

Functions, Statistics & Trigonometry

Curriculum Map Huron High School Lindsey Brewer

8 Standards of Mathematical Practice

- CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them.**
- CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.**
- CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others.**
- CCSS.Math.Practice.MP4 Model with mathematics.**
- CCSS.Math.Practice.MP5 Use appropriate tools strategically.**
- CCSS.Math.Practice.MP6 Attend to precision.**
- CCSS.Math.Practice.MP7 Look for and make use of structure.**
- CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning.**

Timeline	Content	Key Vocabulary	Common Core Standards	Assessments & Resources
Aug/Sept	STATISTICS Sequences & Series <ul style="list-style-type: none"> • Identify and find the nth terms of arithmetic and geometric sequences. • Find sums of arithmetic and geometric series. • Use sigma notation. • Use binomial theorem to expand binomials. • Identify special sequences and series. Example Fibonacci sequences and the number e. • Iteration functions. 	Sequence Terms Arithmetic Sequence Common Difference Recursive Formula Arithmetic Series nth Partial Sum Geometric sequence Common ratio Geometric means Geometric series Sigma Notation Iterate		Daily Assignments Quizzes Tests (multiple choice, free response & vocabulary) Class Discussions Writing Prompts LAB Activities Students Portfolio Hands On Projects TI Calculator & CBR/CBL Applications Board Work DACS Dakota STEP SAT 10
October	Combinatorics & Probability <ul style="list-style-type: none"> ▪ Counting Principle 	Basic Counting Principle Circular permutation		

	<ul style="list-style-type: none"> ▪ Distinguish between dependent and independent events ▪ Solve problems involving permutation or combinations ▪ Solve problems involving permutations with repetitions ▪ Solve problems involving circular permutations ▪ Find the probability of an event ▪ Find the odds for success and failure of an event ▪ Find the probability of independent and dependent events ▪ Identify mutually exclusive events ▪ Find the probability of mutually exclusive and inclusive events ▪ Find the probability of an event given the occurrence of another event ▪ Find the probability of an event by using the Binomial Theorem 	<p>Combinations Complements Conditional probability Dependent event Experimental probability Failure Inclusive event Independent event Mutually exclusive Odds permutation Permutation with repetition Probability Sample space Success Theoretical probability Tree diagram</p>		
November	<p>Statistics & Data Analysis</p> <ul style="list-style-type: none"> ▪ Draw, analyze and use bar graphs and histograms ▪ Organize data into a frequency distribution ▪ Find the mean, median and mode of a set of data ▪ Find the measures of central tendency of data organized in a stem-and-leaf plot or a relative frequency distribution table ▪ Find the interquartile range,, the semi-quartile range, mean deviation and standard deviation of a set of 	<p>Arithmetic mean Back-to-back bar graph Bar graph Bimodal Box-and-whisker plot Class interval Class limits Class mark Frequency distribution Frequency polygon Hinge Histogram Interquartile range Leaf</p>		

	<p>data</p> <ul style="list-style-type: none"> ▪ Organize and compare data using a box-and-whisker plot ▪ Use the normal distribution curve ▪ Use the standard normal curve to study properties of normal distribution <p>Draw, analyze and use bar graphs and histograms</p> <ul style="list-style-type: none"> ▪ Organize data into a frequency distribution ▪ Find the mean, median and mode of a set of data ▪ Find the measures of central tendency of data organized in a stem-and-leaf plot or a relative frequency distribution table ▪ Find the interquartile range,, the semi-quartile range, mean deviation and standard deviation of a set of data ▪ Organize and compare data using a box-and-whisker plot ▪ Use the normal distribution curve ▪ Use the standard normal curve to study properties of normal distribution 	<p>Mean</p> <p>Mean deviation</p> <p>Measure of central tendency</p> <p>Measure of variability</p> <p>Median</p> <p>Median class</p> <p>Mode</p> <p>Normal curve</p> <p>Normal distribution</p> <p>Outlier</p> <p>Percentile</p> <p>Population</p> <p>Quartile</p> <p>Range</p> <p>Semi-quartile range</p> <p>Standard deviations</p> <p>Stem</p> <p>Stem-and-leaf plot</p> <p>Three-dimensional bar graph</p> <p>Variance</p> <p>Whisker</p>		
December	<p>TRIGONOMETRY</p> <p>The Trigonometric Functions</p> <ul style="list-style-type: none"> ▪ Convert decimal degree measures to degree, minutes and seconds and vice versa. ▪ Find the number of degrees in a given number of rotations ▪ Identify angles that are coterminal 	<p>Angle of depression</p> <p>Angle of elevation</p> <p>Circular function</p> <p>Cofunctions</p> <p>Cosecant</p> <p>Cosine</p> <p>Cotangent</p> <p>Coterminal angles</p>		

	<p>with a given angle</p> <ul style="list-style-type: none"> ▪ Find the values of trigonometric ratios for acute angles of right triangles ▪ Find the values of the six trigonometric functions using the unit circle ▪ Find the values of the six trigonometric functions of the six trigonometric function of an angle in standard position given a point on its terminal side ▪ Use trigonometry to find the measures of the sides of right triangles ▪ Evaluate inverse trigonometric functions ▪ Find missing angle measures ▪ Solve right triangles ▪ Solve triangles by using the Law of Sines is the measures of two angles and a side are given ▪ Find the area of a triangle if the measure of two sides and the included angle or the measures of two angles and a side are given ▪ Solve triangles by using the Law of Cosines ▪ Find the area of triangles if the measures of the three sides are given <p>Graphs of Trigonometric Functions</p> <ul style="list-style-type: none"> ▪ Change from radian measure to degree measure and vice versa ▪ Find the length of an arc given the measure of the central angle 	<p>Degree Hero's Formula Hypotenuse Initial side Inverse Law of Cosines Law of Sines Leg Minute Quadrantal angle Reference angle Secant Second Side adjacent Side opposite Sine Solve a triangle Standard position Tangent Terminal side Trigonometric function Trigonometric ratio Unit circle Vertex Amplitude Angular displacement Central angle Circular arc Linear velocity Period Periodic Radian Sector</p>		
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	<ul style="list-style-type: none"> ▪ Find the area of a sector ▪ Find linear and angular velocity ▪ Use the graphs of sine and cosine functions ▪ Find the amplitude and period for sine and cosine functions ▪ Write equations of sine and cosine functions given the amplitude, period, phase shift, and vertical translation. ▪ Model real-world data using sine and cosine functions. ▪ Graph tangent, cotangent, secant and cosecant function. ▪ Write equations of trigonometric functions. 	Sinusoidal function		
January through May	<p>FUNCTIONS</p> <p>Linear Functions & Relations</p> <ul style="list-style-type: none"> ▪ Determine whether a given relations is a function ▪ Identify the domain and range of a relations or function ▪ Evaluate functions ▪ Perform operations with functions ▪ Find composite functions ▪ Iterate functions using real numbers ▪ Graph linear equations ▪ Find the x- and y-intercepts of a line ▪ Fin the slope of a line though two points ▪ Find zeros of linear functions ▪ Write linear equations ▪ Write equations of parallel and perpendicular lines ▪ Draw and analyze scatter plots 	<p>Abscissa</p> <p>Absolute value function</p> <p>Boundary</p> <p>Coinciding lines</p> <p>Composite functions</p> <p>Composition of functions</p> <p>Constant function</p> <p>Domain</p> <p>Family of graphs</p> <p>Function</p> <p>Function notation</p> <p>Greatest integer function</p> <p>Half plane</p> <p>Iterate</p> <p>Iteration</p> <p>Linear equation</p>		

	<ul style="list-style-type: none"> ▪ Write a prediction equation and draw best-fit lines ▪ Use a graphing calculator to compute correlation coefficients to determine goodness of fit ▪ Solve problems using prediction equations models ▪ Identify and graph piecewise functions including greatest integer, step and absolute value functions ▪ Graph linear inequalities <p>Systems of Linear Equations & Inequalities</p> <ul style="list-style-type: none"> ▪ Solve systems of equations graphically ▪ Solve systems of equations algebraically ▪ Solve systems of equations involving three variables algebraically ▪ Model data using matrices ▪ Add, subtract and multiply matrices ▪ Use matrices to determine the coordinates of polygons under a given transformation ▪ Evaluate determinants ▪ Find inverses of matrices ▪ Solve systems of equations by using inverses of matrices ▪ Graph systems of inequalities ▪ Find the maximum or minimum value of a function defined for a convex set ▪ Use linear programming procedures to solve application ▪ Recognize situations where exactly one solution to a linear programming 	<p>Linear function Linear inequality Ordinate Parallel lines Perpendicular lines Piecewise function Point-slope form Range Relation Slope Slope-intercept form Standard form Step function Vertical line test x-intercept y-intercept zero of function best-fit line correlation coefficient goodness of fit model Pearson-product moment correlation Prediction equation Regression line Scatter plot Additive identity matrix: Column matrix Consistent Dependent Determinant Dilation</p>		
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	<p>application may not exist</p> <p>Nature of Graphs</p> <ul style="list-style-type: none"> ▪ Use algebraic test to determine whether the graph of a relation is symmetrical ▪ Classify function as even or odd ▪ Identify transformations of simple graphs ▪ Sketch graphs of related functions ▪ Graph polynomial, absolute value and radical inequalities in two variables ▪ Solve absolute value inequalities ▪ Determine inverses of relations and functions ▪ Graph functions and their inverses ▪ Determine whether a function is continuous or discontinuous ▪ Identify the end behavior of functions ▪ Determine whether a function is increasing or decreasing on an interval ▪ Find the extreme of a function ▪ Graph rational functions ▪ Determine, vertical, horizontal and slant asymptotes ▪ Solve problems involving direct, inverse and joint variation <p>Polynomial, Rational & Rational Functions</p> <ul style="list-style-type: none"> ▪ Determine roots of polynomial equations ▪ Apply the Fundamental Theorem of Algebra ▪ Solve quadratic equations ▪ Use the discriminant to describe the 	<p>Dimensions</p> <p>Element</p> <p>Elimination method</p> <p>Equal matrices</p> <p>Identity matrix for multiplication</p> <p>Image</p> <p>Inconsistent</p> <p>Independent</p> <p>Infeasible</p> <p>Inverse matrix</p> <p>M x n matrix</p> <p>Matrix</p> <p>Minor</p> <p>Nth order</p> <p>Ordered triple</p> <p>Polygonal convex set</p> <p>Pre-image</p> <p>Reflection</p> <p>Reflection matrix</p> <p>Rotation</p> <p>Rotation matrix</p> <p>Row matrix</p> <p>Scalar</p> <p>Solution</p> <p>Square matrix</p> <p>Substitution method</p> <p>System of equations</p> <p>System of linear inequalities</p> <p>Transformation</p> <p>Translation</p> <p>Translation matrix</p>		
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	<p>roots of quadratic equations</p> <ul style="list-style-type: none"> ▪ Find the factor of polynomials using the Remainder and Factor Theorems ▪ Identify all possible rational roots of a polynomial equation by using the Rational Root Theorem ▪ Solve rational equations ▪ Solve radical equations ▪ Write polynomials functions to model real-world data ▪ Use polynomials functions to interpret real-world data <p>Exponential & Logarithmic Functions</p> <ul style="list-style-type: none"> ▪ Use the properties of exponents. ▪ Evaluate and simplify expressions containing rational exponents. ▪ Solve equations containing rational exponents. ▪ Graph exponential functions. ▪ Solve problems involving exponential growth and decay. ▪ Use the exponential function $y = ex$. ▪ Evaluate expressions involving logarithms. ▪ Solve equations and inequalities involving logarithms. ▪ Graph logarithmic functions. ▪ Find common logarithms. ▪ Solve equations using common logarithms. ▪ Solve real world applications with common logarithmic functions. ▪ Find natural logarithms of numbers. ▪ Solve equations using natural 	<p>Vertex theorem Zero matrix Absolute maximum Absolute minimum Constant function Constant of variation Continuous Critical point Decreasing function Direction variation Discontinuous End behavior Even function Extremum Horizontal line test Increasing function Infinite discontinuity Inverse function Inverse process Inversely proportional Inverse relations Joint variation jump discontinuity Line symmetry Maximum Minimum Odd function Parent graph Point discontinuity Point of inflection Point of symmetry Rational function Relative extremum</p>		
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	<p>logarithms.</p> <ul style="list-style-type: none"> ▪ Solve real world applications with coming logarithmic functions. ▪ Investigate the relationship between area of regions below the graph of $y=1/x$ and natural logarithms. ▪ Find the doubling time of an exponential quantity. ▪ Find exponential and logarithmic functions to model real world data. 	<p>Relative maximum Relative minimum Symmetry with respect to the origin Completing the square Complex number Conjugate Degree Discriminant Extraneous solution Factor Theorem Fundamental Theorem of Algebra Imaginary number Integrat root theorem Leading coefficient Polynomial equation Polynomial function Polynomial in one variable Pure imaginary number Quadratic Formula Radical equation Rational equation Root Zero</p>		
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