properties of a normal distribution?</p> <p>Explain the 68-95-99.7 rule.</p> <p>How do you calculate a Z square?</p> <p>What are standard normal tables?</p> <p>What can a normal probability plot tell us?</p>	<p>"Roll Dice" and "Height" Experiments; pg71 #2.2; pg78 #2.8 pg79 #2.12; pg80 #2.14 (TI-83+); pg81#2.16 & 2.18; Quiz 2.1A. Pg82 #2.19 "Flip 50" (TI-83+ program); pg84 #2.20; pg88 #2.6; Example 2.10 pg94 (Calc/plots); pg96 #2.11; pg99 #2.34 (calc/normal cdf); Chpt. 2 Lab</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>

Mathematics

Advanced Placement Statistics

Unit 3: Examining Relationships		2 nd 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Understanding and applying the concept of two-variable analysis: response and explanatory variables. Using scatterplots to understand/explain relationships. Outliers and their meaning/relevance.</p> <p>Testing strength of association (correlation) through the use of "r"</p> <p>Application of the principles of Least-Squares Regression Analysis. Introduction of "correlation of determination" r^2. Applications of residual analysis and understanding/interpreting influential observations.</p>	<p>Examining relationships among variables</p> <p>Scatter plots</p> <p>Correlation</p> <p>Least-squares regressions</p> <p>Residuals</p> <p>Outliers</p>	<p>What are four things you need to look for when examining a scatterplot?</p> <p>Distinguish between the "response" and "explanatory" variables.</p> <p>How does the value of r relate to the correlation between two variables?</p> <p>Between what two values must r exist?</p> <p>Define the purpose of a regression?</p> <p>What would be considered an influential observation?</p>	<p>"SAT Scores" Simulation Activity; pg120 #3.9 (cal/scatter plot); pg125 #3.14; pg127 #3.16 (calc/plot); AP Stats Exam Lab FR#6 (2001) Part I; Pg131 #3.18 (calc/plot); LSRL Activity: "Kalama Children"- Scatter Plots; pg134 #3.20,3.22,3.24 (calc/plot),3.26 (calc/plot),3.30; Chpt. 3.2B Quiz; (ALRM); "Landslide and Clear-Cut Growth" Correlation Simulation (LSR Group Activity); pg159 #3.40 (calc/LSRL); pg162 #3.46 (calc/LSRL), 3.46; Chpt. 3.3A Quiz (after residuals); "Special Problem #3A: "Exploring Least-Squares Regression" Lab (Minitab Output Analysis); Special Problem #3C: "The Olympic Men's Long Jump" (Minitab Output Analysis); Chpt. 3 Lab; (ALRM).</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 4: More on Two-Variable Data			2 nd 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Modeling Non-linear data and power regression (transformations). Investigation of exponential growth and decay with further residual analysis.</p> <p>Determining regression for non-linear data and interpret categorical relations. Perform power regressions and interpret results via predictions.</p> <p>Determine correlation and regression for non-linear data sets and understand relations in categorical data (two-way tables).</p>	<p>Modeling Non-linear data</p> <p>Power transformations</p> <p>Interpreting correlation and regression</p> <p>Relations in categorical data</p> <p>Two-way tables</p> <p>”Simpson’s Paradox”</p>	<p>What are four things you need to look for when examining a scatterplot?</p> <p>What is a response variable and which axis is it plotted on?</p> <p>What is an explanatory variable and which axis is it plotted on?</p> <p>How does the value of r relate to the correlation between two variables?</p> <p>Between what two values must r exist?</p> <p>Define the purpose of a regression?</p> <p>What would be considered an influential observation?</p>	<p>Chpt.4.1 pg189 #4.2a-h (calc/plot); pg196 #4.4; pg198 #4.6; pg202 #4.12; pg203 #4.15 (calc/plot); Chpt. 5 Lab. Pg213 #4.22, 4.24; Quiz 4.1A Pg 224 #4.40; pg 226 # 4.42, 4.44; Chpt. 4 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 5: Producing Data		3 rd 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Define and recognize the basic elements of "Sample Design" (SRS). Systematic errors of sampling: bias, voluntary versus nonvoluntary response, poor wording.</p> <p>Utilize the principles of basic "Sample Design" (control, randomization, and replication): (1) comparative experiments; (2) randomized experiments.</p> <p>Accounting for hidden bias and control factors of block and matched pair designs.</p> <p>Simulating Experiments: An imitation of chance behavior. Student designed studies.</p>	<p>Designing samples</p> <p>Random samples</p> <p>Designing experiments</p> <p>Random design</p> <p>Simulations</p>	<p>What is the purpose of exploratory analysis?</p> <p>What is statistical inference?</p> <p>What is SRS?</p> <p>What is the purpose of SRS?</p> <p>What is the purpose of a Multistage samples?</p> <p>List four reasons why probability samples fail?</p> <p>Identify and explain the basis principles of statistical design.</p> <p>What reduces the role of chance variation?</p> <p>What is the purpose of matched pairs?</p> <p>Why do we run simulations?</p> <p>What are the 5 steps of simulation?</p> <p>Can you think of anything that is useful in conducting simulations?</p>	<p>"Class Survey Activity" Part I (simulation); pg252 # 5.5, 5.6, 5.7; pg261#5.14, 5.15, 5.16; pg262 #5.18, 5.19, 5.20;</p> <p>"Class Survey Activity" Part II (simulation); pg 273 #5.30; pg277 #5.36; pg279 #5.38; pg 283 #5.44; Homework Quiz 5.2A;</p> <p>Rolling Down the River summation and oral presentation of group conclusions; pg295 #5.58</p> <p>"Freethro" TI-83+ program; pg 297 #5.62 (calc); "Special Problem" 5D; Student designed campus improvement study - "Parking Irregularities" (Chpt. 5 Lab).</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 6: Probability: The Study of Randomness			3 rd 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Relate the concepts of probability as the study of randomness.</p> <p>Apply probability models to complex random phenomena.</p> <p>Understanding and calculate complex probabilities.</p>	<p>Introduction to Probability</p> <p>Randomness</p> <p>Sample space</p> <p>Probability rules</p> <p>Complement</p> <p>Union</p> <p>Intersection</p> <p>Venn-diagram</p> <p>Probability models</p> <p>Conditional probability</p>	<p>Define randomness.</p> <p>Discuss the concept of probability.</p> <p>Identify the differences between sampling with replacement and without replacement.</p> <p>Discuss union, intersection, Venn-diagrams.</p> <p>Identify the concept of an empty set.</p> <p>Define disjoint events.</p>	<p>"Spinning Wheel Activity" (simulation); pg331 #6.22; pg337 #6.28; pg338 #6.30; pg339 #6.32; Quiz 6.2A; pg 355 #6.44; pg356 #6.46; pg358 #6.54, 56; pg360 #6.57 (calc/program Pi); pg361 #6.58; pg363 #6.66; Chpt. 6 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 7: Random Variables		4 th 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Distinguish between discrete and continuous random variables.</p> <p>Interpret and describe the means and variances of random variables.</p>	<p>Random variables</p> <p>Discrete random variables</p> <p>Continuous random variables</p> <p>Means and variance of random variables</p>	<p>Describe the differences between discrete and continuous random variables.</p> <p>Describe the impact of the law of large numbers.</p> <p>What are the three rules for variance of random variables?</p>	<p>"Two-Dice Roll" TI-83+ Program (simulation); pg373 #7.2; pg379 #7.4; pg381 #7.8; "SENIC Data Analysis" Lab; pg389 #7.18; pg394 #7.20 (calc/simulation), 7.22; pg397 #7.24; pg403 #7.26, 7.28; pg404 #7.30; pg406 #7.34; pg408 #7.38 (calc/simulation); pg409 #7.44; Chpt. 7 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 8: The Binomial and Geometric Distributions			4 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Demonstrate an understanding of the binomial distribution.</p> <p>Demonstrate an understanding of the geometric distribution.</p>	<p>Binomial distribution</p> <p>Binomial mean and standard deviation</p> <p>Geometric distributions</p>	<p>What four conditions must be satisfied before the distribution can be called binomial?</p> <p>What is the data called that is produced from a binomial distribution?</p> <p>Define a binomial coefficient.</p> <p>Write out the general factorial expression.</p> <p>What conditions must be satisfied to meet the definition of a geometric distribution?</p> <p>What is the expected value of a geometric count?</p>	<p>"A Gaggle of Girls" Activity (simulation); pg418 #8.1, 8.2, 8.3, 8.4; pg427 #8.8, 8.10; pg432 #8.18 (calc/randBin); pg434 #8.22; Quiz 8.1B; g439 #8.24; pg443 #8.27 (calc/geometpdf), #8.28 (calc/plot); Chpt. 8 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>

Mathematics Advanced Placement Statistics

Unit 9: The Sampling Distributions			4 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	<p>Interpreting sampling distributions (SRS).</p> <p>Sample proportions (p, p^\wedge).</p> <p>Outcomes using the Central Limit Theorem.</p>	<p>Sample distributions</p> <p>Sample proportions</p> <p>Sample means</p>	<p>Distinguish between “sample” and “population”.</p> <p>What is a parameter?</p> <p>What lends strength to a statistic?</p> <p>How is a sampling distribution validated?</p> <p>A statistic is said to be unbiased if what condition holds?</p> <p>Describe the concept of “variability of a statistic”.</p> <p>What does the CLT tell us about the sampling distribution versus the normal distribution?</p> <p>Why do we use the CLT?</p>	<p>"100 Values" activity; p461 #9.7a & b; pg467 #9.8 (table); pg470 #9.12 (plots); p477 #9.16; pg478 #9.20; Quiz 9.1A; Take-home Lab Quiz 9.2A; pg485 #9.26; pg491 #9.31, 32; pg494 #9.36, 38; pg497 #9.42; pg498 #9.44; Chpt. 9 Lab.</p>	<p>District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software</p> <p>Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics</p> <p>Campus Resources To be filled in by each campus</p>



Mathematics Advanced Placement Statistics

Unit 10: Introduction to Inference			5 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	Estimating with confidence. Tests of Significance (Ho: & Ha:); p-value. Using Significance Tests (z-stats). Inference as Decision: Power/Type I and Type II error.	Inference: Confidence Estimating with confidence Tests of significance Using significance tests Inference as a decision	Define statistical inference. What does the confidence interval estimate? What does the confidence level tell you? List the three events necessary to reduce a margin of error. What is the goal of tests of significance? How does the p-value influence whether you reject or fail to reject a null hypothesis? What does it mean to be statistically significant? When do we use z-scores? Describe the difference between a Type I and Type II error.	Pg512 #10.2; pg513 #10.4; pg519 #10.6; pg520 #10.8; pg526 #10.16; pg528 #10.20; pg530 #10.22, 24; 26 (calc/tests); pg537 #10.28; pg539 #10.29; pg540 #10.30,31,32; pg543 #10.36; pg549 #10.40 (calc/tests); Take-home Quiz 10.1B (Lab); Quiz 10.1C; pg563 #10.59; pg564 #10.60; pg567 #10.64; Quiz 10.3B; pg573 #10.68; pg572 #10.66; pg575 #10.70; Chpt. 10 Lab.	District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics Campus Resources To be filled in by each campus



Mathematics Advanced Placement Statistics

Unit 11: Inference for Distributions		5 th 6 Weeks			
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	Mean of a Population: Matched pairs (t and t*) Comparing Two Means.	Inference: Distributions Means of a population Comparing two means	What procedure is useful for non-normal data when the sample size is ≥ 15 ? What is the goal of inference? What conditions must be met for comparing two means?	Pg590 #11.1,2 (calc/normal pdf & tpdf);pg597 #11.6,8,10; pg604 #11.12; pg609 #11.16; pg615 #11.26 (calc/graph); pg616 #11.28; pg619 #11.32; pg628 #11.34; pg632 #11.38 (calc/graph); pg637 #11.40,42; pg640 #11.46; pg642 #11.50 (calc/graph); Quiz 11.2; Chpt. 11 Lab: "Beans: Two-Treatment Experiment".	District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics Campus Resources To be filled in by each campus



Mathematics Advanced Placement Statistics

Unit 12: Inference for Proportions			6 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	Population Proportion: p^* Comparing Two Proportions: $p_1 - p_2$	Inference: Population Proportion Population Comparing Two Proportions	What is the “z” procedure for inference about “p” ? What are the conditions for inference about a proportion?	Pg 664 #12.4; pg669 #12.8; pg671 #12.10; pg676 #12.16; pg677 #12.18; pg682 #12.21,22; pg688 #12.24; pg690 #12.25; Chpt. 12 Lab.	District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics Campus Resources To be filled in by each campus

Mathematics Advanced Placement Statistics

Unit 13: Inference for Tables			6 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	Test for Goodness of Fit: χ^2 Inference for Two-Way Tables	Inference: Tables: Chi-Square Test for goodness of fit Inference for two-way tables	What is “formal inference”? What are the components of χ^2 ? What distinguishes the a) χ^2 test for homogeneity from the b) χ^2 test of association and independence?	Pg710 #13.1 (calc/ χ^2),3,4; pg715 #13.6 (TI-83+); pg716 #13.10; pg716 #13.12 (calc/ χ^2); pg728 #13.15 (Minitab); pg729 #13.17(Minitab); pg735 #13.19 (calc/table), #13.20 (two-way table); pg739 #13.26; pg742 #13.28; Chpt. 13 Lab.	District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software Internet Resources MISD Mathematics Web Site Mathematics Tool Kit Math Dictionary WebCCAT Freeman Practice of Statistics Campus Resources To be filled in by each campus



Mathematics Advanced Placement Statistics

Unit 14: Inference for Regression			6 th 6 Weeks		
Date Taught	AP Required Elements	Content/Vocabulary	Guiding Questions	Activities	Resources
	Inference about the Model: SE. Inference about Prediction: X*. Checking Regression Assumptions.	Inference Regression: About the model Regression: About prediction Checking regression assumptions	What assumptions are necessary for “inference about regression”? What must we use to estimate the standard deviation σ ? How many degrees of freedom does the standard error s have?	Pg760 #14.1; pg761 #14.3 (calc/LESID); pg768 #14.6 (calc/LinReg Test), #14.7; pg772 #14.10 (Minitab); AP Stats Exam Lab FR#6 (2001) Part II; pg777 #14.13 (calc/Resid plot); pg781 #14.15 (Minitab); Chpt. 14 Lab.	District Resources Freeman Practice of Statistics Graphing Calculators Minitab Software Internet Resources MISD Mathematics Web Site Mathematics Tool Kit WebCCAT Freeman Practice of Statistics Campus Resources To be filled in by each campus



Mathematics
Advanced Placement Statistics

Unit 15: ANOVA: Optional Chapter

6th 6 Weeks