Math, 7

Communicates clearly and explains reasoning so others can follow how a problem is solved.

: Uses appropriate mathematical language.

: Uses appropriate forms of mathematical representations to present information correctly.

: Moves between different forms of mathematical representations.

: Communicates through lines of reasoning that are complete and coherent.

ALT 6 - Communication Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
• The pathway to a solution is precise, elegant, and clearly leads to an identified solution. • The explanation connecting each of the parts is given using precise mathematical language. • The mathematical writing is elegant, precise, and there are no errors in concepts or connections.	• Show my work such that the pathway to the solution is clear. • Correctly use math words and symbols in my work and final solution. • Express my final answer clearly and in context for contextual problems. • Express my understanding of the connections and concepts of mathematics in writing. • Use correct units when expressing my conclusion.	One or more of the following are occurring in the work… • The pathway to the solution is not clear. • The path to the solution leaves out important parts of the work. • The math words and/or symbols used are not always correct. • The final answer is not clearly evident. • The final answer is not in context for a contextual problem and/or does not have the correct units for the problem. • Some mathematical connections or concepts expressed correctly in writing. • The path to complete the work is just started. OR • The parts of the solution do not connect to each other.	

		OR • No steps are shown, only a final answer is given. OR • Mathematical writing unclear or incorrect.

Reasons mathematically to solve problems in real-life context.

: Identifies the relevant elements of the authentic real-life situation.

: Selects adequate mathematical strategies to model the authentic real-life situation.

: Applies the selected mathematical strategies to reach a valid solution to the authentic real-life situation.

: Explains the degree of accuracy of the solution.

: Explains whether the solution makes sense in the context of the authentic real-life situation.

ALT 2 - Modeling Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
The student is able to: • identify the relevant elements of the authentic real-life situation • select appropriate mathe matical strategies to model the authentic real-life situation • apply the selected mathematical strategies to reach a correct	The student is able to: • identify the relevant elements of the authentic real-life situation • select adequate mathem atical strategies to model the authentic real-life situation • apply the selected mathematical strategies to reach a valid	The student is able to: • identify the relevant elements of the authentic real-life situation • select, with some success, adequate mathematica l strategies to model the authentic real-life situation • apply mathematical strategies to reach a solution to the authentic real-life situation • discuss whether the solution makes sense in the context of	

solution to the authentic real-life situation • justify the degree of accuracy of the solution • justify whether the solution makes sense in the context of the authentic real-life situation.	solution to the authentic real-life situation • explain the degree of accuracy of the solution • explain whether the solution makes sense in the context of the authentic real-life situation.	the authentic real-life situation.

Recognizes patterns and describes them as relationships or general rules.

: Selects and applies mathematical problem-solving techniques to correctly identify the pattern.

: Pattern is described as relationship or general rule.

: Verifies the validity of these general rules.

: Conclusions are consistent with the correct findings.

ALT 3 - Patterns Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
The student is able to: • select and apply mathematical problem-solving techniques to discover complex patterns • describe patterns as general rules consistent with correct findings • prove, or verify and justify, these general rules.	The student is able to: • Select and apply mathematical problem-solving techniques to correctly identify the pattern. • Pattern is described as a relationship or general rule • Verify the validity of these general rules. • Conclusions are consistent with the correct findings.	The student is able to: • Apply mathematical problem-solving techniques to recognize patterns. • Suggest a relationship or general rule with findings.	

Analyzes proportional relationships and uses them to solve real-world and mathematical problems.

: Computes unit rate associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

: Recognizes and represents proportional relationships between quantities.

: Uses proportional relationships to solve multi-step ratio and percent problems.

ALT 4 - Proportional Relationships Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
• In addition to being proficient on the long-term target, I can demonstrate one or more of the following… • Consistently utilize efficient strategies to accurately solve problems in familiar situations • Apply understanding of long-term learning targets to unfamiliar situations and/or to solve complex problems • Use precise and relevant communication to justify mathematical thinking • Connect knowledge to other learning targets and/or advanced problem sets.	• Uses the concepts of ratio and ratio language to describe a ratio relationship between two quantities. • Uses the concept of a unit rate a/b associated with a ratio a:b with b ? 0, and rate language in the context of a ratio relationship. • Uses ratios and rate reasoning to solve real-world and percent mathematical problems.	• I am beginning to and occasionally demonstrate proficiency of one or more of the following concepts…	

Applies and extends previous understandings of operations with fractions.

: Applies and extends previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

: Applies and extends previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

: Solves real-world and mathematical problems involving the four operations with rational numbers.

ALT 05 - Operations with Fractions Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
• In addition to being proficient on the long-term target, I can demonstrate one or more of the following… • Consistently utilize efficient strategies to accurately solve problems in familiar situations • Apply understanding of long-term learning targets to unfamiliar situations and/or to solve complex problems • Use precise and relevant communication to justify mathematical thinking • Connect knowledge to other learning targets and/or advanced problem sets.	• Applies and extends previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. • Applies and extends previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. • Solves real-world and mathematical problems involving the four operations with rational numbers.	• I am beginning to and occasionally demonstrate proficiency of one or more of the following concepts…	

Uses properties of operations to generate equivalent expressions, and solves real-world mathematical problems using numeric and algebraic expressions and equations.

: Applies properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

: Understands that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

: Solves multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form using tools strategically. Applies properties of operations; converts between forms as appropriate; and assesses the reasonableness of answers.

: Uses variables to represent quantities in a real-world or mathematical problems, and constructs simple equations and inequalities to solve problems by reasoning about the quantities.

ALT 6 - Expressions and Equations Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
• In addition to being proficient on the long-term target, I can demonstrate one or more of the following… • Consistently utilize efficient strategies to accurately solve problems in familiar situations • Apply understanding of long-term learning targets to unfamiliar situations and/or to solve complex problems • Use precise and relevant communication to justify mathematical thinking	• Applies properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. • Understands that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. • Solves multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form using tools strategically. • Applies properties of operations; converts between forms as appropriate; and assesses the reasonableness of answers. • Uses variables to represent quantities in a real-world or	• I am beginning to and occasionally demonstrate proficiency of one or more of the following concepts…	

• Connect knowledge to other learning targets and/or advanced problem sets.	mathematical problems, and constructs simple equations and inequalities to solve problems by reasoning about the quantities.	

Draws, constructs, and describes geometric figures and relationships between them, and solves problems involving angle measure, area, surface area, and volume.

: Solves problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

: Draws, with a variety of tools, geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

: Describes the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms, and right rectangular pyramids.

: Knows the formulas for the area and circumference of a circle and uses them to solve problems; gives an informal derivation of the relationship between the circumference and the area of a circle.

: Uses facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

: Solves real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

ALT 7 - Geometric Figures and Measurement Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**

• In addition to being proficient on the long-term target, I can demonstrate one or more of the following… • Consistently utilize efficient strategies to accurately solve problems in familiar situations • Apply understanding of long-term learning targets to unfamiliar situations and/or to solve complex problems • Use precise and relevant communication to justify mathematical thinking • Connect knowledge to other learning targets and/or advanced problem sets.	• Solves problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. • Draws, with a variety of tools, geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. • Describes the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms, and right rectangular pyramids. • Knows the formulas for the area and circumference of a circle and uses them to solve problems; gives an informal derivation of the relationship between the circumference and the area of a circle. • Uses facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. • Solves real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	• I am beginning to and occasionally demonstrate proficiency of one or more of the following concepts…

Develops understanding of statistical variability and investigates chance processes to develop, use, and evaluate probability models.

: Understands that statistics can be used to gain information about a population by examining a random representative sample of a population.

: Uses data from a random sample to draw inferences about a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

: Informally assesses visual overlap of two data distributions with similar variabilities, expressing the differences between centers as a multiple of a measure of variability.

: Uses measures of center and variability for numerical data from random samples to draw informal comparative inferences about two populations.

: Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

: Approximates the probability of a chance event by collecting data, observing its long-run relative frequency, and predicting the approximate relative frequency.

: Develops a probability model and uses it to find probabilities of events. Compares probabilities from a model to observed frequencies; if the agreement is not good, explains possible sources of the discrepancy.

: Finds probabilities of compound events using organized lists, tables, tree diagrams, and simulations.

ALT 8 - Statistics and Probability Rubric

4 **Highly Proficient**	**3** **Proficient**	**2** **Nearly Proficient**	**1** **Developing**
• In addition to being proficient on the long-term target, I can demonstrate one or more of the following… • Consistently utilize efficient strategies to accurately solve problems in familiar situations • Apply understanding of long-term learning targets to unfamiliar	• Understands that statistics can be used to gain information about a population by examining a random representative sample of a population. • Uses data from a random sample to draw inferences about a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. • Informally assesses visual overlap of two data distributions	I am beginning to and occasionally demonstrate proficiency of one or more of the following concepts…	

situations and/or to solve complex problems • Use precise and relevant communication to justify mathematical thinking • Connect knowledge to other learning targets and/or advanced problem sets.	with similar variabilities, expressing the differences between centers as a multiple of a measure of variability. • Uses measures of center and variability for numerical data from random samples to draw informal comparative inferences about two populations. • Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. • Approximates the probability of a chance event by collecting data, observing its long-run relative frequency, and predicting the approximate relative frequency. • Develops a probability model and uses it to find probabilities of events. Compares probabilities from a model to observed frequencies; if the agreement is not good, explains possible sources of the discrepancy. • Finds probabilities of compound events using organized lists, tables, tree diagrams, and simulations.	