

Algebra II – Unit 7: Rational Equations and Functions

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.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. 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.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. CC.2.2.HS.D.9 Use reasoning to solve	Transfer	
	TRANSFER GOALS <i>Students will be able to independently use their learning to...</i> <ul style="list-style-type: none"> • Number Sense: Develop a sound foundation to demonstrate the value of numbers by describing their various representations, relationships, and patterns. • 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 <i>Students will understand that...</i> <ul style="list-style-type: none"> • Mathematical ideas interconnect and build on one another to produce a coherent whole. • Mathematicians require perseverance and resilience when creating solutions. • Mathematicians think about reasonableness throughout the problem-solving process • Tools and strategies are strategically selected and used to solve particular applications. • 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. 	ESSENTIAL QUESTIONS <i>Students will keep considering...</i> <ul style="list-style-type: none"> • What counts as an adequate solution? Does my answer make sense? • What tools should I use here to be most efficient and effective? • Have I represented the relationships between the quantities appropriately? • Have I sufficiently supported my answer and shown my work? • How do figures/quantities/numbers/operations relate to one another? • What does this quantity/number/ expression/value mean? What are the ways to represent it? Is there a best way?

<p>equations and justify the solution method.</p> <p>CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations.</p> <p>CC.2.2.HS.C.4 Interpret the effects transformations have on functions.</p> <p>CC.2.2.HS.C.6 Interpret functions in terms of the situations they model.</p>	<table border="1"> <thead> <tr> <th colspan="2">Knowledge and Skills Acquisition</th></tr> </thead> <tbody> <tr> <td data-bbox="527 228 1213 597"> <p>KNOWLEDGE <i>Students will know...</i></p> <ul style="list-style-type: none"> • How to write and solve direct, inverse, and joint variation problems and interpret their solutions in a real-world context • How to write, graph, and analyze rational functions • How to simplify, add, subtract, multiply, and divide rational expressions • How to solve rational equations </td><td data-bbox="1213 228 1890 704"> <p>SKILLS <i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • Writing and solving direct, inverse, and joint variation equations through matching and open response questions • Writing, graphing, and analyzing rational functions through multiple choice, matching, open response, and constructed response questions • Simplifying, adding, subtracting, multiplying, and dividing rational expressions through open response problems • Solving rational equations through open response problems </td></tr> <tr> <td data-bbox="527 605 1213 781"> <p>VOCABULARY</p> <ul style="list-style-type: none"> • Direct Variation/Inverse Variation • Hyperbola/Rational Function • Slant Asymptote • Complex Fraction </td><td></td></tr> </tbody> </table>	Knowledge and Skills Acquisition		<p>KNOWLEDGE <i>Students will know...</i></p> <ul style="list-style-type: none"> • How to write and solve direct, inverse, and joint variation problems and interpret their solutions in a real-world context • How to write, graph, and analyze rational functions • How to simplify, add, subtract, multiply, and divide rational expressions • How to solve rational equations 	<p>SKILLS <i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • Writing and solving direct, inverse, and joint variation equations through matching and open response questions • Writing, graphing, and analyzing rational functions through multiple choice, matching, open response, and constructed response questions • Simplifying, adding, subtracting, multiplying, and dividing rational expressions through open response problems • Solving rational equations through open response problems 	<p>VOCABULARY</p> <ul style="list-style-type: none"> • Direct Variation/Inverse Variation • Hyperbola/Rational Function • Slant Asymptote • Complex Fraction 	
Knowledge and Skills Acquisition							
<p>KNOWLEDGE <i>Students will know...</i></p> <ul style="list-style-type: none"> • How to write and solve direct, inverse, and joint variation problems and interpret their solutions in a real-world context • How to write, graph, and analyze rational functions • How to simplify, add, subtract, multiply, and divide rational expressions • How to solve rational equations 	<p>SKILLS <i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • Writing and solving direct, inverse, and joint variation equations through matching and open response questions • Writing, graphing, and analyzing rational functions through multiple choice, matching, open response, and constructed response questions • Simplifying, adding, subtracting, multiplying, and dividing rational expressions through open response problems • Solving rational equations through open response problems 						
<p>VOCABULARY</p> <ul style="list-style-type: none"> • Direct Variation/Inverse Variation • Hyperbola/Rational Function • Slant Asymptote • Complex Fraction 							

Stage 2 – Evidence

Code A/M/T	Evaluative Criteria	Assessment Evidence	
<p>A/M/T</p> <p>Acquisition</p> <p>Meaning Making</p> <p>Transfer</p>	<p><i>What criteria will be used in each assessment to evaluate attainment of the desired results?</i></p>	<p>PERFORMANCE TASK(S)</p> <p><i>Students will demonstrate understanding (meaning making and transfer) through complex performance by...</i></p> <p>[Performance Assessment Title] [Performance Assessment Description]</p> <ul style="list-style-type: none"> • <i>Goal:</i> Your task is to... • <i>Role/Audience:</i> You are a... • <i>Situation/Product:</i> You will... • <i>Success Criteria:</i> Your [product] must include... 	<p>Differentiation Considerations:</p>
<p>A/M/T</p> <p>Acquisition</p> <p>Meaning Making</p> <p>Transfer</p>	<p><i>What criteria will be used in each assessment to evaluate attainment of the desired results?</i></p>	<p>OTHER EVIDENCE</p> <p>[Unit Test]</p> <ul style="list-style-type: none"> • [Multiple Choice] • [True/False] • [Matching] • [Constructed Response Prompts:] 	<p>Differentiation Considerations:</p>