High School
Algebra 2
Framework for FORMATIVE/CLASSROOM Instruction and Assessment
Productive Domains of **Speaking and Writing**

Pennsylvania English Language Proficiency Standard 3
English language learners communicate information, ideas, and concepts necessary for academic success in the content area of Mathematics.

Pennsylvania Core Standards

Speaking and Listening
CC.1.5.9-10.A Initiate and participate effectively in a range of collaborative discussions on grade level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CC.1.5.11-12.A Initiate and participate effectively in a range of collaborative discussions on grade level topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Mathematics
CC.2.2.HS.C.5 Construct and compare linear, quadratic and exponential models to solve problems.
A2.2.1.1.3, A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.2, A2.2.2.1.3, A2.2.2.1.4, A2.2.2.2.1

The PA ELL Overlays for English Language Arts and Mathematics assist educators in developing instructional units, lessons, or activities that are meaningful and comprehensible for English language learners. They illustrate the dynamic process of adapting instruction and assessment based on the English language proficiency of students. The PA ELL Overlays for English Language Arts and Mathematics are models that exemplify adaptations for a select instructional context and provide resources to extend this process to other instructional units.

Speaking Model Performance Indicator (MPI)							
Classroom Context: Analyze and solve equations and inequalities.							
Cognitive Function: Students at all levels of English proficiency will ANALYZE and SOLVE equations and inequalities.							
Concepts	**Competencies**	**Vocabulary and Topic Related Language**	**Proficiency Level 1 Entering**	**Proficiency Level 2 Emerging**	**Proficiency Level 3 Developing**	**Proficiency Level 4 Expanding**	**Proficiency Level 5 Bridging**
Exponential functions and equations Quadratic functions and equations Polynomial functions and equations	Represent exponential/ quadratic/polynomial functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Absolute value Domain Equation Exponential function Exponential notation Expression Linear function Logarithmic function Powers Range Systems of equations Variable	Identify math sentences as quadratic, linear, exponential or polynomial, following explicit, repeated examples, as modeled and monitored by the teacher.	Supply words or phrases to evaluate sentences as quadratic, exponential, or polynomial function using visual and vocabulary support with a partner.	Evaluate a quadratic, exponential, or polynomial function in a small group with vocabulary support.	Evaluate the application of a quadratic, exponential or polynomial function as applied to a real-life scenario in a small group.	Respond to presented findings of a grade-level experiment or project dealing with population growth or other topic related to functions.

Writing Model Performance Indicator (MPI)							
Classroom Context: Analyze and solve equations and inequalities.							
Cognitive Function: Students at all levels of English proficiency will ANALYZE and SOLVE equations and inequalities.							
Concepts	**Competencies**	**Vocabulary and Topic Related Language**	**Proficiency Level 1 Entering**	**Proficiency Level 2 Emerging**	**Proficiency Level 3 Developing**	**Proficiency Level 4 Expanding**	**Proficiency Level 5 Bridging**
Functions and equations Quadratic functions and equations Polynomial functions and equations	Represent exponential/ quadratic/polynomial functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Absolute value Domain Equation Exponential function Exponential notation Expression Linear function Logarithmic function Powers Range Systems of equations Variable	Produce elements of equations or formulas from word/phrase banks and visual models, following explicit, repeated examples, as modeled and monitored by the teacher.	Describe equations or formulas using figures and notation from word banks and models with a partner.	Sequence steps for solving problems involving equations or formulas using figures, notation, and sequential language with a partner.	Explain uses of equations or formulas using figures, notation, and complex sentences in a small group..	Summarize procedures for solving problems involving formulas and equations.

Building Productive Model Performance Indicators (MPI) to differentiate and scaffold instruction per English language proficiency level by adjusting the ***language function*** and ***support***.							
Classroom Context:							
Cognitive Function: Students at all levels of English proficiency will							
Concepts	**Competencies**	**Vocabulary and Topic Related Language**	**Proficiency Level 1 Entering**	**Proficiency Level 2 Emerging**	**Proficiency Level 3 Developing**	**Proficiency Level 4 Expanding**	**Proficiency Level 5 Bridging**
			Language Function (differentiated measurable expectations of student language use increasing in complexity and amount from English language proficiency level 1 to level 5)				
			Label the process used to . . . Produce short answer responses Supply missing information in sentence frames	Take notes Label Illustrate Enumerate	Interpret Compare/Contrast Distinguish Sequence Explain	Assess Revise Construct	Analyze Design Prove
			Content Stem (selected focus of grade-level curriculum for all students remains constant across all English language proficiency levels)				
			Instructional Support (scaffolds to accompany explicit instruction with multiple opportunities for student response and feedback decreasing in degree from English language proficiency level 1 to level 5. "I do, We do, You do")				
			Visual support Sensory support	Visual support Sensory support	Visual support Sensory support Realia	Visual support Realia Video	Visual support Video Graphic

			Realia Video Graphic organizers Tiered assignments Partner Flexible grouping First language support Re-teaching/Pre-teaching Modeling Conferences with teacher	Realia Video Graphic organizers Tiered assignments Partner Flexible grouping First language support Re-teaching/Pre-teaching Modeling Conferences with teacher Build background knowledge and connections to topic	Video Graphic organizers Tiered assignments Partner Flexible grouping First language support Re-teaching/Pre-teaching Modeling Conferences with teacher Build background knowledge and connections to topic Rubrics Checklists Reciprocal teaching opportunities	Graphic organizers Tiered assignments Partner Flexible grouping Front load vocabulary Modeling Conferences with teacher Build background knowledge and connections to topic Rubrics Checklists Reciprocal teaching opportunities	organizers Partner/group work Front load vocabulary Modeling Conferences with teacher Build background knowledge and connections to topic Rubrics Checklists Reciprocal teaching opportunities within groups and the class as a whole