

**Rankin County School District  
2006 Curriculum Map - Math - McLaurin**

	Transition	Algebra I	Geometry	Algebra II	Adv. Algebra	Trigonometry	Pre-Calculus	Discrete Math
<b>NUMBER AND OPERATIONS</b>	a. Compare and contrast the subsets of real numbers.	a. Utilize properties of equivalence to simplify variable expressions.	a. Use proportional reasoning to solve for unknown measures in similar polygons.	a. Diagram the relationship among the subsets of the complex number system.	a. Express a series using summation notation.	a. Convert from polar to rectangular coordinates and vice versa.	a. Express sequences and series using recursive and explicit formulas.	a. Convert decimals to binary numbers and vice versa.
	b. Add, subtract, and perform scalar multiplication on matrices.	b. Simplify and perform basic operations on square roots excluding rationalizing denominators.	b. Given exact irrational solutions, determine the best estimation.	b. Find the sum, difference, and product of radical expressions.	b. Evaluate the sum of a series.	b. Convert from rectangular to trigonometric form and vice versa.	b. Evaluate and apply formulas for arithmetic and geometric sequences and series.	b. Convert decimals to hexadecimal and vice versa.
	c. Evaluate expressions with real numbers using order of operations to include absolute value.	c. Add and subtract matrices containing rational numbers and apply the concept of scalar multiplication.		c. Examine the cyclic property of the powers of the imaginary unit, $i$ .	c. Find the determinant of a $4 \times 4$ matrix using expansion by minors.	c. Determine the product and quotient of complex numbers in trigonometric form.	c. Evaluate and apply infinite geometric series.	d. Convert between decimal, binary, and hexadecimal numbers.
	d. Evaluate powers and simplify radicals including square and cube roots.			d. Find the sum, difference, product and quotient of complex numbers and express in simplest form.	d. Find the inverse of a matrix using technology.	d. Determine the power and roots of complex numbers using DeMoivre's Theorem.	d. Use mathematical induction in proofs.	e. Add and subtract binary numbers.
	e. Express, interpret, and compute numbers using scientific notation in meaningful context.			e. Add, subtract, and multiply matrices.				f. Determine the number of walks in an undirected graph of length $n$ .
	f. Apply ratios and use proportional reasoning to solve real-world algebraic problems.			f. Calculate the determinant and inverse of a matrix.				
	g. Classify and determine degree of a polynomial.							
	h. Use the rules of exponents to multiply and divide monomials, to multiply monomials by polynomials, and to multiply binomials by binomials.							

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<b>ALGEBRA</b>	a. Recognize and demonstrate the difference among "evaluate", "simplify", and "solve".	a. Solve, check and graph multi-step linear equations and inequalities in one variable, including rational coefficients in mathematical and real-world situations.	a. Solve problems in the coordinate plane using geometric properties and algebraic formulas such as: identifying parallel lines, writing the equations of circles, finding midpoint and distance, and exploring the relationships among quadrilaterals.	a. Solve compound and absolute value inequalities and represent solutions using interval notation and graphing.	a. Determine domain and range of functions.	a. Convert between degree and radian measurements of angles.	a. Determine characteristics of the graphs of parent functions (domain/range, increasing/decreasing intervals, intercepts, symmetry, end behavior, and asymptotic behavior).	a. Define sentence (proposition), true and false in relation to logic.
	b. Given a literal equation, solve for a specified variable of degree one.	b. Solve, use set notation, and graph absolute value equations and inequalities in one variable.	b. Analyze the effect of changing various parameters on geometric figures.	b. Solve systems of linear, absolute value, and quadratic equations using various methods, such as substitution, elimination, and matrices. Verify with technology.	b. Find the sum, difference, product, and quotient of functions noting any restrictions on the domain.	b. State and utilize trigonometric identities.	b. Determine horizontal, vertical, and slant asymptotes and holes of rational functions.	b. Define the simple compound statements: negation, conjunction, disjunction, contradiction, and tautology using truth tables.
	c. Explain and illustrate how changes in one variable may result in a change in another variable.	c. Analyze the relationship between x and y values, determine whether a relation is a function, and identify domain and range.	c. Draw conclusions from investigating the effect of scale factors on perimeter, area, and volume.	c. Translate a word problem into a system of algebraic equations.	c. Perform the composition of functions.	c. Verify identities analytically and with technology.	c. Determine the domain and range of piece-wise functions.	c. Define a conditional statement using truth tables.
	d. Solve and check multi-step equations and inequalities, including distributive property, variables on both sides, and rational coefficients.	d. Explain and illustrate how a change in one variable may result in a change in another variable and apply to the concepts of independent and dependent variables.	d. Recognize and write the equation of a circle in standard form $[(x-h)^2 + (y-k)^2 = r^2]$ and identify the center and radius.	d. Given the constraints, find the maximum and minimum value(s) of a system of linear inequalities.	d. Write the inverse of a function.	d. Solve trigonometric equations using both radians and degrees.	d. Determine the end behavior of polynomial functions.	d. Define the inverse, converse, and contrapositive of a conditional statement.
	e. Use real-world data to express slope as a rate of change.	e. Write, graph, and analyze linear and nonlinear functions (such as quadratic, greatest integer), and absolute value and inequalities in two variables given a table of values, slope, intercept, or rule.		e. Add, subtract, multiply, divide, and simplify polynomial functions.	e. Determine if two functions are inverses of each other.		e. Decompose composite functions into component functions.	e. Apply the principles of logic to determine the validity of arguments.

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<b>ALGEBRA</b>	f. Compare and contrast the solutions of linear equations and inequalities.	f. Use algebraic and graphical methods to solve systems of linear equations and inequalities in mathematical and real-world situations (i.e., graphing, elimination, substitution).		f. Perform operations on polynomial expressions including both long division and synthetic division.	f. Expand binomials using Pascal's triangle and the Binomial Theorem.		f. Solve exponential and logarithmic equations to include real world applications.	f. Define a sequence recursively and explicitly.
	g. Graph solutions to linear inequalities.	g. Add, subtract, multiply, and divide polynomial expressions.		g. Write an equation of a quadratic using sum and product of roots.	g. Write the equations of conic sections given essential information.		g. Find the possible number of rational roots using the Rational Root Theorem.	g. Find the explicit formula for a recursively defined sequence using iteration.
	h. Graph linear equations using slope and y-intercept or two points.	h. Factor polynomials by using Greatest Common Factor (GCF) and factor quadratics that have only rational roots.		h. Write the equation of a polynomial when given its roots including complex roots.	h. Solve a system of equations using inverse matrices, augmented matrices, and Cramer's Rule.		h. Find the zeros of polynomial functions by synthetic division and the Factor Theorem.	h. Use mathematical induction to verify explicit formulas for arithmetic, geometric, and other sequences and/or series.
	i. Examine the graph of a linear function and identify domain, range, slope, and intercepts.	i. Analyze real number solutions to quadratic equations algebraically and graphically using the quadratic formula and factoring.		i. Use the discriminant to classify solutions of quadratic equations and justify your answer.	i. Solve real world applications using linear programming.		i. Graph and solve quadratic inequalities.	i. Define terminology and symbols associated with sets.
	j. Use appropriate technology to investigate families of graphs (linear, quadratic, and absolute value) and develop generalizations to characterize the behaviors of graphs.	j. Use graphic and symbolic means to justify why some polynomials are prime over the rational number system.		j. Select the appropriate rule to factor perfect square trinomials, sums and differences of cubes, and polynomials by grouping.	j. Solve linear-quadratic and quadratic-quadratic systems of equations and inequalities.		j. Factor using advanced techniques to include rational and negative exponents and non-standard difference of squares.	j. Perform basic operations, unions, intersections, differences, and complements.
				k. Solve quadratic equations by factoring, completing the square, and using the quadratic formula.			k. Decompose a fraction into partial fractions.	
				l. Solve radical equations.				
			m. Write equivalent forms of rational expressions using real and complex conjugates.					

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<b>ALGEBRA</b>				n. Simplify and perform operations on rational expressions including complex fractions.				
				o. Solve equations involving rational expressions and verify solutions.				
				p. Convert between exponential and logarithmic forms.				
				q. Select the appropriate exponent rule or logarithmic property to simplify exponential and logarithmic expressions.				

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<b>GEOMETRY</b>	a. Identify angles formed by parallel lines cut by a transversal to include alternate interior, alternate exterior, and corresponding angles.	a. Given the equations of two lines, determine graphically and/or algebraically whether the lines are parallel, perpendicular, or neither and justify answer.	a. Explore and determine the relationship between inductive and deductive reasoning using logic and geometric concepts.	a. Determine domain and range from the graphs of relations (including functions).	a. Recognize conic sections by their graphs and equations.	a. Identify and locate angles in radians and degrees based on the unit circle.	a. Recognize the graphs and the general equations of the parent functions (linear, quadratic, cubic, absolute value, rational, exponential, logarithmic, square root, cube root, and greatest integer).	a. Construct a logic circuit from a Boolean expression to determine output.
	b. Determine missing angle measurements for parallel lines cut by transversal(s).	b. Use algebraic and geometric representations to compare slopes as rates of change.	b. Develop and evaluate mathematical arguments and proofs.	b. Determine whether the inverse of a relation or function exists and justify the answer.	b. Identify the essential features of each conic section from standard form.	b. Define and apply the six trigonometric functions in relation to a right triangle.	b. Perform translations, reflections, and dilations on parent functions.	b. Construct a Boolean expression given a logic circuit.
	c. Apply the Pythagorean theorem to solve problems.		c. Analyze properties and determine attributes (including congruence and similarity) of two- and three-dimensional figures (including the Platonic Solids).	c. Recognize and sketch graphs of functions such as linear, quadratic, absolute value, greatest integer, piecewise, etc.	c. Sketch the graph of each conic section from its equation.	c. Find exact values of trigonometric functions of special angles in the unit circle.	c. Graph exponential, logarithmic, rational, and piece-wise functions with and without technology.	c. Construct a logic circuit and Boolean expression given an input/output table.
	d. Apply proportional reasoning to determine similar figures and find unknown measure.		d. Identify, classify, explore, and apply angle relationships formed by parallel lines cut by transversals.	d. Sketch and describe transformations of functions such as linear, quadratic, absolute value, etc., using technology.		d. Recognize, sketch, and interpret the graphs of the six trigonometric functions and their inverses to include restrictions on their domains.		d. Use Venn diagrams to represent basic operations on sets.
			e. Examine arcs and various angles of circles and their relationships.	f. Graphically represent complex numbers and the sum of complex numbers in a complex coordinate plane.		e. Recognize, sketch, and interpret graphs illustrating transformations of trigonometric functions.		e. Define basic terminology associated with graphs.
			f. Identify and investigate altitude, median, angle bisectors, and perpendicular bisectors.	g. Find the composition of 2 or more functions.		f. Solve for unknown parts of triangles using the Law of Sines and the Law of Cosines.		f. Determine the number of vertices and edges in a graph.
			g. Classify triangles and apply postulates and theorems to test for triangle inequality, congruence, and similarity.	h. Identify and sketch the essential graphs of the 4 conic sections: circle, parabola, ellipse, and hyperbola.		g. Graph polar coordinates and equations.		g. Determine walks, paths, and circuits in a graph.
<b>GEOMETRY</b>			h. Use protractor, compass, straight edge and technology to investigate and construct geometric figures and drawings.					h. Construct walks, paths, and circuits given an edge/vertex string.
			i. Create designs using point, line, and rotational symmetry.					i. Determine whether Euler and Hamiltonian circuits exist in a given graph.
			j. Use various representations to understand transformations (reflections, translations, rotations, dilations, and combinations thereof).					j. Construct a graph given the adjacency matrix of the graph and vice versa.
			k. Use translations and rotations in the creation of tessellations.					k. Determine connectivity of a graph using an adjacency matrix.

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			l. Identify conic sections based on modeling with a cone.					l. Determine the number of walks between two vertices using powers of the adjacency matrix.
			m. Graph a vector and determine the magnitude and direction of a given vector.					n. Determine the level, parent, siblings, ancestors, descendants and height of a rooted tree.
								m. Determine whether a graph is a tree.
								o. Determine the shortest route in a spanning tree.

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<b>MEASUREMENT</b>	a. Use manipulatives to model polynomial operations for problems involving perimeter and area.	a. Solve real-world problems involving formulas (e.g., circumference, perimeter, area, volume, interest, distance, rate, work, etc.).	a. Use arc, angle, and segment relationships to find unknown measures related to circles.	a. Use dimensional analysis to solve real world problems.		a. Find arc length and sector area of a circle.	a. Apply area and volume formulas to various shapes.	
	b. Solve real-world problems involving measurements (i.e., circumference, perimeter, area, volume, distance, temperature, etc.).	b. Apply the appropriate formula to determine length (distance formula, Pythagorean Theorem), midpoint, and slope of a segment in a coordinate plane.	b. Use the appropriate definition, postulate, or theorem to find angle measurements associated with polygons.	b. Solve mathematical or real-world problems involving plane and solid figures.		b. Find the area of a triangle using Heron's Formula, $(\frac{1}{2}) C \text{ absin } \theta$ , and/or $(\frac{1}{2}c^2)\frac{\sin A \sin B}{\sin C}$		
		c. Apply polynomial operations to problems involving perimeter and area.	c. Select the appropriate formula from special right triangle relationships, geometric means, or trigonometric functions to find missing measurements in right triangles.	c. Solve absolute value inequalities to describe the accuracy of measurements in real-world situations.				
			d. Solve real-world or mathematical problems including perimeter, circumference, and area.					
			e. Find surface area and volume of three-dimensional figures, including spheres (with great circles) and hemispheres.					

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<b>DATA ANALYSIS &amp; PROBABILITY</b>	a. Construct and interpret data involving histograms, bar graphs, line graphs, scatterplots, box-and-whisker plots, circle graphs, stem-and-leaf plots, frequency distributions, and tables.	a. Collect, organize, graph, and interpret data sets.		a. Use scatterplots and apply linear and quadratic regression analysis to data using technology.	a. Solve problems involving permutations and combinations.		a. Fit exponential and logarithmic regressions to data using technology.	
	b. Analyze situations that involve the probability of independent/dependent events.	b. Draw conclusions and make predictions from scatter plots. Perform the analysis of data including line of best fit.		b. Solve simple combinations.	b. Determine quadratic and cubic regression equations for given data using technology.		b. Fit cubic regressions to data using technology.	
	c. Determine and use the sample space of events to determine the probability of an event.	c. Interpret how changes in one-variable data sets affect mean, median, mode, and range.		c. Apply the appropriate formula to basic application problems involving probability.				
	d. Use and apply the concepts of probability to real-world problems.	d. Analyze data and apply appropriate scale to the graph of the data.		d. Use permutations and combinations.				
				e. Collect, analyze, and compare data sets.				

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**Calculus**

1. Demonstrate basic knowledge of functions, their behavior and characteristics.
  - a. Predict and explain the characteristics and behavior of functions and their graphs.
  - b. Investigate, describe, and determine asymptotic behavior.
  - c. Discuss and determine continuity and discontinuity of functions.
  - d. Analyze parametric, polar, and vector functions.
2. Use the definition and formal rules of differentiation to compute derivatives.
  - a. State and apply properties of limits.
  - b. Calculate limits using algebra.
  - c. Estimate limits from graphs or tables of data.
  - e. Use L'Hopital's Rule to evaluate simple indeterminate forms.
  - f. Apply L'Hopital's Rule to determine convergence of improper integrals and series.
3. Use the definition and formal rules of differentiation to compute derivatives.
  - a. State and apply the formal definition of a derivative.
  - b. Apply differentiation rules to sums, products, quotients, and powers of functions.
  - c. Discuss and demonstrate the differences between average and instantaneous rates of change.
  - d. Use the chain rule and implicit differentiation.
  - e. Extend knowledge of derivatives to include exponential, logarithmic, trigonometric and inverse trigonometric functions.
  - f. Calculate derivatives of parametric, polar, and vector functions.
3. Use the definition and formal rules of differentiation to compute derivatives.
  - a. Interpret and communicate the purposes of the derivatives.
  - b. Interpret the derivative as a rate of change in varied applied contexts, including velocity, speed and acceleration.
  - c. Apply the derivative to find tangent lines and normal lines to given curves at given points.
  - d. Apply Rolle's Theorem and the Mean Value Theorem and their geometric consequences.
  - e. Apply differentiation techniques to curve sketching.
  - f. Explain and predict the relationships between functions and their derivatives.
  - g. Model rates of change to solve related rate problems.
  - i. Determine an understanding of Newton's Method to approximate roots.
  - j. Investigate local linear approximations.
  - k. Interpret differential equations using slope fields.
  - l. Solve differential equations by Euler's Method.
  - m. Analyze planar curves given in parametric, polar and vector form including velocity and acceleration vectors.
5. Employ various integration properties and techniques to evaluate integrals.
  - a. Demonstrate the concept of the integral as an accumulator.
  - b. Use Reimann's Sum and the Trapezoidal Rule to approximate definite integrals.
  - c. State and apply the First and Second Fundamental Theorem of Calculus.
  - d. Evaluate the average value of a function on an interval.
  - e. Apply the power rule and u-substitution to evaluate indefinite integrals.
  - f. Extend techniques of integration to include integration by parts and simple partial fractions.
6. Adapt integration methods to model solutions to problems.
  - a. Investigate and apply integration to solve problems including area, volume, and cross sections.
  - b. Employ integration to compute distance traveled by a particle along a line.
  - d. Utilize integrals to model solutions to real-world problems.
  - e. Solve logistic differential equations and use them in modeling.
  - f. Apply integration to find length of a curve.
7. Explore the concepts affecting relationships among different kinds of series.
  - a. Identify different types of series and their characteristics.
  - c. Use Lagrange's Method for computing errors of Taylor polynomials.
  - d. Formulate new series from known series to include Maclaurin and Taylor series.

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**Engineering**

1. Explore general problem solving strategies.
  - a. Analyze and evaluate general problem solving strategies.
  - b. Develop and use critical thinking skills in solving problems.
  - c. Identify and utilize various aspects of "best" engineering solutions.
  - d. Apply Newton's Laws of Physics as they relate to the problem solving strategies.
    1. Calculate mass of objects on earth, moon, etc.
    2. Convert units of English system of measurement to Standard International units.
  - e. Convert units extensively (i.e., meters/sec to mi/hr, cubic inches/day to liters/min).
2. Solve general electrical engineering problems.
  - a. Calculate angles of a triangle given lengths of sides.
  - b. Calculate distance of given angle measurements.
  - d. Apply Pythagorean Theorem of a right triangle.
  - e. Calculate the area of a road to be paved over a certain distance using road grade (slope).
  - f. Calculate difference in percent slope and degree slope.
3. Solve general electrical engineering problems.
  - a. Calculate work, power, voltage, current, and resistance using given and derived formulas.
  - b. Apply Ohm's Law to calculate unknown information in a simple series and parallel circuits.
  - c. Apply Kirchoff's Voltage and Current Laws to derive equations for calculating equivalent resistances in series and parallel circuits.
  - d. Calculate the number of light bulbs (and other resistors) that could be placed in series or parallel circuitry before a circuit breaker would trip.
4. Solve general electrical engineering problems.
  - a. Write mass balance equations and solve for some variable in the mass balance equations. Typical problem would be a system having different inflow and outflow rates. Determine drain or overflow rate and calculate exact time for the system to drain or overflow.
  - b. Write energy balance equations and solve for some variable in the energy balance equations. Typical problem would be an individual consuming a certain diet and exercising a certain amount. Determine an individual's weight gain or loss and his new weight after a specified period of time.
  - c. Calculate volumes of odd sized containers or systems, which must be incorporated into a mass or energy balance equation in order to solve.
  - d. Write equations of mass balance and energy balance, which are dependent upon one another. Solve the system of equations using a variety of methods such as substitution method, elimination method, matrices, etc.
5. Identify, study, and solve problems involving the control of room acoustics.
  - a. Determine and use the root mean square of a signal in further calculations.
  - b. Use and apply given formulas to solve for sound power, reverberation time, decibel level, and total noise exposure. Students will apply geometry to calculate volume and area in order to use architectural acoustics formulas.
  - c. Use formulas involving logarithms to calculate decibel levels from sound pressure.
  - e. Calculate total noise exposure limits per OSHA standards by using a computer spreadsheet.
6. Design and build a coffee-making system.
  - a. Apply and use mathematical concepts related to basic physics and chemistry including heat exchange, fluid flow, condensation, leaching, mass transfer, and system energy requirements.
  - b. Collect, apply, and use data to determine actual costs of a morning shower as part of thermodynamics discussion.
  - c. Calculate BTU requirements and utility costs for heating a specified home.
  - d. Optional: Design and build a system from various hardware materials capable of heating water, transferring water to coffee grounds, and producing hot coffee.
7. Following chemical engineering methods, create calibration curves from laboratory data to establish standard
  - a. Use and apply methods of unit conversion.
  - b. Determine units of concentration (weight percent, volume percent, parts per million, and molarity).
  - c. Using a periodic table, determine molecular weight of a substance.
  - d. Use and apply linear relationships and the slope-intercept equation.
  - e. Determine and use the "line of best fit." Calculate the linear regression of a line by hand, by spreadsheet, and by computer graphing.
8. Design and build a bridge meeting certain specifications.
  - a. Optional: Calculate internal and external forces of members of a structure and loads applied.
  - b. Optional: Use and apply geometry to calculate bending angle formed from various forces acting on a figure.
  - c. Optional: Calculate load paths, functions, and force types of capable, arch, and truss systems.
  - d. Optional: Use and apply equilibrium analysis and strength checks of design.

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**Survey of Math Topics**

1. Demonstrate the skills necessary to manage personal finance.
  - a. Develop a household budget.
  - b. Maintain and balance a checkbook.
  - c. Investigate terminology and the process of filing personal income tax.
  - d. Investigate and explore all the components necessary to own and operate a car.
  - e. Analyze the options of housing alternatives.
  - f. Connect and apply appropriate algebraic formulas to personal finance situations.
2. Analyze and illustrate the practices that affect employer and employee decision-making.
  - a. Analyze information to make wise decisions regarding personal savings.
  - c. Study and investigate the economics of the stock market.
  - d. Connect and apply appropriate algebraic formulas to personal and business investments.
3. Analyze and illustrate the practices that affect employer and employee decision-making.
  - a. Compute and compare various forms of earnings and calculate gross pay, deductions, and net pay.
  - b. Analyze the relationships among cost, revenue, and profit.
  - c. Apply linear programming to business decisions.
  - d. Connect and apply appropriate algebraic formulas to employer and employee practices.
4. Analyze and illustrate the practices that affect employer and employee decision-making.
  - a. Compare and contrast the finances of credit cards.
  - b. Explore the pros and cons of installment loans.
  - c. Connect and apply appropriate algebraic formulas to consumer credit.
5. Collect and apply information in planning a trip.
  - a. Investigate and evaluate modes of transportation.
  - b. Create a travel budget.
  - c. Make travel plans based upon airline schedules.
  - d. Utilize map-reading skills.
  - e. Connect and apply appropriate algebraic formulas to planning a trip.

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**Statistics**

1. Use graphical and numerical techniques to study patterns and to explore, describe, and interpret data.
  - a. Interpret graphical displays of distributions of univariate data (dot plots, stem plots, histograms, box plots).
  - b. Summarize distribution of univariate data and correctly find and use measures of center (mean, median, mode); measures of spread (range, interquartile range, standard deviation); and measures of position (quartiles, percentiles, standardized scores).
  - c. Explore bivariate data by analyzing patterns in scatterplots and residual plots, performing logarithmic and power transformations to achieve linearity, finding least squares regression lines, and finding correlation coefficients.
  - d. Explore categorical data, construct, and interpret frequency tables.
3. Use probability to predict what the distribution of data should look like under a given method.
  - a. Know the characteristics of a well-designed and well-conducted study and be able to distinguish between observational studies, surveys, and experiments.
  - b. Design a method for obtaining a simple random sample for a population of interest and for obtaining a stratified sample when appropriate.
  - c. Identify sources of bias and discuss the concept of sampling error in studies.
3. Use probability to predict what the distribution of data should look like under a given method.
  - a. Use concepts of independent and mutually exclusive events, and apply the addition, multiplication, and conditional probability rules to find the probability of events.
  - b. Produce models using probability and simulation, and explain the "law of large numbers."
  - c. Find the mean and standard deviation of a random variable and the mean and standard deviation for the sums and differences of independent random variables.
  - d. Know properties of the normal distribution, use normal distribution tables, and make inferences from these tables.
  - e. Simulate sampling distributions (distribution of a sample proportion, distribution of a sample mean, distribution of a difference between two independent sampling proportions, distribution of a difference between two independent sample means).
  - f. Discuss and illustrate the Central Limit Theorem.
3. Use probability to predict what the distribution of data should look like under a given method.
  - a. Find and interpret large sample confidence intervals for a proportion, a mean, a difference between two proportions, and a difference between two means.
  - b. Appropriately use the following tests of significance: large sample tests for a proportion, a mean, a difference between two proportions, and a difference between two means (unpaired and paired); Chi-square test for goodness of fit, homogeneity of proportions, and independence; single sample and two sample t-procedures; and inference for slope of least squares line.
  - c. Write null and alternate hypotheses for studies, distinguish between one and twosided tests, calculate appropriate test statistics, find p-values, arrive at appropriate conclusions, and communicate those conclusions effectively.