Unit 11: Polynomials and Factoring
Algebra 1 Honors

13 Class Meetings

Revised May 2025

Essential Questions

- How are the properties of real numbers related to polynomials?
- How can polynomials be simplified and applied to solve problems?

Enduring Understandings with Unit Goals

EU 1: Properties of real numbers apply to polynomials.
- Combine polynomials by adding, subtracting, and multiplying.

EU 2: Factoring is the inverse of multiplying polynomials.
- Factor polynomials with monomials.
- Factor polynomials as the product of two binomials

Standards

Common Core State Standards/College and Career Readiness Anchor Standards :

- **HS.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.
- **HS.A.SSE.A.1.A:** Interpret parts of an expression, such as terms, factors, and coefficients.
- **HS.A.SSE.B.3.A:** Factor a quadratic expression to reveal the zeros of the function it defines.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.
Competency 2: Speak to diverse audiences in an accountable manner.
Competency 3: Develop the behaviors needed to interact and contribute with others on a team.
Competency 4: Analyze and solve problems independently and collaboratively.
Competency 5: Be responsible, creative, and empathetic members of the community.

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Unit Content Overview

1. **Adding and Subtracting**
   - Find the Degree of a Monomial and Polynomial
   - Add and Subtracting Monomials
   - Add and Subtract Polynomials

2. **Multiplying Polynomials**
   - Multiply a Monomial and a Polynomial
   - Use the Distributive Property
   - Use the FOIL method to multiply two binomials
   - Multiply a Trinomial and a Binomial

3. **Factoring Out a GCF**
   - Find a Greatest Common Factor
   - Factor Out a Monomial

4. **Factoring $ax^2 + bx + c$**
   - Factor a quadratic expression where b > 0, c > 0
   - Factor a quadratic expression where b < 0, c > 0
   - Factor a quadratic expression where c < 0
   - Factor a quadratic expression where a =1, and a ≠ 1

Interdisciplinary Connection:

- Language Arts- Accountable Talk, Word Problems

Daily Learning Objectives with *TWPS Activities*

Students will be able to…

- Classify a polynomial and add and subtract polynomials by utilizing properties of real numbers
  - *TWPS – How can you use prefixes to differentiate between monomials, binomials, and trinomials?*
- Distribute a monomial to a polynomial and simplify the resulting expression
  - *TWPS – What is the difference between multiplying numbers and multiplying algebraic terms?*
- Multiply two binomials using the FOIL method
  - *TWPS – Which of the products does not belong with the rest?*
- Find special products of polynomials by utilizing patterns
  - *TWPS – What is the error the student made multiplying the polynomials? Explain.*
- Identify and factor the greatest common factor out of a polynomial
  - *TWPS – What does GCF stand for? Explain how you can find the GCF of the following algebraic expression.*
- Factor trinomials using the AC method**

- *TWPS – Try factoring the following expression using the AC method. Does this method work for all polynomials? Why or why not?*
- *TWPS – What type of polynomials can be factored? Are there any polynomials that are not factorable? Explain.*

- Factor Special Case Trinomials
  - *TWPS – How do special cases of factoring save you time?*
- Solve polynomial equations using the Zero Product Property
  - *TWPS – Why does the Zero Product Property allow us to set each factor equal to zero and solve?*

Instructional Strategies/Differentiated Instruction

- Whole-group instruction
- Creating authentic connections for students
- Rephrasing and restatement of information and concepts
- Guided notes
- Student-led instruction
- Small group instruction
- Independent problem-solving
- Collaborative problem-solving
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Manipulatives
- Cumulative Homework

EL DIFFERENTIATED INSTRUCTION:

- Word Walls with visuals
- TWPS (Think, Write, Pair, Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments

Assessments

FORMATIVE ASSESSMENTS:

- Accountable Talk Discussions
- Daily Think-Write-Pair Share (TWPS)
- Daily Do Now
- Whiteboards
- Mid-class check-ins

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- Exit Slips
- Student-led instruction
- Cumulative Homework
- Performance Task IAB – Baseball Tickets
    - Summative Performance Task Assessment Rubric

SUMMATIVE ASSESSMENTS:

- Unit 11A Quiz (EU 1)
- Unit 11B Quiz (EU 2)
- Unit 11 Test (EU 1, EU 2)
- IAB (Performance Task) – Baseball Tickets

Unit Task

Unit Task Name: Baseball Tickets

Description: In this IAB Performance Task, students are given a scenario involving season tickets and single tickets for three different locations to a baseball game. Students must write and solve a system of inequalities to determine which scenario is the best option for attendees. Based on attending a set number of games, students will write a formal recommendation explaining which ticket option is best for each of the three locations.

Evaluation: Summative Performance Task Assessment Rubric

Unit Resources

- Worksheets
- Calculator
- Laptops
- SBAC Prep Online
- Kahn Academy
- Quizizz
- Gimkit
- Online resources
- Pear Assessment