

Mount Pleasant Central to create a random sample regarding from a population properly School District

Probability & Statistics, Math



We believe that students should learn the mathematical practice standards by showing the connections between real world problems and mathematical solutions by modeling, explorations using and discovery.draw

How can we use data to understand the world, draw valid conclusions, and make informed decisions? In this class, students will learn to analyze data patterns, plan and conduct studies to collect data, use probability to understand and model random events, and apply statistical methods to make inferences and test hypotheses about populations. Our main goal is to empower students to investigate questions of interest utilizing appropriate statistical methods to ensure sound conclusions accepted by experts across various fields. We emphasize understanding how statistical phenomena are found and used. Assessment will be primarily through an equal emphasis on testing and project-based assessments.

Unit Title	Month	Content	Vocabulary	Standards	Skills	Big Ideas	Assessments
Experimental Design	September	Experiment vs Observation, Random Sampling Methods	Experiment, Observation, Blocking, Simple Random Sample, Cluster, Placebo,	Describe an appropriate method for gathering and representing data. (CBAPSTAT-1.C)	Create a sample using appropriate methods to achieve useful results.	Students will be able to properly create a random sample from a population	Project: Parking Lot & Test #1 made of multiple-choice and extended-response questions
Display Data	October	Types of Graphs, 5 Number Summary,	Histogram, Dot Plot, Box Plot, Quantitative, Qualitative	Construct numerical or graphical representations of distributions. (CBAPSTAT-2.B)	Create an appropriate graph based on the data type. Calculate an outlier.	Students will be able to create an appropriate graph based on the type of data being explored.	Project: Great State of New York & Test #2 made of multiple-choice and extended response questions
Center and Spread	November	Measures of spread and other summary statistics. Expressing statistics in approachable	Percentile, Mean, Median, Standard Deviation, Outlier	Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response.	Describe a distribution. Compare multiple distributions	Students will be able to describe data, in regard to varying centers, shapes, and unique features.	Project: Weathering Data & Test#3 made of multiple-choice and extended response questions

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		vocabulary.		(CBAPSTAT-2.C)			
Bi-Variate Data	December	Scatterplots, Least Squares Regression Line,	Independent variable, Dependent variable, Correlation, Causation, Strength, Predicted value	Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response. (CBAPSTAT-2.C)	Create and interpret a linear regression. Create a residual plot	Students will be able to represent and explore a data point with two components. Students will be able to develop predictive models based on the data.	Project: Point Iroquois & Test#4 made of multiple-choice and extended-response questions
Probability	January - February	Probability of an event and related components (Two-way tables)	Event, Complement, Or, Conditional	Determine relative frequencies, proportions, or probabilities using simulation or calculations. (CBAPSTAT-3.A)	Use probability laws to calculate the likelihood of various events	Students will be able to predict the probability of events.	Project: Board Game Creation & Test#5 made of multiple-choice and extended-response questions

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Geometric and Binomial	February - March	Exploring binomial and geometric distributions	Binomial, Geometric	Determine relative frequencies, proportions, or probabilities using simulation or calculations. (CBAPSTAT-3.A)	Calculate the probability of a precise amount of a total or a series of events of a total. Calculate the probability of a first occurrence or a series of first occurrences.	Students will be able to differentiate between the occurrence of a first event and some of a whole. Students will be able to calculate the probability of those events happening.	Project: NBA 3pt Free Throw & Test#6 made of multiple-choice and extended-response questions
Random Variables	April	Expected Value, Standard Deviation	Discrete, Independent	Interpret statistical calculations and findings to assign meaning or assess a claim. (CBAPSTAT-4.B)	Calculate the expected value of an event.	Students will be able to calculate the projected value of an outcome over a long run of events.	Project: Game Creation & Test#7 made of multiple-choice and extended-response questions

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Normal Distribution	April	Z-Score, Normal CDF	Standard Deviation, Mean, Standard Statistic	Compare distributions or relative positions of points within a distribution. (CBAPSTAT-2.D)	Calculate and use the Z-score to describe the positioning of values.	Students will be able to interpret values from a normal curve	Test #8 is made up of multiple-choice and extended-response questions
Inference 1 Prop	May	1 sample proportion hypothesis test, 1 sample confidence interval	Sample proportion, Hypothesis test, Confidence interval, Test statistics	Construct a confidence interval, provided conditions for inference are met. (CBAPSTAT-3.D) Calculate a test statistic and find a p-value, provided conditions for inference are met. (CBAPSTAT-3.E)	Create a properly formatted 1-sample proportion hypothesis test and confidence interval.	Students will be able to assess the validity of a hypothesis based on a sample and create a range that contains the actual value.	Student exploration

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Inference 1 Mean	June	1 sample mean hypothesis test, 1 sample mean interval	Sample mean, Sample Standard Deviation, Hypothesis test, Confidence interval, Test statistics	Construct a confidence interval, provided conditions for inference are met. (CBAPSTAT-3.D) Calculate a test statistic and find a p-value, provided conditions for inference are met. (CBAPSTAT-3.E)	Create a properly formatted 1-sample mean hypothesis test and confidence interval	Students will be able to assess the validity of a hypothesis based on a sample and create a range that contains the actual value.	Student exploration

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