Algebra I – Unit 3: Linear Functions

Phoenixville Area School District

<table>
<tr><th colspan="3">Stage 1 Desired Results</th></tr>
<tr><td rowspan="4">PA Core Standards:
CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities.

CC.2.2.HS.C.1 Use the concept and notation of functions to interpret and apply them in terms of their context.

CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations

CC.2.2.HS.C.3 Write functions or sequences that model relationships between two quantities.

Keystone Assessment Anchors:
A1.2.1.1 Analyze and/or use patterns or relations.

A1.2.1.2 Interpret and/or use linear functions and</td><td colspan="2">Transfer</td></tr>
<tr><td colspan="2">TRANSFER GOALS
Students will be able to independently use their learning to…
• Number Sense: Develop a sound foundation to demonstrate the value of numbers by describing their various representations, relationships, and patterns.
• 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.</td></tr>
<tr><td colspan="2">Meaning</td></tr>
<tr><td>UNDERSTANDINGS
Students will understand that…
• 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.
• Patterns and functions can be generalized and represented using, verbal models, tables, equations, and graphs.</td><td>ESSENTIAL QUESTIONS
Students will keep considering...
• What is the nature of the relationship? How do I represent it?
• 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?
• What is the pattern here? How do I represent it? How do I use it?</td></tr>
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their equations, graphs, or tables. A1.2.2.1 Describe, compute, and/or use the rate of change (slope) of a line. A1.2.2.2 Analyze and/or interpret data on a scatter plot.	***Knowledge and Skills Acquisition***	
	KNOWLEDGE *Students will know…* • How to analyze, write, and graph the equation of a line • How to interpret the meaning of intercepts and slope in real world context • How to identify parallel and perpendicular lines by their equations and graphs • How to identify, write, and use equations of arithmetic sequences • How to graph scatter plots and graph, write, and use their lines of best fit VOCABULARY • Linear Function • Rate of Change/Slope • Intercept • Parallel/Perpendicular • Arithmetic Sequence • Scatter Plot/Line of Best Fit	SKILLS *Students will be skilled at…* • Computing, describing, and using rate of change and slope to answer graphical and real-world application multiple choice and open response questions. • Analyzing, graphing, writing, and interpreting equations of lines based on graphical and real-world application multiple choice, open response, and constructed response questions. • Graphing lines on their calculator to better visualize and analyze linear equations and functions in real world context. • Graphing and writing equations of parallel and perpendicular lines shown by playing an open response BINGO game, an exit ticket, or similar formative assessment. • Writing, using, and interpreting equations of arithmetic sequences on multiple choice and open response real-world application questions. • Graphing, writing, and using lines of best fit for scatter plots demonstrated through IPF Keystone worksheets, real-world example problems, and class discussion.

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. Predictions/solutions are reasonable based upon the context of the problem situation. All representations are clear and labeled accurately.	PERFORMANCE TASK(S) *Students will demonstrate understanding (meaning making and transfer) through complex performance by...* Select One: **Linear Equation Analysis** http://www.insidemathematics.org/assets/common-core-math-tasks/graphs%20(2006).pdf **Scatter Plot Analysis** http://www.insidemathematics.org/assets/common-core-math-tasks/scatter%20diagram.pdf **Linear vs Nonlinear Functions** http://www.insidemathematics.org/assets/common-core-math-tasks/functions.pdf	Differentiation Considerations:
Acquisition Meaning Making Transfer	Valid conclusions are made based on given/ implied/ found information. Uses mathematics vocabulary and notation concisely and correctly. Predictions/solutions are reasonable based upon the context of the problem situation. Explains one's reasoning efficiently using mathematics, words, or both.	OTHER EVIDENCE **Unit Test: 3.1-3.3 and 4.1-4.5** • Multiple Choice • Matching • Open Response • Constructed Response Prompts	Differentiation Considerations: