**Moon Area School District Curriculum Map**

**Course: Algebra 2**
**Grade Level: 9-12**
**Content Area: Math**
**Frequency:** Full-Year Course

**Primary Resource(s) & Technology:**
McDougal Littell Algebra 2, IXL online software,
Microsoft Teams, Promethean Boards, Student Laptops/iPads

**Pennsylvania and/or focus standards referenced at:**
www.pdesas.org
www.education.pa.gov

| Big Ideas/EQs | Focus Standard(s) | Assessed Competencies (Key content and skills) | Timeline |
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| How does solving a linear equation differ from simplifying a linear expression?<br><br>How can rewriting formulas help you?<br><br>What is the relationship between a verbal model and an algebraic model?<br><br>How does solving linear inequalities compare with solving linear equations?<br><br>How are absolute value models used in manufacturing? | 2.5.11.A (Introduced)<br><br>2.5.11.B (Introduced)<br><br>2.8.11.D (Introduced)<br><br>2.8.11.F (Introduced)<br><br>2.8.11.N (Introduced) | • Solving linear equations. ropriate mathematical concepts an<br>mathematics and apply them to solving non-routine a<br>Rewriting equations and<br>formulas. symbols, mathematical terminology, standard not<br>and other types of mathematical representations to c<br>Problem solving using cedures, generalizations, ideas and resu<br>algebraic models.<br>Formulate expressions, equations, inequalities, systen<br>Solving linear inequalities. rices to model routine and non-ro<br><br>Solving absolute value systems of equations and inequalitie<br>equations and inequalities.<br>Solve linear, quadratic and exponential equations both | August - September |
| When is a relation a function?<br><br>How do the graphs of discrete and continuous functions differ? | 2.1.11.A (Introduced)<br><br>2.4.11.E (Introduced) | • Functions and their graphs. opposite, reciprocal, absolute va<br>finding logarithms)<br>Slope and rate of change.<br>Demonstrate mathematical solutions to problems (e.g<br>Quick graphs of linear equations.<br><br>Writing equations of lines. | September |

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| How can you tell from a line's graph if it has a positive, negative, or zero slope?<br><br>What is an advantage of graphing a line using the slope-intercept form?<br><br>How do you graph a linear equation?<br><br>How do you write the equation of a line?<br><br>How is direct variation used in real-life?<br><br>What is a constant of variation and how is it related to slope? | 2.5.11.B (Introduced)<br><br>2.5.11.C (Introduced)<br><br>2.8.11.J (Introduced)<br><br>2.8.11.L (Introduced)<br><br>2.8.11.Q (Introduced)<br><br>2.8.11.R (Introduced)<br><br>2.8.11.S (Introduced) | Use symbols, mathematical terminology, standard not and other types of mathematical representations to c concepts, procedures, generalizations, ideas and resu<br><br>Present mathematical procedures and results clearly, correctly.<br><br>Demonstrate the connection between algebraic equat geometry of relations in the coordinate plane.<br><br>Write the equation of a line when given the graph of slope of the line and a point on the line.<br><br>Represent functional relationships in tables, charts an<br><br>Create and interpret functional models.<br><br>Analyze properties and relationships of functions (e.g. trigonometric, exponential, logarithmic). | |
| How do you use a graph to determine how many solutions there are for a system of linear equations?<br><br>When using the linear combination method for solving a linear system, why would you want to have the coefficients of one of the variables be opposites?<br><br>What is the procedure used to graph a system of linear inequalities?<br><br>What is real-life situation that you can use functions of two variables to model?<br><br>How do you solve a | 2.5.11.C (Introduced)<br><br>2.8.11.D (Introduced)<br><br>2.8.11.F (Introduced)<br><br>2.8.11.G (Introduced)<br><br>2.8.11.J (Introduced)<br><br>2.8.11.Q (Introduced) | • Solving linear systems by graphing.<br><br>Solving linear systemsssions, equations, inequalities, system algebraically.ities and matrices to model routine and non-ro<br><br>Graphing and solving systems of linear inequalities.<br>Analyze and explain systems of equations, systems of Solving systems of linear equations in three variables.<br>geometry of relations in the coordinate plane.<br>Matrix addition, subtraction and scalar multiplication.<br><br>Muiliplying matrices.<br><br>Cramer's Rule<br><br>Solve equations by using inverse matrices | October |

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| system of linear equations in 3 variables?<br><br>Explain how to add, subtract and use scalar multiplication for matrices.<br><br>How do you find each element in the product of two matrices?<br><br>How do you solve a system of equations using Cramer's Rule?<br><br>Why would you want to find the inverse of a matrix? | | | |
| How are the values of a, b and c in a quadratic equation related to the graph of a quadratic function?<br><br>How can you use a quadratic function in real life?<br><br>What must be true about a quadratic function before you solve it?<br><br>To graph a quadratic function, what are the advantages in having it written in vertex form or intercept form?<br><br>How can factoring be used to solve quadratic equation when a=1 and a is not | 2.1.11.A (Introduced)<br><br>2.5.11.A (Introduced)<br><br>2.5.11.C (Introduced)<br><br>2.5.11.D (Introduced)<br><br>2.8.11.G (Introduced)<br><br>2.8.11.J (Introduced)<br><br>2.8.11.N (Introduced)<br><br>2.8.11.Q (Introduced)<br><br>2.8.11.S (Introduced) | • Graphing quadratic functions in standard form<br>Select and use appropriate mathematical concepts an<br>Graphing quadratic functions in vertex or intercept form<br>Present mathematical procedures and results clearly,<br>Solving a quadratic equations by factoring<br>Conclude a solution process with a summary of result<br>Solving quadratic equation by finding square roots<br>Operations with complex numbers<br>Demonstrate the connection between algebraic equat<br>Completing the square<br>Solve linear, quadratic and exponential equations both<br>Quadratic formula and the discriminant<br>Graphing and solving quadratic inequalities | November<br>opposite, reciprocal, absolute va<br>arithmetic).<br>them to solving non-routine a<br>esent an acceptable response<br>alid.<br>n systems of equations, systems of<br>geometry of relations in the coordinate plane.<br>ent functional relationships in tables, charts an<br>ies and relationships of functions (e.g.<br>xponential, logarithmic) |

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| equal to 1?<br><br>How can you use square roots to solve a quadratic equation?<br><br>What is the procedure for each of the four basic operations on complex numbers?<br><br>How can completing the square be used to find the maximum values of a function?<br><br>How are the discriminant and the graph of a quadratic equation related?<br><br>How do you solve quadratic inequalities in one variable?<br><br>If you know 3 points on the graph of a quadratic function, how can you find an equation for the function? | | Write quadratic functions and models | |
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