Moon Area School District Curriculum Map

Course: Algebra One Quadratics
Grade Level: 9, 10
Content Area: Mathematics
Frequency: Full-Year Course

Big Ideas

1. Learn methods of solving a linear system, including graphing, substitution, and elimination.
2. Learn the properties of exponents.
3. Categorize polynomials by their degree and number of terms and perform operations with polynomials.
4. Examine quadratic equations and their graphs.
5. Solve quadratic equations by various techniques such as factoring and applying the quadratic formula.
6. Review the topics of both Algebra One Linear and Algebra One Quadratics to review for the Algebra One Keystone Exam.

Essential Questions

7. What can we do with a system of equations/inequalities that we cannot do with a single equation/inequality?
8. Why do we need to use exponential notation to model situations?
9. How does the graph of a quadratic function relate to its algebraic equation?
10. How can we identify the type of polynomial for it to be factored?
11. Why should we factor?

Primary Resource(s) & Technology:

Algebra One Textbook, IXL online software
Microsoft Teams, Promethean Boards, Student Laptops/iPads

Pennsylvania and/or focus standards referenced at:
www.pdesas.org

Unit 3: Systems of Linear Equations and Inequalities

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
1, 7	CC.2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method. CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.	• Solve a system of linear equations by graphing • Use substitution to solve a linear system. • Use linear combination to solve a system of linear equations. • Choose a method to solve a system of linear equations. • Identify linear systems as having one solution, no solution, or infinitely many solutions. • Graph a linear inequality in two variables. • Solve a system of linear inequalities by graphing.	August – October

Unit 4: Exponents and Scientific Notation

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
2, 8	CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents. CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real-world or mathematical problems. CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.	• Use properties of exponents to multiply exponential expressions. • Evaluate powers that have zero and negative exponents • Use division properties of exponents to evaluate powers and simplify expressions. • Use scientific notation to represent numbers.	October - November

Unit 5: Polynomials

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
3, 5, 10, 11	CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context. CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials. CC.2.2.HS.D.5 Use polynomial identities to solve problems. CC.2.2.HS.D.6 Extend the knowledge of rational functions to rewrite in equivalent forms.	• Add and subtract polynomials • Multiply polynomials and special product of polynomials. • Find the GCF and LCM of polynomials. • Factor polynomials (common monomials) • Factor polynomials ax^2 + bx + c	November - January

Unit 6: Quadratic Equations and Functions

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
4, 5, 9	CC.2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents	• Evaluate and approximate square roots. • Square roots and cube roots. • Use the properties of radicals to simplify radicals. • Sketch the graph of a quadratic equation graphically. • Use the quadratic formula to solve a quadratic equation.	February - March

Unit 7: Review for Algebra One Keystone

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
6	All Algebra One Standards	• Review is based on results from CDT data and varies each year according to the data.	March - May