Algebra I – Unit 6: Factoring Quadratics and Simplifying Rational Expressions

Phoenixville Area School District

Stage 1 Desired Results

PA Core Standards:

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.

CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples.

Keystone Assessment Anchors:

A1.1.1.2 Apply number theory concepts to show relationships between real numbers in problem solving settings.

A1.1.1.5 Simplify expressions involving polynomials.

Transfer

TRANSFER GOALS

Students will be able to independently use their learning to…

- *Fluency:* Demonstrate automatic recall of addition, subtraction, multiplication, and division of rational numbers.
- *Problem-Solving:* Persistently apply various problem-solving strategies and organized approaches to accurately understand and solve problems and provide evidence to support response.
- *Reasoning:* Demonstrate mathematical resilience and conceptual understanding through the use of vocabulary, written expression, graphical representation, and alternate strategies.

Meaning

UNDERSTANDINGS

Students will understand that…

- Mathematicians flexibly use symbols, numbers, words, and visual representations while maintaining the integrity of the relationship between quantities.
- Mathematicians think about reasonableness throughout the problem-solving process.
- Algebraic rules and properties determine how expressions are simplified and how equations are solved.

ESSENTIAL QUESTIONS

Students will keep considering...

- What counts as an adequate solution? Does my answer make sense?
- Does my abstract representation of these quantities make sense in context?
- What does this quantity/number/ expression/value mean? What are the ways to represent it? Is there a best way?

	Knowledge and Skills Acquisition	
	KNOWLEDGE *Students will know…* • How to find the CGF and LCM of monomials • How to factor and solve quadratic trinomials when a = 1 • How to simplify, multiply, divide, add, and subtract rational expressions VOCABULARY • Greatest Common Factor • Least Common Multiple • Factoring • Zero Product Property • Rational Expression	SKILLS *Students will be skilled at…* • Finding and using the GCF and LCM of monomials with the use of a calculator on multiple choice and open-ended response questions. • Factoring and solving polynomials using a variety of methods through class discussions, multiple choice, open-ended response, and constructed response items. • Simplifying/reducing, multiplying, dividing, adding and subtracting rational expressions through multiple choice and constructed response questions.

Stage 2 – Evidence

Code A/M/T	Evaluative Criteria	Assessment Evidence	
Acquisition Meaning Making Transfer	Valid conclusions are made based on given/ implied/ found information. Chooses effective strategy/strategies for solving the problem. Proves the approach was valid and solution correct through examples/counterexamples. Related mathematics is presented in a step – by – step format *(final submission only)*.	PERFORMANCE TASK(S) *Students will demonstrate understanding (meaning making and transfer) through complex performance by...* **System of Equation and Polynomial Operation Activity** http://www.insidemathematics.org/assets/common-core-math-tasks/number%20towers.pdf	Differentiation Considerations:
Acquisition Meaning Making	Chooses effective strategy/strategies for solving the problem.	OTHER EVIDENCE **Unit Test: 8.5, 8.6, 8.8, 8.9, 11.2, 11.3**	Differentiation Considerations:

Transfer	All necessary work is shown with no missing information/skipped steps. Solution is clearly identified; appropriate units are provided *(if applicable)*.	• Multiple Choice • Open Response • Constructed Response Prompts	