

Student: _____

Project/Unit: _____

Date: _____

Mathematical Practices Rubric

CRITERIA	WEIGHT	Emerging (Below Standards)	Proficient (Meets Standards)	Mastery (Exceptional Performance)
1. Make sense of problems and persevere in solving them.	15%	<ul style="list-style-type: none"> Student cannot recognize givens, constraints, relationships, and goals of a problem. Student does not monitor progress or adjust approach to problem. Student does not check solutions for errors. 	<ul style="list-style-type: none"> Student analyzes givens, constraints, relationships, and goals of a problem. Student monitors and evaluates progress and changes course if necessary. Student checks solutions for errors. Student asks continually: "Does this make sense?" 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student quickly analyzes key aspects of a problem. Student easily monitors progress and adjusts approach to problem. Student routinely checks solutions for errors. Student is able to fully explain solution to others.
		1-----3-----5	6-----8-----12	13-----14-----15
2. Reason abstractly and quantitatively.	15%	<ul style="list-style-type: none"> Student cannot represent problem symbolically. Student shows limited ability to contextualize the problem. 	<ul style="list-style-type: none"> Student abstracts a given situation and represents it symbolically. Student manipulates the representing symbols and shows ability to contextualize the problem. Student creates a coherent representation of the problem. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student represents a problem symbolically in ways that show thorough understanding. Student manipulates the representing symbols in ways that clearly contextualize the problem. Student can explain the representation of the problem to others.
		1-----3-----5	6-----8-----12	13-----14-----15
3. Construct viable arguments and critique the reasoning of others.	15%	<ul style="list-style-type: none"> Student cannot state assumptions, definitions, and results in constructing arguments. Student makes limited conjectures or builds an illogical progression of statements to explore conjectures. Student shows limited ability to reason inductively or use logic. 	<ul style="list-style-type: none"> Student understands and uses stated assumptions, definitions, and results in constructing arguments. Student makes conjectures and builds a logical progression of statements to explore conjectures. Student analyzes situations and can recognize and use counterexamples. Student reasons inductively and uses logic and reasoning. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student can construct argument using stated assumptions and definitions, and results in constructing arguments. Student makes original conjectures and builds an elegant progression of statements to explore conjectures. Student quickly uses original counterexamples to explain or construct problem.
		1-----3-----5	6-----8-----12	13-----14-----15

		1-----3-----5	6-----8-----12	13-----14-----15
4. Model with mathematics.	15%	<ul style="list-style-type: none"> Student cannot link important quantities in a practical situation with use of tools such as diagrams, two-way tables, graphs, flowcharts, and formulas. Student shows limited knowledge of how mathematics applies to problems arising in everyday life, society, and the workplace. 	<ul style="list-style-type: none"> Student identifies important quantities in a practical situation and maps his or her relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. Student applies mathematics to solve problems arising in everyday life, society, and the workplace. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student maps complex practical situations with such tools as diagrams, two-way tables, graphs, flowcharts, and formulas. Student has unusual insight into how mathematics applies to solving problems arising in everyday life, society, and the workplace.
5. Use appropriate tools strategically.	10%	<ul style="list-style-type: none"> Student does not use the available tools when solving a mathematical problem. Student has limited ability to use technological tools to explore and deepen his or her understanding of concepts. 	<ul style="list-style-type: none"> Student considers the available tools when solving a mathematical problem. Student is able to use technological tools to explore and deepen his or her understanding of concepts. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student chooses the best available tools when solving a mathematical problem. Student is expert at using technological tools to explore and deepen his or her understanding of concepts.
6. Attend to precision.	10%	<ul style="list-style-type: none"> Student does not use definitions in discussion with others and in his or her own reasoning. Student calculates accurately and efficiently, and expresses numerical answers with a minimal of precision appropriate for the problem context. 	<ul style="list-style-type: none"> Student uses clear definitions in discussion with others and in his or her own reasoning. Student calculates accurately and efficiently, and expresses numerical answers with a degree of precision appropriate for the problem context. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student uses clear definitions in a variety of ways in discussion that helps others clarify their own reasoning. Student calculates accurately and efficiently, and expresses numerical answers with the exact degree of precision appropriate for the problem context.
7. Look for and make use of structure.	10%	<ul style="list-style-type: none"> Student cannot discern a pattern or structure without assistance. 	<ul style="list-style-type: none"> Student looks closely to discern a pattern or structure. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student can easily identify a pattern or structure in a wide range of natural settings or practical ways.
8. Look for and express regularity in repeated reasoning.	10%	<ul style="list-style-type: none"> Student overlooks calculations that are repeated, and does not look for general methods or for shortcuts. 	<ul style="list-style-type: none"> Student notices if calculations are repeated, and looks both for general methods and for shortcuts. 	<p>In addition to meeting the PROFICIENT criteria</p> <ul style="list-style-type: none"> Student rarely repeats calculations, and first looks both for general methods and for shortcuts when problem solving.

BREAKTHROUGH
Evidence for
exceptional or
creative performance
beyond mastery.

The evidence for breakthrough is: