

**Michigan Center School District
Math Department Curriculum**

Updated October 21, 2014

Grade Level/Course: Algebra 1

Sequence of Units

Unit 1: Function Relationships

Power Strands

- F-IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.

Vocabulary/Key Concepts

1. function
2. domain and range
3. independent and dependent variables
4. function notation
5. patterns of change/recursion
6. relationships between variables

Unit: 2 Representing and Solving Linear Functions

Power Strands

- A.REI.B.3. Explain and solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- F-IF.B.4. Interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

Vocabulary/Key Concepts

1. linear functions
2. linear patterns
3. independent and dependent variables
4. domain and range
5. constant rate of change
6. slope
7. y-intercept
8. x-intercept
9. associative
10. commutative

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Unit: 3: Exponential Functions

Power Strands

- A.REI.A.2. Solve simple rational and radical equations in one variable.
- A-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- F-LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions.

Vocabulary/Key Concepts

1. compare and contrast exponential functions with linear functions
2. definitions and standard rules for exponents
3. exponential patterns - explicit form (i.e., $f(x) = a(b^x)$)
4. exponential patterns - recursive form
5. modeling exponential functions (key applications: scientific notation, half-life, compound interest)
6. multiple representations
7. multiplicative rate of change
8. patterns of change in exponential functions (growth and decay)

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Unit: 4: Quadratic Functions

Power Strands

- F-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- F-BF.A.1. Write a function that describes a relationship between two quantities.

Vocabulary/Key Concepts

1. compare and contrast quadratic functions with other function families
2. completing the square
3. factored (root) form $f(x) = a(x-p)(x-q)$
4. vertex
5. axis of symmetry
6. minimum
7. maximum
8. x-intercept(s)
9. y-intercept(s)
10. modeling quadratic functions (key applications: projectile motion and profit/loss business models)
11. multiple representations
12. patterns of change in quadratic functions: common second differences
13. quadratic formula
14. roots
15. standard (polynomial) form $f(x) = ax^2 + bx + c$
16. transformations of quadratic graphs based on changes of a, b, and c
17. vertex form $f(x) = a(x-h)^2 + k$
18. zeroes

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Unit: 5: Solving Quadratic Equations

Power Strands

- A-SSE.B.3a. Factor a quadratic expression to reveal the zeros of the function it defines.
- A-SSE.B.3b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

Vocabulary/Key Concepts

1. completing the square
2. key features of quadratics graphs: vertex, axis of symmetry, minimum, maximum
3. modeling quadratic functions (key applications: projectile motion, revenue and profit business models)
4. patterns of change in quadratic functions
5. quadratic formula
6. quadratic patterns - explicit forms (i.e., $f(x) = a(x - h)^2 + k$, $f(x) = a(x - p)(x - q)$, $f(x) = ax^2 + bx + c$)
7. roots
8. zeroes

Unit: 6 Power and Polynomial Functions

Power Strands

- A-APR.A. Perform arithmetic operations on polynomials.
- A-APR.B. Understand the relationship between zeros and factors of polynomials.

Vocabulary/Key Concepts

1. polynomial function
2. power function
3. patterns of change in polynomial functions
4. patterns of change in power functions
5. modeling polynomial functions with multiple representations
6. modeling power functions with multiple representations
7. compare and contrast polynomial and power functions with other function families
8. zeros
9. factors
10. intercepts
11. end behavior
12. leading coefficient

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Unit: 7 Bivariate Statistics

Power Strands


- S-ID.B.6. Represent data on two quantitative variables on a scatter plot and describe how the variables are related.
- S-ID.C. Fit a linear function for scatter plots that suggest a linear relationship between variables

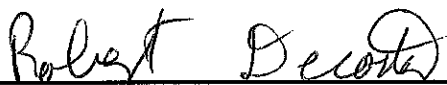
Vocabulary/Key Concepts

1. scatterplot
2. outlier
3. correlation (positive, negative, strong, weak, moderate)
4. causation
5. interpolation
6. extrapolation
7. correlation coefficient
8. line of best fit
9. least squares regression line
residual



Signature of Current Grade Level/Course Representative


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