

**Michigan Center School District  
Math Department Curriculum**

Updated October 21, 2014

**Power Standard**

- Most important skills defined within a grade level/course
- Expect proficiency (according to grade level ranges or 75%)

**Grade Level/Course** 8<sup>th</sup> Grade Intermediate Algebra

**Sequence of Units**

• **Unit 1 Representing & Making Sense of Linear Functions**

**1. Power Standards**

1. Interpret and compare unit rate from a graph, table, or equation.
  - 8.EE.B.5
2. Construct and analyze a function to model a linear relationship between two quantities.
  - 8.F.B.4.
3. Solve linear equations in one variable with one solution.
  - 8.EE.C.7, 8.EE.C.7a.
4. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
  - 8.F.A.1.

**2. Vocabulary/Key Concepts**

- |                                |  |
|--------------------------------|--|
| 1. constant of proportionality | 9. proportional relationship               |
| 2. direct variation            | 10. rate of change                         |
| 3. equivalence                 | 11. slope                                  |
| 4. function                    | 12. solutions (infinitely many, one, none) |
| 5. initial value               | 13. unit rate                              |
| 6. input/output                | 14. $x$ - and $y$ -intercept               |
| 7. like terms                  |  |
| 8. properties of equality      |  |

• **Unit 2 Bivariate Data**

1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns between two quantities.
  - 8.SP.A.1.
2. Construct and interpret two-way tables.
  - 8.SP.A.4

**3. Vocabulary/Key Concepts**

- |   |                                     |
|---|-------------------------------------|
| 1. scatter plot   | 6. two-way tables                   |
| 2. outlier  | 7. frequency                        |
| 3. cluster  | 8. relative frequency               |
| 4. line of best fit                                       | 9. categorical and measurement data |
| 5. correlation (positive, negative, weak, moderate, none) |                                     |

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• **Unit 3 Shapes of Number**

**4. Power Standards**

1. Understand and apply formulas to derive the Area and Volume of Cylinders, Cones, and Spheres
  - 8.G.C.9
2. Use square root and cube root symbols to find and represent solutions to equations.
  - 8.EE.A.2
3. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles.
  - 8.G.B.7.

**2. Vocabulary/Key Concepts**

- |                                    |   |
|------------------------------------|---|
| 1. converse of Pythagorean theorem | 7. Real Numbers-counting numbers, whole numbers, integers, rational numbers, and irrational numbers |
| 2. square roots/cube roots         | 8. volumes  |
| 3. distance between two points     | 9. cones  |
| 4. Pythagorean Theorem             | 10. cylinders   |
| 5. terminating decimals            | 11. spheres   |
| 6. repeating decimals              |   |

• **Unit 4 Introduction to Nonlinear Exponential Patterns**

**3. Power Standards**

1. Know and apply the properties of integer exponents to generate equivalent numerical expressions
  - EE.A.1.
2. Describe qualitatively the functional relationship between two quantities by analyzing a graph that is linear or nonlinear
  - 8.F.B.5

**4. Vocabulary/Key Concepts**

- |                          |                                      |
|--------------------------|--------------------------------------|
| 1. functions             | 5. operations with integer exponents |
| 2. exponential change    | 6. scientific notation               |
| 3. exponential notation  |                                      |
| 4. linear and non-linear |                                      |

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• **Unit 5 Transformational Geometry**

**5. Power Standards**

1. Master the properties of rotations, reflections, translations, and dilation.
  - 8.G.A.1

**6. Vocabulary/Key Concepts**

- |                         |                          |
|-------------------------|--------------------------|
| 1. angle(s) of rotation | 9. magnitude of dilation |
| 2. center of dilation   | 10. reflection           |
| 3. center of rotation   | 11. rotation             |
| 4. congruence           | 12. scale factor         |
| 5. dilation             | 13. similarity           |
| 6. image/pre-image      | 14. transformation       |
| 7. line of reflection   | 15. translation          |
| 8. lines of dilation    |                          |

• **Unit 6 Linear Systems**

**7. Power Standards**

1. Solve systems of two linear equations in two variables algebraically (by substitution) and estimate solutions by graphing the equations.
  - 8.EE.C.8b.
4. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs.
  - 8.EE.C.8a

**2. Vocabulary/Key Concepts**

- |  |                           |
|--|---------------------------|
| 1. number of solutions as seen in multiple representations | 4. solved by graphing     |
| 2. point of intersection                                   | 5. solved by substitution |
| 3. solved by combining equations                           | 6. system of equations    |

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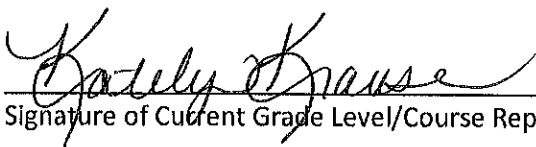
• **Unit 7 Introduction to Nonlinear Quadratic Patterns**

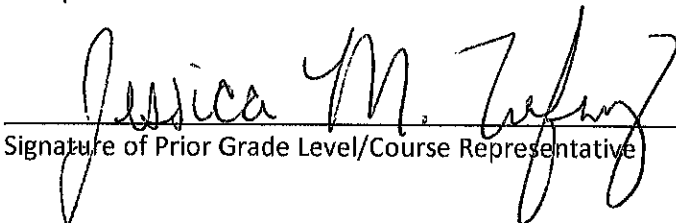
**3. Power Standards**

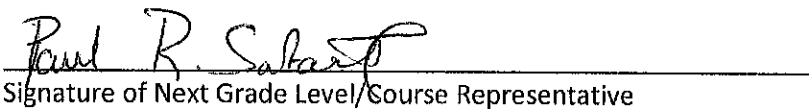
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
  - 8.F.B.5

**4. Vocabulary/Key Concepts**

- |   |                     |
|---|---------------------|
| 1. modeling quadratic functions with multiple representations | 4. vertex           |
| 2. polynomial with degree 2                                   | 5. axis of symmetry |
| 3. common second differences                                  | 6. minimum          |
|   | 7. maximum          |
|   | 8. x-intercept(s)   |
|   | 9. y-intercept      |

  
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Signature of Current Grade Level/Course Representative

  
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Signature of Prior Grade Level/Course Representative

  
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Signature of Next Grade Level/Course Representative

**Middle School Goals**

“Power Strands/Clusters”

- Integers (Mult, Div, Add, Sub)
- Solve Equations
- Linear Functions – Any Representation
- Proportions