Unit 2: Polynomials And Factoring

Content Area: **Mathematics**
Course(s): **Algebra 8**
Time Period: **October**
Length: **4 weeks**
Status: **Published**

Transfer

Big Idea: Polynomials & Factoring

Essential Questions

In what scenarios can polynomial and rational functions be used to model real-life processes?

How are the properties of real numbers related to polynomials?

Enduring Understandings

You can represent algebraic expressions in many ways. When you add, subtract, multiply, divide and factor polynomials, you replace one expression with an equivalent expression.

The properties of real numbers are the basis of the laws of algebra. You can apply properties of real numbers, such as the Distributive Property, to polynomials

Standards in Mathematics

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.N-RN.A	Extend the properties of exponents to rational exponents.
MA.A-SSE.A	Interpret the structure of expressions
MA.N-RN.A.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
MA.K-12.2	Reason abstractly and quantitatively.
MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.

MA.A-SSE.A.1b	Interpret complicated expressions by viewing one or more of their parts as a single entity.
MA.K-12.4	Model with mathematics.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.A-APR.A.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.
MA.8.G.C	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
MA.8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Critical Knowledge and Skills

Vocabulary

Vocabulary

Binomial, Degree of a Monomial, Degree of a Polynomial, Difference of Two Squares, Exponent, Factoring by Grouping, Monomial, Perfect-Square Trinomial, Polynomial, Standard Form of a Polynomial, Trinomial

Learning Objectives

Classify, add, and subtract polynomials (A.APR.1)

Multiply powers with the same base (N.RN.1)

Multiply a monomial by a polynomial (A.APR.1)

Factor a monomial from a polynomial (A.SSE.1.b)

Multiply two binomials or a binomial by a trinomial (A.APR.1)

Apply polynomials to area, surface area, and volume, including cylinders, cones, and spheres (8.G.9)

Find the square of a binomial and to find the product of a sum and difference (A.APR.1)

Factor trinomials of the form $x^2 + bx + c$ (A.SSE.1.a)

Factor trinomials of the form $ax^2 + bx + c$ (A.SSE.1.a)

Factor perfect square trinomials and the differences of two squares (A.SSE.1.a)

Factor higher-degree polynomials by grouping (A.SSE.1.a)

Resources

Illuminations Distributing & Factoring Using Area

TED Ed: Locker Riddle

Factoring Math Game

Khan Academy: Polynomials

Khan Academy: Factorization