Huron School District

Core Curriculum Guide   Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Numbers and Function   Month(s): August/September

Content Standards:

- 9-12.A.3.1.
- 9-12.A.3.2.
- 9-12.A.4.1.

- 9-12.A.4.3A.
- 9-12.G.2.2.
- 9-12.G.2.3.

- 9-12.N.1.1.
- 9-12.N.2.1.
- 9-12.N.2.1A.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
• Identify and use Properties of Real Numbers • Evaluate expressions by using the order of operations.	Natural numbers Whole Numbers Integers Rational Numbers Irrational Numbers Real Numbers Commutative Property Associative Property Identity Property Closure Property Inverse Property Distributive Property Order of Operations	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
• Evaluate expressions involving exponents. • Simplify expressions involving exponents.	Base Power Exponent Properties of Exponents Rational Expressions	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

Objectives	Vocabulary	Assessment
• State the domain and range of a relation, and tell whether it is a function. • Write a function in function notation and evaluate it.	Function Domain Range Vertical Line Test Relation Discrete Function Continuous Function Independent Variable Dependent Variable	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
• Perform operations with functions to write new functions. • Find the composition of two functions.	Sum Difference Product Quotient Composite	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide   Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Data and Linear Representations   Month(s): September/October
Content Standards:

- 9-12.A.1.1.
- 9-12.A.2.1.
- 9-12.A.2.2.
- 9-12.A.2.3A.
- 9-12.A.3.1.

- 9-12.A.3.2.
- 9-12.A.4.1.
- 9-12.A.4.6A.
- 9-12.G.1.4A.
- 9-12.G.2.3.

- 9-12.M.1.1.
- 9-12.M.1.2.
- 9-12.M.1.3.
- 9-12.S.1.1.
- 9-12.S.1.3.

- 9-12.S.2.1.
- 9-12.N.1.1.
- 9-12.N.1.2A.
- 9-12.N.3.1.
- 9-12.N.3.2.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
- Represent a real-world linear relationship in a table, graph or equation. - Identify linear equations and linear relationships between variable in a table.	Linearly related Linear equation	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
- Graph a linear equation. - Write a linear equation for a given line in the coordinate plane.	Slope of a Line y-intercept slope-intercept form standard form x-intercept horizontal line vertical line	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
- Write a linear equation in two variables given sufficient information. - Write an equation for a line that is parallel or perpendicular to a given line.	Point Slope Form Parallel Line Perpendicular Lines	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

• Write and apply direct-variation equations. • Write and solve proportions.	Direct-Variation Equation Constant of Variation Ratio Proportion Cross-Product Property	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
• Create a scatter plot. • Use a graphics calculator to find an equation for the least-squares line.	Scatter plot Least-square line Correlation	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Unit Title: Solving Equations and Inequalities   Month(s): October

Content Standards:

- 9-12.A.1.1.
- 9-12.A.2.1.
- 9-12.A.2.2.
- 9-12.A.2.3A.
- 9-12.A.3.1.

- 9-12.A.3.2.
- 9-12.A.4.1.
- 9-12.A.4.6A.
- 9-12.G.1.4A.
- 9-12.G.2.3.

- 9-12.M.1.1.
- 9-12.M.1.2.
- 9-12.M.1.3.
- 9-12.S.1.1.
- 9-12.S.1.3.

- 9-12.S.2.1.
- 9-12.N.1.1.
- 9-12.N.1.2A.
- 9-12.N.3.1.
- 9-12.N.3.2.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
• Write and solve a linear equation in one variable. • Solve a literal equation for a specified variable.	Equation Variable Solution Properties of Equality Substitution Property Terms Like Terms Simplified Literal Equation Equivalent	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
• Write, solve, and graph linear inequalities in one variable. • Solve and graph compound linear inequalities in one variable.	Inequality Solution Properties of Inequality	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
• Write, solve, and graph absolute-value equations.	Absolute value	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

Huron School District

Core Curriculum Guide   Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Systems of Linear Equations and Inequalities   Month(s): November
Content Standards:
- 9-12.A.2.2A.   • 9-12.N.1.1   • 9-12.N.3.2.

Essential Questions:
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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Solve a system of linear equations in two variables by graphing.	Systems of Equations Linear System Solution of a system Inconsistent System Consistent System Independent System Dependent System	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve a system of linear equations in two variables by substitution.	Substitution	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve a system of linear equations in two variables by elimination.	Elimination Equivalent Systems	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve and graph a linear inequality in two variables.	Systems of linear inequalities	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide   Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Quadratic Functions and Factoring   Month(s): November/December
Content Standards:
- 9-12.A.2.1A.
- 9-12.A.3.1A.
- 9-12.G.1.2.
- 9-12.G.2.3.
- 9-12.N.1.1.
- 9-12.N.3.2.

Essential Questions:
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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Identify quadratic functions. Graph quadratic function. Multiply linear binomials to produce a quadratic expression.	Parabola Quadratic function Axis of symmetry Vertex of the parabola Minimum value Maximum value	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve quadratic equations by taking square roots. Use the Pythagorean Theorem to solve right triangle problems involving right triangles.	Square Roots Pythagorean Theorem	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Factor quadratic expressions.	Factoring Greatest Common Factor Perfect square Trinomial Difference of Two Squares	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Use factoring to solve a quadratic equation and find the zeros of a quadratic function.	Zero-Product Property Zeros of a Function	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide

Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Solving Quadratic Functions and Complex Numbers   Month(s): January

Content Standards:

- 9-12.A.1.2A.
- 9-12.A.2.1A.
- 9-12.N.1.1A.
- 9-12.N.1.2A.
- 9-12.S.1.5A.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Use completing the square to solve a quadratic equation.	Completing the Square	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Use the quadratic formula to find real roots of quadratic equations. Classify and find all roots of a quadratic equation.	Quadratic Formula Discriminant	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Graph and perform operations on complex numbers.	Imaginary Number Complex number Pure imaginary number Complex number plane Complex conjugates	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Write, solve, and graph a quadratic inequality in one variable. Write, solve, and graph a quadratic inequality in two variables.	Systems of Quadratic Inequalities	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide
Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Polynomial Functions   Month(s): February

Content Standards:

- 9-12.A.1.1A.
- 9-12.A.4.2A.
- 9-12.A.4.5A.
- 9-12.N.2.1.
- 9-12.N.2.2.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Identify, evaluate, add, and subtract polynomials. Classify polynomials and describe the shapes of their graphs.	Monomial Degree of a Monomial Polynomial Degree of a Polynomial Polynomial Function Standard Form Turning Point End Behavior Maximum Minimum	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Multiply polynomials and divide one polynomial by another using long and synthetic division.	Synthetic Division Remainder Theorem	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve polynomial equations.	Sum of Cubes Difference of Cubes	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

Find the real zeros of polynomial functions and state the multiplicity of each	Multiplicity	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

Huron School District

Core Curriculum Guide   Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Rational Functions   Month(s): March
Content Standards:
 - 9-12.A.2.1.   • 9-12.A.2.2.   • 9-12.G.2.3A.
Essential Questions:
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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Simplify rational expressions, including complex fractions.	Rational Function Continuous Graph Discontinuous Graph Points of Discontinuity	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Multiply and divide rational expressions Add and subtract rational expressions.	Rational Expression Simplest Form Complex Fraction	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Solve a rational equation or inequality by using algebra, a table, or a graph. Solve problems by using a rational equation or inequality.	Rational Equation	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Unit Title: Radical Functions   Month(s): April

Content Standards:

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Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Simplify radical expressions.	Nth root Principal root Radicand index	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Add, subtract, multiply and divide radical expressions	Simplest Form of a Radical	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Rationalize a denominator.	Rationalize the denominator	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide

Grade Level: 9-12   Content Area: Algebra 2

Unit Title: Trigonometric Functions   Month(s): April/May

Content Standards:

- 9-12.G.1.2A.
- 9-12.G.1.3A.

- 9-12.M.1.1.
- 9-12.M.1.3.

- 9-12.M.1.1A.
- 9-12.M.1.2A.

Essential Questions:

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Skills Students Will Be Able To…	Essential Vocabulary	Assessment How will you know if students have learned?
Find the trigonometric functions of acute angles. Solve a right triangle by using trigonometric functions.	Sine Cosine Tangent	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Find coterminal and reference angles. Find the trigonometric function values of angles in standard position. Find exact values for trigonometric functions of special angles and their multiples.	Coterminal Reference Standard Position Terminal	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback
Find approximate values for trigonometric functions of any angle. Convert from degree measure to radian measure and vice versa.	Unit Circle Radian Measure Degree Measure	Quiz Daily Work DakotaStep Test (MC, FR, Vocabulary) Board Work Oral Feedback

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Core Curriculum Guide

Grade Level: 9-12   Content Area: Algebra 2

Essential Skills: **Algebra II**

<u>Linear Functions and Inequalities</u>

The student will:

1. Perform operations of linear functions and inequalities.
2. Perform operations of systems of linear functions and linear inequalities.
3. Apply operations of linear functions, inequalities and systems to real world situations.

<u>Quadratic and Radical Functions</u>

The student will:

1. Recognize, graph, rewrite, and describe different forms of a quadratic function.
2. Determine significant values in the graph of a quadratic function.
3. Simplify and solve radical expressions and functions.
4. Perform operations involving complex numbers.

<u>Polynomial and Rational Functions</u>

The student will:

1. Identify and simplify polynomial expressions.
2. Evaluate and solve polynomial functions.
3. Perform the operations of rational functions.

<u>Trigonometry</u>

The student will:

1. Recognize, manipulate and apply properties of basic trigonometric functions
2. Solve triangles