

Pre-Algebra – Unit 2: Rational Numbers

Phoenixville Area School District

| Stage 1 Desired Results | | |
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| <p>PA Core Standards: M07.A-N.1.1 Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>M06.A-N.3.2 Understand ordering and absolute value of rational numbers. (6th)</p> <p>PSSA Assessment Anchors: M07.A-N.1 Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.</p> | <i>Transfer</i> | |
| | <p>TRANSFER GOALS <i>Students will be able to independently use their learning to...</i></p> <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. | |
| | <i>Meaning</i> | |
| | <p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • The most appropriate way to solve a problem or represent a quantity depends on the situation, calculations may be done using; mental math or paper and pencil calculations using a variety of mathematically sound algorithms. • 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. • Expressions are simplified using a predetermined order of operations. | <p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> • What is the question asking? How do I get there? • When is it appropriate to use estimation? What would be a reasonable answer? • 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? |

| Knowledge and Skills Acquisition | | | |
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| | | <p>KNOWLEDGE <i>Students will know...</i></p> <ul style="list-style-type: none"> • Adding & Subtracting Integers • Multiplying & Dividing Integers • Adding & Subtracting Fractions • Multiplying & Dividing Fractions • Graphing in four quadrants on a coordinate plane. <p>VOCABULARY</p> <ul style="list-style-type: none"> • Absolute Value (6th Grade) • Integer • Rational Number • Sum • Difference • Product • Quotient | <p>SKILLS <i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • Applying properties of operations to add and subtract rational numbers, including real-world contexts to solve real world problems. • Representing addition and subtraction on a horizontal or vertical number line to understand the concept. • Applying properties of operations to multiply and divide rational numbers, including real-world contexts to solve real world problems. • Demonstrating that the decimal form of a rational number terminates or eventually repeats to understand the difference between rational and irrational numbers. • Interpreting the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation. (6th) |
| 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) <i>Students will demonstrate understanding (meaning making and transfer) through complex performance by...</i></p> <p>Temperature Change This task requires the application of absolute value and familiarity of positive and negative numbers in context.</p> <ul style="list-style-type: none"> • Goal: Your task is to calculate the temperature change. | |
| | | <p>Differentiation Considerations:</p> | |

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| | | <ul style="list-style-type: none"> • Role/Audience: You are a meteorologist preparing for a newscast on the weather changes. • Situation/Product: Calculations can be explained using absolute value and/or number lines. • Success Criteria: Matching a given calculation with a situation and explaining the reasoning would be the solution. <p>Number Line Game This task requires higher order thinking skills since the students would be creating a game using positive and negative numbers.</p> <ul style="list-style-type: none"> • Goal: Your task is to invent a game given a number line. • Role/Audience: You are a mathematician designing a game to reinforce the concepts of positive and negative numbers for your classmates. • Situation/Product: The game needs a purpose and format. • Success Criteria: The game could be played in its entirety. | |
| A & M | <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: Rational Numbers</p> <ul style="list-style-type: none"> • 3 Multiple Choice • 6 Short Answer • How are whole numbers, integers, and rational numbers related? Use a diagram to explain. • Describe the difference between a terminating and repeating decimal using at least two examples. • Could a number ever have a negative absolute value? Why or why not? <p>Formative Assessments</p> <ul style="list-style-type: none"> • Warm up Activities • Quiz • Exit Tickets | <p>Differentiation Considerations:</p> |