Algebra I – Unit 1: Operations, Functions, and Data

Phoenixville Area School District

Stage 1 Desired Results

PA Core Standards:
CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable

CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.

CC.2.2.8.C.1 Define, evaluate, and compare functions.

CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.

Keystone Assessment Anchors:
A1.2.3.2 Use data displays in problem solving settings and/or to make predictions.

A1.2.3.3 Apply probability to practical situations.

Transfer

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.
- *Fluency:* Demonstrate automatic recall of addition, subtraction, multiplication, and division of rational numbers.
- *Mathematical Vocabulary:* Interpret mathematical vocabulary and apply proper terminology to engage in meaningful oral and written expression that communicates mathematical thinking, problem-solving methods, and rationale.
- *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.
- Expressions are simplified using a predetermined order of operations.
- The way that data is collected, organized and displayed influences interpretation and decision-making.
- The likelihood of an occurrence is governed by specific rules that can be used as a basis for prediction/determining possible outcomes with varying degrees of confidence.

ESSENTIAL QUESTIONS

Students will keep considering...

- 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?
- How can mathematics be used to provide models that help us interpret data and make predictions?

A1.2.1.1 Analyze and/or use patterns or relations. A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percent).	***Knowledge and Skills Acquisition***	
	KNOWLEDGE *Students will know…* • How to apply order of operations to simplify expressions • How to identify different equivalent algebraic number properties • How to analyze, represent, and use relations and functions • How to find the measures of central tendency for a data set • How to create and analyze stem and leaf plots and box and whisker plots • How to compute simple and compound probabilities of equally likely events VOCABULARY • Expression • Order of Operations • Function • Measures of Central Tendency • Probability	SKILLS *Students will be skilled at…* • Simplifying algebraic expressions using the order of operations and identifying algebraic properties through one-step and multiple-step open-ended response questions. • Representing and differentiating between relations and functions through a Venn Diagram or similar graphic organizer. • Using data displays to analyze and make predictions for data sets by finding the measures of central tendency, designing accurate data displays, and drawing appropriate conclusions based on data. • Applying simple probability to independent and compound events to open response and multiple-choice Keystone 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. Explains one's reasoning efficiently using mathematics, words, or both. All representations are clear and labeled accurately.	PERFORMANCE TASK(S) *Students will demonstrate understanding (meaning making and transfer) through complex performance by...* **Data Analysis Questionnaire** • *Goal:* Students will come up with a quantitative question to ask their classmates. They will then find the measures of central tendency for the data and will display the data using at least 2 methods (box and whisker plot, stem and leaf plot, bar graph, or pie chart). Students will then draw conclusions based on their data. • *Role/Audience:* You are a statistician presenting to a company. • *Situation/Product:* You will present your question, data, and findings using either a poster board or a PowerPoint presentation. • *Success Criteria:* Your presentation must include the survey question, the data set and analysis, at least 2 displays, and a summary/conclusion of the findings.	Differentiation Considerations:
Acquisition Meaning Making Transfer	Valid conclusions are made based on given/ implied/ found information. Uses mathematics vocabulary and notation concisely and correctly. All necessary work is shown with no missing information/skipped steps.	OTHER EVIDENCE **Chapter 1 Test** • Multiple Choice • Matching • Open Response • Constructed Response Prompts	Differentiation Considerations: