

NEW

<p align="center">Geometry Framework for FORMATIVE/CLASSROOM Instruction and Assessment English language learners communicate information, ideas, and concepts necessary for academic success in the content area of MATHEMATICS.</p>							
<p>PA Academic Standard(s) Read, understand and respond to essential content of text and documents in all academic areas. 1.2.11.E. Listen critically and respond to others in small and large group situations 1.6.11.A. • Respond with grade level appropriate questions, ideas, information or opinions. Write formal proofs (direct proofs, indirect proofs/proofs by contradiction, use of counter-examples, truth tables, etc.) to validate conjectures or arguments. 2.4.G.A. Use statements, converses, inverses, and contrapositives to construct valid arguments or to validate arguments relating to geometric theorems. 2.4.G.B. Identify and use properties and relations of geometric figures; create justifications for arguments related to geometric relations. 2.9.G.A. Use arguments based on transformations to establish congruence or similarity of 2- dimensional shapes. 2.9.G.B. Use techniques from coordinate geometry to establish properties of lines, 2-dimensional shapes. 2.9.G.C.</p>							
<p align="center">Listening</p>							
Concepts	Competencies	Vocabulary	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Geometric Representations Reasoning and Proof Geometric Relations: Congruence and Similarity Analytic Geometry Trigonometric Ratios	Define and describe the types of geometrical reasoning and proof, using them to verify valid conjectures as they surface in the study of geometry; develop a counterexample to refute an invalid conjecture. Define, describe and analyze 2- and 3-dimensional figures, their properties and relationships, including how a change in one measurement will affect other measurements of that figure. Use concepts of congruence and similarity to relate and compare 2- and 3-dimensional figures, including trigonometric ratios. Use coordinates and algebraic techniques to interpret, represent and verify geometric	Combination Congruent Conjecture Contrapositive Converse Equation Expression Inequality Inverse Irrational number Polygon Probability Proof by contradiction Similarity Systems of equations Transformation Trigonometric functions Valid argument Variable	Match a picture or scenario with a verbally stated conjecture.	Supply a valid conclusion to a conditional statement.	Refute/Dispute the validity of an argument made by a peer citing a counterexample.	Evaluate a peer presentation using a rubric.	Extract geometric reasoning from professionals or informational video as it applies to real-life in a related field such as architecture.
							<p>Level 6- Reaching</p>

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	relationships.								
Reading									
Concepts	Competencies	Vocabulary	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging		
			Answer Y/N and/or point to a counterexample of a statement by reading sketch or picture. Read a protractor.	Refute a statement in text with visual support using math language.	Draw parallels between scientific method and proof techniques when reading a scientific document.	Arrange the steps of a proof in order.	Read a geometric statement and determine which method of proof is superior and explain why.	Level 6- Reaching	
Content Stems									
			Conditional statements Geometric reasoning Counter examples Problem solving Write math language Communicate mathematically Logic	Proof, recognize real-world scenarios Communicate mathematically	Conjecture valid arguments Engage in mathematical discourse Make predictions Test theories	Mathematical writing and technical text Find and correct errors in mathematical thinking	Proof by contradiction Find the best solution Make recommendations Mathematical reasoning		
Instructional Support									
			Geoboards Polyhedrons Geometer's sketchpad Protractors Real-world objects Infuse text with graphics Teacher-made supplemental text Read	Geometer's Sketchpad® Online Flash® activities Explain their thinking, Peer tutoring/ explanation Infuse graphics with text Explain answer	Model situations with pictures or sketches Think-write-pair-share Explain peer's work Sequence events/steps/instructions Explain answer with technology and written	Test conjectures with geometry software Students explain incorrect answers Solve problem more than one way Confirm	Practice concepts on productive tasks Reason logically aloud Use technology to enhance problem solving		

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			<p>aloud Teacher models talking to the text Thumbs up/ thumbs down or traffic lighting Paper-folding</p>	<p>using technology</p>	<p>work Predict outcomes</p>	<p>answer with technology</p>	
Language Use							
			<p>Listening Listen for traits Identify heard words or short phrases</p>	<p>Listening Analyze statements Comprehend sentences</p>	<p>Listening Listen to peers/teacher Follow logical reasoning of multiple sentences</p>	<p>Listening Listen to speeches and evaluate for accuracy</p>	<p>Listening Listen to technical speeches or videos and draw parallels</p>
			<p>Reading Read and recognize words or short phrases Read a protractor Read a ruler</p>	<p>Reading Read and recognize sentences Read an interactive math interface online or in a computer program or calculator</p>	<p>Reading Read simple articles and paragraphs of text</p>	<p>Reading Read extended mathematical text and documents</p>	<p>Reading Read technical texts or media</p>