



## INVESTIGATE THE WORLD

*How well does the student use mathematics to model and investigate a given issue, situation, or event?*

	Emerging	Developing	Proficient	Advanced
<b>MATH6-8.INV1.MODEL</b>	Understands what a mathematical model is, identifies parts of a situation or problem that may be included in a mathematical model, but needs some assistance to develop an appropriate one.	Creates a simple mathematical model to describe a situation or problem, but may omit some given data or information.	Designs a mathematical model to illustrate a situation or to diagram a problem, or applies a model that has been successful previously in similar situations.	Develops a comprehensive mathematical model using all relevant information to describe a situation or to diagram a problem, reflects on the process and considers possible revisions, or adapts a previous model to be applicable to a new situation or problem.
<b>MATH6-8.INV2.RLTNS</b>	Understands the purpose of a mathematical model and can relate parts of a problem or situation to a model but may omit data or information.	Illustrates mathematical relationships by a simple model that reflects a complex situation, or attempts to generalize a familiar model to fit a similar situation.	Describes how the mathematical relationships in a model reflect a situation or the elements of a problem, or predicts when and/or how a model could be generalized to similar situations.	Distinguishes how the mathematical relationships in a model reflect a situation or the elements of a problem and analyzes the parameters of the problem or situation for possible limitations of the model.
<b>MATH6-8.INV3.RPRSN</b>	Selects and uses mathematical tools, procedures, and representations to explore an issue, situation, or event, but may not select the most efficient tool or procedure to explore the given issue, situation, or event.	Employs appropriate mathematical tools, procedures, and/or representations to explore the issue, situation, or event.	Distinguishes between appropriate mathematical tools, procedures, and representations to explore the issue, situation, or event and can articulate why a particular tool or procedure was selected.	Effectively employs appropriate mathematical tools, procedures, or representations to explore the given issue, situation, or event.

	<b>Emerging</b>	<b>Developing</b>	<b>Proficient</b>	<b>Advanced</b>
<b>MATH6-8.INV4.SELEC</b>	Understands the range of possible solution strategies, but needs assistance to recognize an appropriate one.	Generates a range of initial solution strategies and outlines why a particular strategy was chosen.	Generates a range of appropriate strategies and differentiates between applicability of the strategies to the given situation.	Formulates multiple appropriate solution strategies and evaluates how one or more will represent a correct approach and solve the problem.
<b>MATH6-8.INV5.STRTG</b>	Applies consistent strategies to verify a solution, but needs assistance to identify other more efficient methods.	Identifies a reasonable initial strategy to verify the solution and outlines why this strategy was chosen.	Selects and applies a reasonable strategy to verify the solution and differentiates appropriateness of possible strategies.	Generates multiple appropriate strategies to verify the solution with respect to the mathematics and the given context, and justifies the selection of a particular strategy using precise mathematical terminology.

## RECOGNIZE PERSPECTIVES

*How well does the student recognize the impact of his/her mathematical analyses on themselves and others?*

	Emerging	Developing	Proficient	Advanced
<b>MATH6-8.PERS1.ARGUE</b>	Understands the need to draw a conclusion based on evidence, but needs assistance identifying relevant evidence to support conclusions.	Draws a reasonable initial conclusion and provides simple explanations that are supported by data.	Draws a conclusion or generates an incomplete argument to justify a conclusion only partially supported by the mathematical data or information.	Presents a viable conjecture or conclusion and generates a convincing argument that is supported by the mathematical data and some analysis.
<b>MATH6-8.PERS2.VRIFY</b>	Seeks independent verification of process and/or conclusions when working independently or collaboratively, but may not articulate clearly what needs verification is sought.	Understands diversity in a general way and uses knowledge of the target culture(s) in a limited way to communicate in the target language.	Understands diversity in and uses knowledge of the target culture(s) to effectively communicate in the target language.	Collaborates and seeks external verification or validation of the appropriateness of their model, tools, procedures, solutions, analyses, conclusions, arguments, or decisions, and considers possible revisions based external critique.
<b>MATH6-8.PERS3.IMPLC</b>	Understands that conclusions may have personal or local implications, and begins to identify wider ranging, more general implications through exploration of the mathematical model or process.	Expresses some general implications of a conclusion or conjecture arising from a mathematical model or process.	Expresses and evaluates some implications of a conclusion, conjecture, or argument arising from a mathematical model or process and uses data or information from the model as support.	Evaluates some implications of the conjecture, conclusion, decision, or arguments in the context of a wider range of reference, including national and global scales.

	<b>Emerging</b>	<b>Developing</b>	<b>Proficient</b>	<b>Advanced</b>
<b>MATH6-8.PERS4.PERSP</b>	Identifies different perspectives that influence formulating conclusions, decisions, or opinions, but needs assistance to recognize and acknowledge them.	Recognizes and articulates some different perspectives using precise mathematical language when appropriate.	Recognizes, articulates, and addresses different perspectives using precise mathematical language when appropriate.	Recognizes, articulates, and addresses different perspectives by revising original ideas, using precise mathematical language when appropriate.
<b>MATH6-8.PERS5.POSTN</b>	Articulates an incomplete conjecture related to a conclusion, but needs assistance to identify evidence to support the conjecture.	Articulates a conjecture that reflects the mathematical process procedure model that results in a mathematically valid conclusion.	Articulates a valid conjecture that reflects the mathematical process procedure model that results in a mathematically valid conclusion and engages in mathematical discourse to justify conjecture.	Engages in mathematical discourse justifying conjectures, conclusions, and procedures, critiquing the reasoning of others, and uses external critique to analyze, review, and begin to revise conjecture, conclusion, or procedure.

## COMMUNICATE IDEAS

*How clearly and accurately does the student communicate and defend his/her mathematical thinking, approaches, representations, solution, and decisions?*

	Emerging	Developing	Proficient	Advanced
<b>MATH6-8.COMM1.COMM</b>	Explains and justifies mathematical concepts, procedures, or relationships using simple, imprecise language.	Explains and justifies mathematical reasoning, concepts, procedures, or relationships using precise mathematical language.	Explains and justifies complex mathematical reasoning, concepts, procedures, and relationships using precise mathematical language in a way that is mostly organized and sequenced.	Explains and justifies complex mathematical reasoning, concepts, procedures, and relationships using precise mathematical language in an organized and sequenced way, referencing visual representations.
<b>MATH6-8.COMM2.DEFNS</b>	Defends conclusions with mathematical language, but needs some prompting through probing questions.	Defends a conclusion, conjecture, decision, or argument, but does not include all relevant mathematical concepts, procedures, or data from the model.	Defends a conclusion, conjecture, decision, or argument with some mathematical concepts, procedures, or data from the model using precise mathematical language.	Defends a complex conclusion, conjecture, decision, or argument with relevant and accurate concepts, procedures, or data from the model using precise mathematical language.
<b>MATH6-8.COMM3.SYMBL</b>	Correctly uses mathematical terms, symbols, and conventions often, but may need some prompting.	Decontextualizes a mathematical idea by using mathematical terms, symbols, and conventions.	Decontextualizes a mathematical idea using mathematical terms, symbols, and conventions, and begins to contextualize by some evaluation of the process using mathematical language.	Decontextualizes a mathematical idea correctly using precise mathematical terms, symbols, and conventions, and contextualizes by evaluation of the process using precise mathematical terminology and symbols.

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<b>MATH6-8.COMM4.GRAMM</b>	Engages in oral and written mathematical discourse using mathematical terminology with some prompting or with mathematical meaning slightly distracted by some errors in grammar, usage, and mechanics.	Engages in mathematical discourse using simple, familiar mathematical terminology correctly with few errors in grammar, usage, and punctuation.	Engages in clear oral and written mathematical discourse using mathematical terminology, symbols, and conventions correctly and generally free of distracting errors in grammar, usage, and punctuation.	Engages in clear oral and written mathematical discourse that is free of mathematical misconception and errors in grammar, usage, and mechanics.
<b>MATH6-8.COMM5.MEDIA</b>	Understands the need to select and use media, but may not understand the strategic selection of medium for communication.	Selects an appropriate medium to communicate mathematical ideas in a basic way.	Selects an appropriate medium and uses it in an effective way to communicate mathematical ideas.	Selects appropriate media and uses them efficiently to communicate and evaluate mathematical ideas.

## TAKE ACTION

*How well does the student advocate for, engage in, and reflect on plausible and responsible actions that are supported by his/her mathematics?*

	Emerging	Developing	Proficient	Advanced
<b>MATH6-8.ACT1.ADVCT</b>	Identifies possible courses of action and explains the need to advocate for a course of action, but needs assistance to articulate support for a course of action.	Advocates for a course of action that is somewhat plausible, somewhat responsible, and partially supported by mathematics.	Advocates for a course of action that is plausible, responsible, and supported by mathematics.	Advocates for multiple possible course of action that are plausible, responsible, and supported by mathematics.
<b>MATH6-8.ACT2.ACTN</b>	Outlines a viable, manageable, and responsible plan of action, but needs assistance to implement actions.	Identifies a plan of action supported by the mathematics that is somewhat viable, manageable, and/or responsible that is somewhat consistent with the argument, conclusion, or decision	Identifies a plan of action supported by the mathematics that is mostly viable, manageable, and/or responsible that is related to the conclusion, argument, or decision.	Develops and implements a plan of action supported by the mathematics that is viable, manageable, and/or responsible that is primarily consistent with the argument, conclusion, or decision.
<b>MATH6-8.ACT3.IMPRT</b>	Understands the importance of the plan, but needs assistance in articulating its importance in the context of the global community and in understanding its limitations and potential improvements.	Describes in general ways the importance of the plan, using some support from mathematical conclusions or conjectures.	Describes the importance of the plan of action, with some connection to the global community, supported by the data or conclusions.	Articulates the importance of the plan(s) of action within the context of the global community and identifies the limitations and potential improvements, supported by the data or conclusions.