Course: Algebra 1 **Unit #/ Unit Name:** Unit #5 Polynomials	**Year of Implementation: 2019-2020**

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Stage One - Desired Results

Link(s) to New Jersey Student Learning Standards for this course:
https://www.state.nj.us/education/cccs/2016/math/standards.pdf

Unit Standards:

The Real Number System N-RN: 3

- Use properties of rational and irrational numbers

Quantities N-Q: 1, 2, 3

- Reason quantitatively and use units to solve problems

Seeing Structure in Expressions A-SSE: 1, 3a

- Interpret the structure of expressions
- Write expressions in equivalent form to solve problems

Arithmetic with Polynomials and Rational Expressions A-APR: 1

- Perform arithmetic operations on polynomials

21st Century Themes

(www.21stcenturyskills.org)
_x_Global Awareness
_x_Financial, Economic, Business and Entrepreneurial Literacy
___Civic Literacy
___Health Literacy
___Environmental Literacy

Learning and Innovation Skills:
_x_Creativity and Innovation
_x_Critical Thinking and Problem Solving
_x_Communication and Collaboration

Information, Media and Technology Skills:
_x_Information Literacy
_x_Media Literacy
_x_ICT (Information, Communications and Technology) Literacy

Life and Career Skills:
_x_Flexibility and Adaptability
_x_Productivity and Accountability
_x_Initiative and Self-Direction
___Social and Cross-Cultural Skills

Transfer Goal(s): *Students will be able to independently use their learning to* construct valid conclusions and effectively communicate those conclusions.

Enduring Understandings	*Essential Questions*
Students will understand that. . . EU1	EU1 • How do I use algebraic equations to analyze or solve problem?

● Real world situations can be represented symbolically and graphically EU2 ● Sometimes the correct mathematical answer is not the best solution to real-world scenarios.	EU2 ● How do I know when a result is reasonable?
Knowledge Students will know. . . EU1 ● Real world situations can be graphed and interpreted using an algebraic model. EU2 ● Whether a solution is a viable answer	*Skills* Students will be able to. . . EU1 ● Write algebraic equations that model real world situations EU2 ● Factor polynomial expressions ● Solve quadratic equations by factoring

Stage Two - Assessment

Other Evidence:

- Tests on operations with polynomials with applications, and factoring polynomials
- Quizzes on operations (add, subtract, multiply, divide) with polynomials, applications with polynomials, simple factoring, complex factoring, all factoring combinations
- Assessed elements from Recommended Performance Tasks
- Other teacher-graded evaluations
- Presentations of student research

- Cumulative Benchmark Assessment at end of marking period.

Stage Three - Instruction

Learning Plan: **Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer.**

Activities:

- Applications with multiplying polynomials to find the area of rectangles (T – EU1)
  http://education.ti.com/calculators/timathnspired/US/Activities/Detail?sa=5022&t=5035&id=12433
- **Design a Library (Google Drive)** (T – EU1, EU2)
- Wonka's Golden Ticket (T – EU1, EU2, EU3)
  http://www.cpalms.org/Public/PreviewResourceLesson/Preview/47832

Critical Vocabulary: *The following terms should be utilized…*

-Exponent
-Quadratic
-Leading Coefficient
Scientific Notation
-Binomial
-Monomial Factoring
-Classifying
-Perfect Square
-Linear
-Coefficient
-Negative Exponent
-Monomial
-Greatest Common Factor (GCF)
-Polynomial
-Factoring of a Trinomial
-Negative Exponent
-Base
-Cubic
-Terms
-Standard
-Trinomial
-Difference of 2 Squares
-Degree

The following is the suggested sequence of learning activities for the Algebra I ACC class. Adjustments should be made accordingly for other levels.

- Classify polynomials (number of terms and degree)
- Add and subtract polynomials
- Use exponent rules to simplify polynomial expressions
- Multiply polynomials (distribute, binomial x binomial, square a binomial, binomial x trinomial)
- Factor polynomials
  - Greatest common factor
  - Difference of two squares

- Factor $x^2 + bx + c$
- Factor $ax^2 + bx + c$
- Perfect square trinomials

- Solve quadratic equations by factoring