

Algebra I – Unit 4: Systems of Linear Equations and Inequalities

Phoenixville Area School District

Stage 1 Desired Results		
<p>PA Core Standards: CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <p>CC.2.2.HS.D.10 Represent, solve, and interpret systems of equations/inequalities algebraically and graphically.</p> <p>Keystone Assessment Anchors: A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.</p> <p>A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.</p>	Transfer	
	<p>TRANSFER GOALS <i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> • <i>Number Sense:</i> Develop a sound foundation to demonstrate the value of numbers by describing their various representations, relationships, and patterns. • <i>Problem-Solving:</i> Persistently apply various problem-solving strategies and organized approaches to accurately understand and solve problems and provide evidence to support response. • <i>Reasoning:</i> Demonstrate mathematical resilience and conceptual understanding through the use of vocabulary, written expression, graphical representation, and alternate strategies. 	
	Meaning	
	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • Variables represent the unknown so that mathematicians can generalize a pattern rather than being limited to looking at specific values. • Algebraic expressions, equations, inequalities, and functions (linear, absolute value, quadratic, polynomial, exponential, and logarithmic) are used to model relationships between quantities in real-world situations. • 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. 	<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? • How do I create an equation/representation that describes the problem situation? How do I know if I got it right? Is one representation more appropriate than another?

Knowledge and Skills Acquisition

KNOWLEDGE

Students will know...

- How to solve a system of equations and understand the meaning of the solution
- How to write, solve, and interpret systems that represent real world scenarios
- How to graph a system of inequalities and determine a solution in the feasible region

VOCABULARY

- System of Equations
- Substitution
- Elimination/Linear Combination
- Constraint
- Feasible Region

SKILLS

Students will be skilled at...

- Solving systems of equations graphically and algebraically through multiple choice and open response questions.
- Writing, analyzing, and solving real world system of equation application problems and be able to explain their solution in terms of the problem through constructed response questions.
- Writing and graphing systems of inequalities through class discussion, multiple choice, open response, and constructed response questions.

Stage 2 – Evidence

Code A/M/T	Evaluative Criteria	Assessment Evidence	
Acquisition Meaning Making Transfer	Uses mathematics vocabulary and notation concisely and correctly. Chooses effective strategy/strategies for solving the problem. All necessary work is shown with no missing information/skipped steps. Explains one's reasoning efficiently using mathematics, words, or both. Solution is clearly identified; appropriate units are provided (<i>if applicable</i>).	PERFORMANCE TASK(S) <i>Students will demonstrate understanding (meaning making and transfer) through complex performance by...</i> System of Equation and/or Inequality Real World Problem <ul style="list-style-type: none"> • <i>Goal:</i> Your task is to create a real-world system of equations or inequality problem for your classmates to solve. You will solve graphically and algebraically and will explain the meaning of the solution in terms of the context of the problem. • <i>Role/Audience:</i> [Student-selected role and audience based on problem created.] • <i>Situation/Product:</i> You will create a word problem representing the system in a real-world context. Your peers will then solve the system using both graphs and algebra and will write at least a sentence to explain the meaning of the solution. • <i>Success Criteria:</i> The situation created must be represented algebraically by a system of equations or inequalities. You must correctly graph and solve the system and explain the meaning of the solution. 	Differentiation Considerations:
Acquisition Meaning Making Transfer	Chooses effective strategy/strategies for solving the problem. Proves the approach was valid and solution correct through examples/counterexamples. All necessary work is shown with no missing information/skipped steps. Explains one's reasoning efficiently using mathematics, words, or both. Solution is clearly identified; appropriate units are provided (<i>if applicable</i>).	OTHER EVIDENCE Unit Test: Chapter 6 <ul style="list-style-type: none"> • Multiple Choice • Open Response • Constructed Response Prompts 	Differentiation Considerations: