Grade 7 Advanced Math Proficiency Scale Quarter 1

	1 = Novice	2 = Approaching	3 = Proficient	4 = Advanced
Equivalent Expressions	Applies a property of operations to write an equivalent expression with integer coefficients.	Applies properties of operations as strategies to add, subtract, factor and expand linear expressions with integers to write equivalent expressions.	Applies properties of operations as strategies to add, subtract, factor and expand linear expressions with **rational coefficients** to write equivalent expressions (7.EE.1)	Shows in-depth inferences and connects ideas about properties of operations to add, subtract, factor and expand linear expressions with rational coefficients to write equivalent expressions.
Solving Linear Equations	Engages in guided practice of solving equations.	Solves two-step equations in the form of $px + q = r$ **OR** solves equations with integer coefficients.	Solves linear equations including word problems where coefficients are rational numbers and identifies the sequence of the operations used in each approach. (7.EE.4, 8.EE.7)	Generalizes how to solve any linear equation where coefficients are rational using mathematical vocabulary.
Solving Inequalities	Engages in guided practice of graphing and writing inequalities.	Solves and graphs one-step inequalities $px > r$ and $px < r$.	Solves and graphs two-step inequalities and word problems in the form of $px + q > r$ and $px + q < r$. (7.EE.4)	Solves and graphs real world problems leading to inequalities with variables and rational coefficients on both sides **AND** gives a detailed explanation in the context of problem using mathematical vocabulary.
Transformations	**Engages in the practice** of identifying a transformation on a two-dimensional figure.	Identifies a dilation, translation, rotation, **or** reflection on two-dimensional figures.	Identifies dilations, translations, rotations, and reflections on two-dimensional figures on a coordinate plane. (8.G.1, 8.G.3)	Demonstrates and describes in detail using mathematical vocabulary the pattern using formal coordinate notation for performing dilations, translations, rotations, and reflections on two-dimensional figures on a coordinate plane.
Congruence & Similarity	Identifies when two figures are congruent or similar with guidance and support.	**Identifies** congruent **or** similar two-dimensional figures given only one transformation.	Identifies a sequence of transformations for both congruent and similar two-dimensional figures. (8.G.2, 8.G.4)	Demonstrates and describes in detail using mathematical vocabulary the sequence of transformations that equal to one single transformations.

Makes Sense of Problems and Persevere	Solves mathematical problems **with structured support**.	Engages in mathematical problems by working to understand the questions that is asked, trying different strategies **or** identifying why their solution make sense.	Actively engages in solving real-world and mathematical problems by working to understand the information that is in the problem and the questions that is asked, trying different strategies and identifying why their solution make sense.	Not Assessed
Attend to Precision	Attempts to communicate work and reasoning, but math vocabulary and units are absent **AND** calculates with repeated basic computation errors.	Attempts to communicate work and reasoning using math vocabulary and units **AND** calculates with basic computation errors.	Communicates work and reasoning using math vocabulary and units **AND** calculates with little or no basic computations error.	Not Assessed

Grade 7 Advanced Math Proficiency Scale Quarter 2

	1 – Novice	2 = Approaching	3 = Proficient	4 = Advanced
Triangles and Parallel Lines	**Identifies** types of angles created when two lines are cut by a transversal **with guidance and support.**	**Recognizes or recalls** facts about triangles angle sum and exterior angles, **OR** angles created when two parallel lines are cut by a transversal.	Uses facts about supplementary, complementary, vertical, and adjacent angles, triangle's angle sum, and parallel lines cut by transversal in a multistep problem to write and solve simple equations for an unknown angle in a figure **AND** recognizes that no triangle, a unique triangle or multiple triangles can be formed from a given set of conditions. (7.G.2, 7.G.5, 8.G.5)	Given a pair of parallel lines and two congruent angles, informally proves another set of transversal lines are parallel.
Pythagorean Theorem	Recalls the Pythagorean Theorem and how it relates to a right triangle with structured support.	Uses the Pythagorean theorem to determine unknown side lengths in two dimensional problems **OR** uses the Pythagorean theorem to find the distance between two points on a coordinate plane.	Explains how the Pythagorean theorem relates to triangles **AND** uses the Pythagorean theorem to determine unknown side lengths in right triangles to solve real-world problems in two & three dimensions and on a coordinate plane. (8.G.6, 8.G.7, 8.G.8)	Creates and explains a formula to find the distance between two points (x_1, y_1), (x, y_2).
Rational & Irrational Numbers	With help and support, identifies an irrational number.	Identifies numbers that are rational or irrational **OR** locates irrational numbers on a number line.	Understands the definition of rational and irrational numbers based on the decimal expansion **AND** uses rational approximations to compare the size of irrational numbers using number line (8.NS.1 & 8.NS.2)	Describes in depth and using math vocabulary the entire the entire real number system and the inner relationships.
Exponent Equations	With help and support, identifies a radical as rational and irrational.	Classifies radicals as rational or irrational **OR** evaluates square roots of small perfect squares.	Solves equations of the form $x^2 = p$ using square root symbols to represent solutions **AND** evaluates square roots of small perfect squares. (8.EE.2)	Write equivalent radical expressions by simplifying radicals **AND** explain why the two expressions are equivalent.

Integer Exponents	Writes the expanded form of an integer raised to a power.	Applies a property of integer exponents to generate equivalent expressions.	Knows and applies multiple properties of integer exponents to generate equivalent expressions. (8.EE.1)	Writes and explains in detail with math vocabulary multiple equivalent expressions using different properties of integer exponents.
Makes Sense of Problems and Persevere	Solves mathematical problems **with structured support**.	Engages in mathematical problems by working to understand the questions that is asked, trying different strategies **or** identifying why their solution make sense.	Actively engages in solving real-world and mathematical problems by working to understand the information that is in the problem and the questions that is asked, trying different strategies and identifying why their solution make sense.	Not Assessed
Attend to Precision	Attempts to communicate work and reasoning, but math vocabulary and units are absent **AND** calculates with repeated basic computation errors.	Attempts to communicate work and reasoning using math vocabulary and units **AND** calculates with basic computation errors.	Communicates work and reasoning using math vocabulary and units **AND** calculates with little or no basic computations error.	Not Assessed

Grade 7 Advanced Math Proficiency Scale Quarter 3

	1 – Novice	2 = Approaching	3 = Proficient	4 = Advanced
Understanding Slope	**Identifies** slope with guidance and support.	**Recognizes** the slope as the rate of change of a graph **OR** **recognizes** slope as a constant rate on a non-vertical line.	Identify slope from a graph, table and two points (EE.5) **AND** explains why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. (8.EE.6)	Analyzes how the different ways to find slope of the graph are related using mathematical vocabulary.
Graphing Functions	Participates in the practice of graphing linear or non-linear functions.	Constructs the graph of a linear function from a table, equation, **or** verbal description	Constructs the graph of a linear function from a table, equation, and verbal description (8.EE.5, 8.F.4, 8.F.5)	**Create** situations that can be modeled by a linear functions and describe the domain and range in the context of the situation.
Writing Linear Equations	Participates in the practice of writing an equation of a line.	Writes the equation $y = mx + b$ from a description, graph **OR** table.	Writes the equation $y = mx + b$ from a description, graph, and table. (8.EE.6, 8.F.4)	**Summarizes in words** how to write the equation of a line from a non-specific description, graph, and table.
Interpreting Functions	With guidance and support, identifies a function **OR** identifies a quality of a graph of functional relationship.	Understands the definition of a linear and non-linear functions as represented in a table, equation, **or** a graph **OR** interprets the rate of change **or** initial value of a linear function in terms of the situation it models.	Understands the definition of a linear and non-linear function as represented in a table, equation, and a graph (8.F.1, 8.F.3) **AND** interprets the rate of change and initial value of a linear function in terms of the situation it models (8.F.4, 8.F.5)	Understands and describes how domain and range change between graphs of linear and non-linear functions.
Comparing Linear Functions	With guidance and support, **sorts** functions based on a property.	**Identifies** a difference between two linear functions represented in the same way.	**Compares** the properties (slope, y-intercept, linear and non-linear) of linear functions represented in different ways using math vocabulary. (8.EE.5, 8.F.2)	**Creates** examples of functions represented in different ways and compares and contrasts properties of those functions.

Makes Sense of Problems and Persevere	Solves mathematical problems **with structured support**.	Engages in mathematical problems by working to understand the questions that is asked, trying different strategies **or** identifying why their solution make sense.	Actively engages in solving real-world and mathematical problems by working to understand the information that is in the problem and the questions that is asked, trying different strategies and identifying why their solution make sense.	Not Assessed
Attend to Precision	Attempts to communicate work and reasoning, but math vocabulary and units are absent **AND** calculates with repeated basic computation errors.	Attempts to communicate work and reasoning using math vocabulary and units **AND** calculates with basic computation errors.	Communicates work and reasoning using math vocabulary and units **AND** calculates with little or no basic computations error.	Not Assessed

Grade 7 Advanced Math Proficiency Scale Quarter 4

	1 – Novice	2 = Approaching	3 = Proficient	4 = Advanced
Area and Surface Area	With help and support, matches the net to the prism or cylinder OR identifies the area formulas for a given two-dimensional shape.	Solves mathematical problems involving area or circumference of circles and/or area of polygons **OR** draws the net of a cylinder or prism.	Uses nets to solve real world and mathematical problems involving surface area of prisms and cylinders including composite solids (7.G.6) **AND** describes cross-sections of right rectangular prisms and pyramids. (7.G.3)	Solves for dimensions of the prism and cylinder given the surface area and other dimensions and explains their process with math vocabulary.
Volume	With guidance and support, identifies the formulas for the volume of cones, prisms, spheres, and cylinders.	Recognizes or recalls the formulas for the volume of prisms, cones, spheres, and cylinders.	Solves real-world and mathematical problems involving volumes of cones, cylinders, spheres, and right prisms including composite solids. (7.G.3, 7.G.6, 7.G.9, 8.EE.2)	Solve real-world mathematical problems involving composite figures consisting of prisms, cones, cylinders, and spheres **AND** solve for unknown dimensions given the volume and other dimensions.
Systems of Equations	With help and support, identifies the solution to a linear system.	Solves systems of linear equations using a method of solving **OR** explains the possible solutions for a system and what it represents with the two linear equations.	Solves systems of linear equations algebraically and graphically **AND** writes the systems of linear equations in two variables to solve real-world and mathematical problems. (8.EE.8)	Solve systems of linear equations with rational solutions that requires the one or both equations to be rearranged before solving.
Data Collections and Calculations	Engages in the practice of generating random samples.	Generates a random sample and makes predictions based on the sample.	Analyzes and draws inferences about a population using single and multiple random samples by using measures of center and variability for the numerical data set. (7.SP.1-4)	Draws multiple inferences when comparing two populations using mathematical vocabulary and gives a detailed explanation in the context of problem using mathematical vocabulary.

Probability	Engages in the practice of collecting data on a chance process.	Collects data on a chance process and makes predictions based on probability models.	Develop a probability model to find probabilities of theoretical events and compares/contrasts probabilities from an experimental model **AND** finds probabilities of compound events using organized lists, tables, tree diagrams, and simulations (7.SP.5-8)	Finds probability of multiple independent and dependent events and gives a detailed explanation in the context of problem using mathematical vocabulary.
Solving Equations	Engages in guided practice of solving equations.	Solves one-step equations in the form of $px = r$ and $x + p = r$ **OR** solves equations with integer coefficients.	Solves two-step equations including word problems in the form of $px + q = r$ and $p(x + q) = r$ where coefficients are rational numbers and identifies the sequence of the operations used in each approach. (7.EE.4)	Solves equations with variables on both sides where coefficients are rational **AND** gives a detailed explanation in the context of problem using mathematical vocabulary.
Makes Sense of Problems and Persevere	Solves mathematical problems **with structured support**.	Engages in mathematical problems by working to understand the questions that is asked, trying different strategies **or** identifying why their solution make sense.	Actively engages in solving real-world and mathematical problems by working to understand the information that is in the problem and the questions that is asked, trying different strategies and identifying why their solution make sense.	Not Assessed
Attend to Precision	Attempts to communicate work and reasoning, but math vocabulary and units are absent **AND** calculates with repeated basic computation errors.	Attempts to communicate work and reasoning using math vocabulary and units **AND** calculates with basic computation errors.	Communicates work and reasoning using math vocabulary and units **AND** calculates with little or no basic computations error.	Not Assessed