



INVESTIGATE THE WORLD

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

	Emerging	Developing	Proficient	Advanced
MATH3-5.INV1.MODEL	Recognizes the need to simplify complex situation or problem using mathematical modeling, may need assistance to list types of mathematical models and to select an appropriate one.	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.
MATH3-5.INV2.RLTNS	Recognizes that a model can be used to represent a particular situation, but may need assistance to connect appropriate model with the situation.	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.
MATH3-5.INV3.RPRSN	Recognizes that mathematical tools, procedures, and representations can be used to explore an issue, situation, or event, but may need some assistance in selecting the appropriate tools, procedures, and/or representations.	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.

	Emerging	Developing	Proficient	Advanced
MATH3-5.INV4.SELEC	Recognizes that different situations and problems may require different strategies, but needs assistance to list possible strategies.	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.
MATH3-5.INV5.STRTG	Recognizes that a strategy is required to verify a solution, but needs some assistance to select an appropriate method.	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.

RECOGNIZE PERSPECTIVES

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

	Emerging	Developing	Proficient	Advanced
MATH3-5.PERS1.ARGUE	Recognizes the need to draw a conclusion, but needs some assistance in articulating appropriate conclusions.	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.
MATH3-5.PERS2.VRIFY	Recognizes the need for an external verification when working independently or collaboratively and verification may be sought throughout the selection process, before outcomes are attained, but needs some assistance to identify an appropriate source of verification.	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.
MATH3-5.PERS3.IMPLC	Recognizes that conclusions may be influenced by personal experience and bias, but needs assistance to identify bias and generate more general implications or conclusions.	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.

	Emerging	Developing	Proficient	Advanced
MATH3-5.PERS4.PERSP	Recognizes that different conclusions, decisions, or opinions may arise from diverse perspectives.	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.
MATH3-5.PERS5.POSTN	Recognizes that conjectures are related to a conclusion, but needs assistance to articulate conclusions and related conjectures.	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.

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
MATH3-5.COMM1.COMM	Recognizes the need to explain and justify mathematical concepts, procedures, and relationships, but needs assistance to use mathematically precise language to do so.	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.
MATH3-5.COMM2.DEFNS	Recognizes the need to defend conclusions, but uses imprecise language.	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.
MATH3-5.COMM3.SYMBL	Recognizes that mathematical terms, symbols, and conventions should be used to express mathematical ideas, but needs some assistance in doing so correctly.	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.
MATH3-5.COMM4.GRAMM	Engages in oral and written mathematical discourse with some incomplete, incorrect, or misuse of mathematical conventions or language including grammar, usage, and punctuation.	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.
MATH3-5.COMM5.MEDIA	Recognizes that the use of media can aid in communication of ideas, but may not be able to select an appropriate medium without assistance.	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.

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
MATH3-5.ACT1.ADVCT	Recognizes the need to advocate for a course of action, but needs some assistance to identify support for a course of action.	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.
MATH3-5.ACT2.ACTN	Recognizes the need to develop a viable, manageable, and responsible plan of action, but needs significant assistance to do so.	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.
MATH3-5.ACT3.IMPRT	Recognizes the importance of the plan of action through probing questions or other prompts.	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.