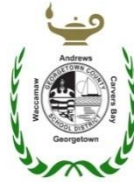


Georgetown County School District



2017-2018 Probability and Statistics Pacing Guide

Description and Purpose of the Pacing Guide: A pacing guide is an interval centered description of what teachers teach in various grade levels or courses; the order in which it should be taught, and the allotted time designated to teach the content area. Its purpose is to guarantee that all of the standards are addressed during the academic year. Pacing is flexible based on student need. Bold lines indicate approximate breaks for each quarter.

<p>South Carolina College- and Career- Ready Mathematical Process Standards</p>	<p>1. Make sense of problems and persevere in solving them.</p> <ul style="list-style-type: none"> a. Relate a problem to prior knowledge. b. Recognize there may be multiple entry points to a problem and more than one path to a solution. c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem. d. Evaluate the success of an approach to solve a problem and refine it if necessary. 	<p>2. Reason both contextually and abstractly.</p> <ul style="list-style-type: none"> a. Make sense of quantities and their relationships in mathematical and real-world situations. b. Describe a given situation using multiple mathematical representations. c. Translate among multiple mathematical representations and compare the meanings each representation conveys about the situation. d. Connect the meaning of mathematical operations to the context of a given situation. 	<p>3. Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.</p> <ul style="list-style-type: none"> a. Construct and justify a solution to a problem. b. Compare and discuss the validity of various reasoning strategies. c. Make conjectures and explore their validity. d. Reflect on and provide thoughtful responses to the reasoning of others.
<p>4. Connect mathematical ideas and real-world situations through modeling.</p> <ul style="list-style-type: none"> a. Identify relevant quantities and develop a model to describe their relationships. b. Interpret mathematical models in the context of the situation. c. Make assumptions and estimates to simplify complicated situations. d. Evaluate the reasonableness of a model and refine if necessary. 	<p>5. Use a variety of mathematical tools effectively and strategically.</p> <ul style="list-style-type: none"> a. Select and use appropriate tools when solving a mathematical problem. b. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts. 	<p>6. Communicate mathematically and approach mathematical situations with precision.</p> <ul style="list-style-type: none"> a. Express numerical answers with the degree of precision appropriate for the context of a situation. b. Represent numbers in an appropriate form according to the context of the situation. c. Use appropriate and precise mathematical language. d. Use appropriate units, scales, and labels. 	<p>7. Identify and utilize structure and patterns.</p> <ul style="list-style-type: none"> a. Recognize complex mathematical objects as being composed of more than one simple object. b. Recognize mathematical repetition in order to make generalizations. c. Look for structures to interpret meaning and develop solution strategies.

Unit Title	Yearlong Pacing	Block Pacing	South Carolina College and Career Ready (SCCCR) Standards			Textbook Lessons	FALs	Other
Overview of Statistics	12 days	6 days	PS.SPMJ.1*	Understand statistics and sampling distributions as a process for making inferences about population parameters based on a random sample from that population.			1.1, 1.2	
Data	8 days	4 days	PS.SPMJ.2*	Distinguish between experimental and theoretical probabilities. Collect data on a chance event and use the relative frequency to estimate the theoretical probability of that event. Determine whether a given probability model is consistent with experimental results.			1.3	Interpreting Data
			PS.SPMJ.3	Plan and conduct a survey to answer a statistical question. Recognize how the plan addresses sampling technique, randomization, measurement of experimental error and methods to reduce bias.				
			PS.SPMJ.5	Distinguish between experiments and observational studies. Determine which of two or more possible experimental designs will best answer a given research question and justify the choice based on statistical significance.				
			PS.SPMJ.6	Evaluate claims and conclusions in published reports or articles based on data by analyzing study design and the collection, analysis, and display of the data.				
Graphs	16 days	8 days	PS.SPID.1*	Select and create an appropriate display, including dot plots, histograms, and box plots, for data that includes only real numbers.			2.1, 2.2	Frequency Graphs Box Plots; Using Data
			PS.SPID.5*	Analyze bivariate categorical data using two-way tables and identify possible associations between the two categories using marginal, joint, and conditional frequencies.				
			PS.SPID.6*	Using technology, create scatterplots and analyze those plots to compare the fit of linear, quadratic, or exponential models to a given data set. Select the appropriate model, fit a function to the data set, and uses the function to solve problems in the context of the data.				
Measures of Central Tendency	8 days	4 days	PS.SPID.2*	Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.			2.3	
			PS.SPID.3*	Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).				

Unit Title	Yearlong Pacing	Block Pacing	South Carolina College and Career Ready (SCCCR) Standards	Textbook Lessons	FALs	Other
Measures of Variation and Position	16 days	8 days	<p>PS.SPID.2* Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.</p> <p>PS.SPID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.</p> <p>PS.SPMJ.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.</p>	2.4, 2.5		
Basic Probability	8 days	4 days	<p>PS.SPCR.1 Describe events as subsets of a sample space and</p> <ol style="list-style-type: none"> Use Venn diagrams to represent intersections, unions, and complements. Relate intersections, unions, and complements to the words and, or, and not. Represent sample spaces for compound events using Venn diagrams. 	3.1	Representing Probabilities	
Conditional Probability	20 days	10 days	<p>PS.SPCR.2 Use the multiplication rule to calculate probabilities for independent and dependent events. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.</p> <p>PS.SPCR.3 Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.</p> <p>PS.SPCR.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.</p> <p>PS.SPCR.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.</p> <p>PS.SPCR.6 Calculate the conditional probability of an event A given event B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.</p> <p>PS.SPCR.7 Apply the Addition Rule and the Multiplication Rule to determine probabilities, including conditional probabilities, and interpret the results in terms of the probability model.</p> <p>PS.SPCR.8 Use permutations and combinations to solve mathematical and real-world problems, including determining probabilities of compound events. Justify the results.</p>	3.2, 3.3, 3.4	Conditional Probabilities 1 Conditional Probabilities 2	Three Shots - Mathalicious

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Probability Distributions	10 days	5 days	PS.SPMD.1 PS.SPMD.2 PS.SPMD.3 PS.SPMD.4* PS.SPMD.5* PS.SPMD.6*	Develop the probability distribution for a random variable defined for a sample space in which a theoretical probability can be calculated and graph the distribution. Calculate the expected value of a random variable as the mean of its probability distribution. Find expected values by assigning probabilities to payoff values. Use expected values to evaluate and compare strategies in real-world scenarios. Construct and compare theoretical and experimental probability distributions and use those distributions to find expected values. Use probability to evaluate outcomes of decisions by finding expected values and determine if decisions are fair. Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions. Analyze decisions and strategies using probability concepts.	4.1		Money Duck	
Binomial Distributions	16 days	8 days	PS.SPCR.2	Calculate the expected value of a random variable as the mean of its probability distribution. Find expected values by assigning probabilities to payoff values. Use expected values to evaluate and compare strategies in real-world scenarios.	4.2			
Introduction to Normal Distributions	16 days	8 days	PS.SPID.3* PS.SPID.4	Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers). Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	5.1			
Normal Distribution Cont.	20 days	10 days	PS.SPID.3* PS.SPID.4	Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers). Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	5.2, 5.3			

Unit Title	Yearlong Pacing	Block Pacing	South Carolina College and Career Ready (SCCCR) Standards	Textbook Lessons	FALs	Other
Correlation	14 days	7days	<p>PS.SPID.6* Using technology, create scatterplots and analyze those plots to compare the fit of linear, quadratic, or exponential models to a given data set. Select the appropriate model, fit a function to the data set, and use the function to solve problems in the context of the data.</p> <p>PS.SPID.7* Find linear models using median fit and regression methods to make predictions. Interpret the slope and intercept of a linear model in the context of the data.</p> <p>PS.SPID.8* Compute using technology and interpret the correlation coefficient of a linear fit.</p> <p>PS.SPID.9 Differentiate between correlation and causation when describing the relationship between two variables. Identify potential lurking variables which may explain an association between two variables.</p> <p>PS.SPID.10 Create residual plots and analyze those plots to compare the fit of linear, quadratic, and exponential models to a given data set. Select the appropriate model and use it for interpolation.</p>	9.1, 9.2	Devising a Measure: Correlation	