

Chelsea High School Performance Assessment: *PROBLEM SOLVING APPLICATION (ANALYSIS or INQUIRY)*

SCORING DOMAIN	EMERGING	E/D	DEVELOPING	D/P	PROFICIENT	P/A	ADVANCED
PROBLEM SOLVING <i>What is the evidence that the student understands the problem and the mathematical strategies that can be used to arrive at a solution?</i>	<ul style="list-style-type: none"> • Ignores constraints • Uses few, if any, strategies for solving problem (e.g. tools and resources, guess and check, prior knowledge) 		<ul style="list-style-type: none"> • Discusses some of the given constraints and relationships • Selects strategies for solving the problem, but some are inappropriate (e.g. tools and resources, guess and check, prior knowledge) 		<ul style="list-style-type: none"> • Analyzes and uses all given constraints, goals, definitions, and relationships • Selects appropriate strategies for solving the problem (e.g. tools and resources, guess and check, prior knowledge) 		<ul style="list-style-type: none"> • Analyzes and uses all given constraints, goals, definitions, relationships, and implied assumptions • Selects, monitors, and adapts strategies for solving problem throughout their work (e.g. tools and resources, guess and check, prior knowledge)
MATHEMATICAL KNOWLEDGE <i>What is the evidence that students can apply mathematical knowledge and procedures to solving the problem?</i>	<ul style="list-style-type: none"> • Shows little to no understanding of the problem’s mathematical concepts and principles • Execution of procedure may contain major procedural or computational errors 		<ul style="list-style-type: none"> • Shows limited understanding of the problem’s mathematical concepts and principles • Executes procedures completely; computations are generally correct but may contain minor errors 		<ul style="list-style-type: none"> • Shows understanding of the problem’s mathematical concepts and principles • Executes procedures and computations completely and correctly 		<ul style="list-style-type: none"> • Shows thorough and complete understanding of the problem’s mathematical concepts and principles • Executes procedures and computations completely and correctly; process is thorough and evident through work
REASONING & PROOF <i>What is the evidence that the student can apply mathematical reasoning in an accurate and complete manner?</i>	<ul style="list-style-type: none"> • Provides incorrect solutions and/or does not provide justifications • Does not check for reasonableness of solution 		<ul style="list-style-type: none"> • Provides partially correct solutions or a correct solution without logic or justification • Attempts to check for reasonableness of solution 		<ul style="list-style-type: none"> • Constructs logical, correct, complete solution with justifications • Checks for reasonableness of solution 		<ul style="list-style-type: none"> • Constructs logical, correct, complete solution with justifications AND determines domains to which a solution applies • Checks for reasonableness of solution with a clearly stated rationale

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<p>CONNECTIONS <i>What is the evidence that the student understands the relationships between similar problems, previous knowledge, and/or real-world applications inherent in the problem?</i></p>	<ul style="list-style-type: none"> Makes minimal or no connections to similar problems and/or real world applications and/or previous knowledge 		<ul style="list-style-type: none"> Identifies superficial connections to similar problems and/or real world applications and/or previous knowledge 		<ul style="list-style-type: none"> Explains connections to similar problems and/or real world applications and/or previous knowledge 		<ul style="list-style-type: none"> Discusses connections to similar problems and/or real world applications and/or previous knowledge; Discussion shows insight into application of mathematical concepts
<p>COMMUNICATION & REPRESENTATION <i>What is the evidence that the student can communicate mathematical ideas to others?</i></p>	<ul style="list-style-type: none"> Selects representations that may confuse the audience in understanding the solution path Use terms and mathematical notation without defining them OR uses incorrect definitions or inaccurate representations. Gives minimal to no written explanation of the solution process; May fail to explain <u>what</u> was done and <u>why</u> it was done 		<ul style="list-style-type: none"> Uses representations (diagrams, tables, graphs, formula) that, though correct, do not enhance the audience's understanding of the solution path Uses imprecise definitions or incomplete mathematical notations (e.g. missing units of measure or unlabeled axes.) Gives a nearly complete written explanation of the solution process; explains <u>what</u> was done and beings to address <u>why</u> it was done 		<ul style="list-style-type: none"> Uses representations (diagrams, tables, graphs, formula) to enhance the audience's understanding of the solution path Uses precise definitions and accurate mathematical notations (e.g. units of measure and labeled axes.) Gives a complete written explanation of the solution process; explains <u>what</u> was done and <u>why</u> it was done 		<ul style="list-style-type: none"> Uses representations (diagrams, tables, graphs, formula) in a convincing manner to enhance the audience's understanding of the solution path Provides comprehensive, extensive, and precise definitions and accurate mathematical notations (e.g. units of measure and labeled axes.) Gives a thorough and complete explanation of the solution process; clearly explains <u>what</u> was done and <u>why</u> it was done

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REFLECTION <i>What is the evidence that the student can deeply reflect on performance, growth as a learner and ability to apply this in the future?</i>	<ul style="list-style-type: none"> Know: Explains the topic of class when artifact was assigned Do: Explanation of process, decision-making and connections to Vision of a Graduate is incomplete or unclear Reflect: States what was done well and what could be improved upon 		<ul style="list-style-type: none"> Know: Describes some context of class (learning goals, purpose of artifact or necessary skills) Do: Briefly explains process, decision-making and connections to Vision of a Graduate used during the task Reflect: Explains how artifact impacted self as a learner 		<ul style="list-style-type: none"> Know: Clearly states general learning goals and purpose of artifact, including academic skills needed to be successful Do: Thoroughly explains process and decision-making, including connections to Vision of a Graduate, used during the task Reflect: Describes how artifact impacted self & own future, including growth as a mathematician 		<ul style="list-style-type: none"> Know: Explicitly ties context of class to content and skill goals as well as purpose of artifact Do: Explains process, decision-making and connections to Vision of a Graduate with detail and through lens of thinking like expert in field Reflect: Describes and analyzes how artifact impacted self & own future, including growth as a mathematician