URBANDALE
COMMUNITY SCHOOL DISTRICT

Bridges to Algebra

Learning Requirements & Proficiency Scales

What are grade level learning requirements and how should they be used?

Learning requirements are the student and parent/guardian friendly statement that indicates the knowledge, understanding, and skills students are expected to learn. In addition, educators communicate, post, and share course learning requirements with students and families in order to establish a compelling "why" and "what" within their classroom learning system.

Teachers use the learning requirements to guide their planning and assessment within their classroom. Individual and grade/content teams should use learning requirements daily to inform planning, delivery of instruction, and assessment within the professional learning process and individual actions. Finally, learning requirements were established from course/grade level level standards by assessing each standard's relevance, endurance, appearance on assessments, and leverage. Therefore, these are the learning outcomes that are prioritized for the grade/course and therefore should occupy the most instructional time for both whole group, small group and individual intervention.

What are proficiency scales and how should they be used?

Proficiency scales are a structure that articulates levels of learning that aligns to the learning requirement. Each proficiency scale is unidimensional meaning it outlines the levels of learning related to a single skill, concept, or understanding. There are frequently more than one proficiency scale that aligns and informs the overall level of proficiency for a learning requirement. The fulcrum for the proficiency scale is the score of 3.0 level. When students demonstrate competence at the score of 3.0, we say they are proficient. The score of 2.0 content is necessary for students to be able to achieve proficiency and important for the teacher to instruct directly. The score of 4.0 content is advanced and typically requires students to apply the score of 3.0 content in novel situations that they did not receive direct instruction on in class. Score of 1.0 signifies that a student cannot demonstrate proficiency in any of the content independently, but can do so, at least partially, with aid and cueing. Finally, the score value of 0.0 signifies that even with help, the student cannot demonstrate even partial competence in any of the content the scale articulates.

Teachers should use proficiency scales individually and collectively in the following ways:

- To plan instruction paying specific attention to level 2.0 to identify foundational vocabulary, knowledge, understanding, and skills to execute.
- To communicate levels of proficiency with students so students understand how they go from learning to knowing and doing.
- To assess students during instruction and as a result of instruction.
- To assess students on formative and summative assessments.
- Collectively a grade or content team should use the proficiency scales within a learning requirement in the design of common formative assessments and to assess students proficiency on common formative assessments.

Grading for Learning Implementation Expectations

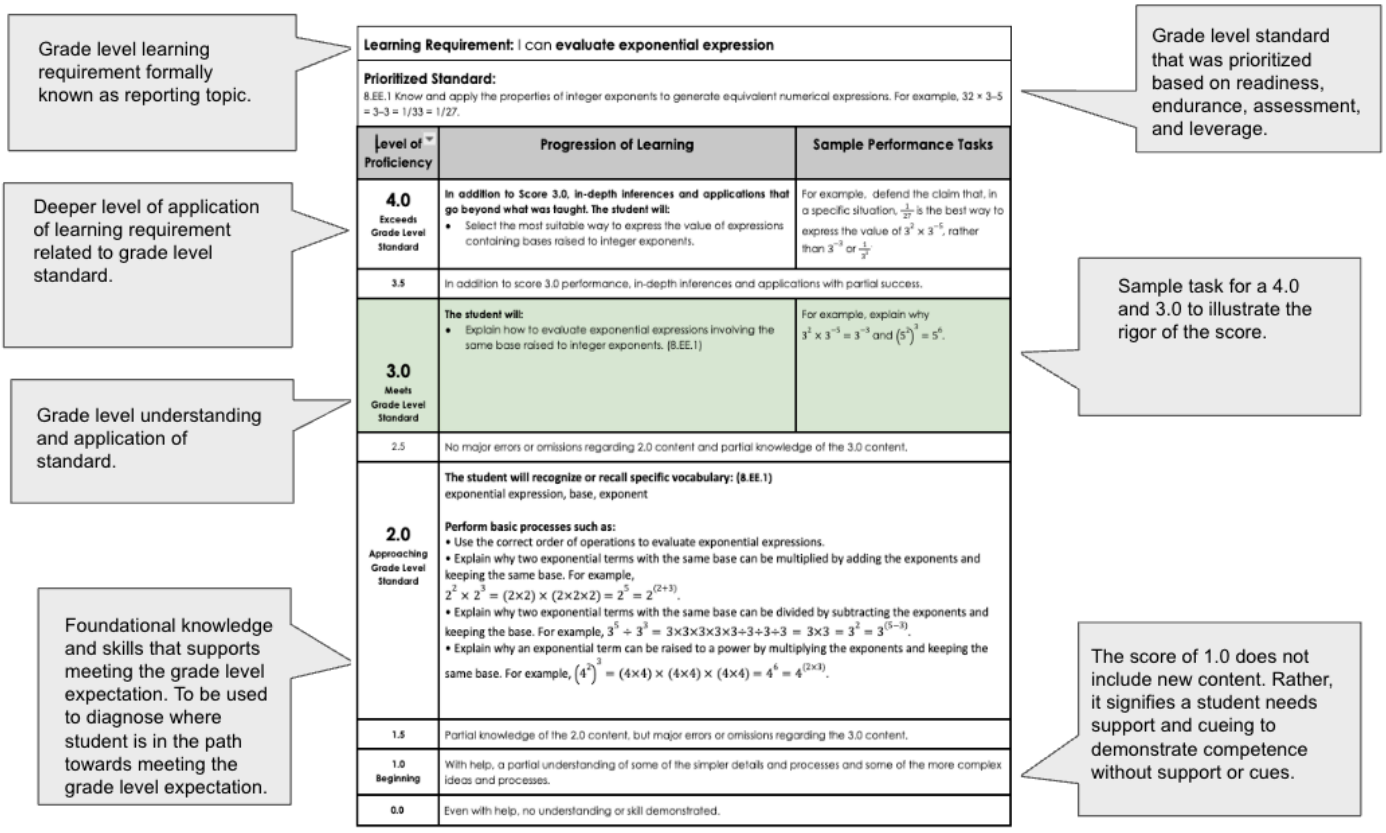
How are learning requirements and proficiency scales used to determine course/content area scores or grades?

A score (end of course level of proficiency) for a learning requirement is determined by using a body of evidence. Best practice is to provide multiple opportunities for students to demonstrate their knowledge, understandings, and execution skills. Evidence can be collected through observations, presentations, projects, interviews, written expressions, quick checks and/or tests. The evidence opportunity is tiered 2.0-4.0 in order to allow the student to demonstrate their full level of proficiency. For efficiency purposes, teachers should first focus on grade level or the 3.0 level of proficiency to determine if the student is proficient, and if they are not, then review the evidence for level 2.0 or 4.0. The last piece of evidence should hold the most weight when making a decision about a student's level of proficiency.

In the example below, the student has received scores for multiple pieces of evidence connected to one learning requirement. Since the evidence shows learning progress over time, the scores are not averaged. The last piece of evidence holds the most weight in determining the overall learning requirement proficiency because it is the most recent evidence of student learning.

Evidence	Score	Learning Requirement	Level of Proficiency
Exploration Task	2.0	I can evaluate exponential expressions.	3.0
Mid-Unit Check	2.5		
End-of-Unit Assessment	3.0		

The Anatomy of the Proficiency Scale



Proficiency scales are designed to provide clarity to what is grade level and the knowledge, understanding, and skills necessary to meet grade level or 3.0. The score of 3.0 and 4.0 includes a focus statement that the teacher uses to know what to look for when assessing the piece of evidence. The Sample Performance Task provides an example of how that statement might manifest or show up. The Sample Performance Task could be used as an example to understand the rigor of grade level and the deeper level performance. The score of 4.0 is at a level with the content that requires students to make inferences and applications that go beyond what the teacher directly addresses in class. The score of 2.0 contains a list of vocabulary terms and details that students should know to be able to demonstrate competence at the score of 3.0 level. The contents of level 2.0 should be used by teams to plan instruction that includes the vocabulary and content listed within it. If less than 80% of students are scoring a 2.0 or less on the content within a proficiency scale or reporting topic the teacher and/or team should provide whole class reteaching using what is outlined in 2.0. In addition, if a student has not reached a level of proficiency of a 3.0 the teacher and/or team should use the knowledge, understandings, and skills within the 2.0 to diagnose the need and match an supplemental intervention during the intervention block to support the student in reaching proficiency.

Bridges to Algebra Learning Requirements & Proficiency Scales

Units	Learning Requirements
Unit 1	**I can evaluate and represent real numbers in a variety of ways.**
	I can numerically represent and solve real world problems.
Unit 2	**I can interpret algebraic expressions.**
	I can numerically represent and solve real world problems.
Unit 3	**I can solve mathematical problems using numerical and algebraic equations.**
	I can write and solve linear inequalities.
Unit 4	**I can write a function rule to represent a set of data.**
	I can graph equations of lines and calculate slope.
Unit 5	**I can solve systems of equations and inequalities.**
Unit 6	**I can evaluate exponential expressions.**
	I can simplify polynomials.

Learning Requirement: I can **evaluate and represent real numbers in a variety of ways.**

Prioritized Standard:

6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
6.NS.C.7 Understand ordering and absolute value of rational numbers.

Supporting Standards: 6.EE.1, 6.EE.3, 6.NS.5

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Solve addition and subtraction problems involving negative numbers and absolute values.	For example, evaluate $3 - 5, 4 + (-6), 1 + \lvert -3\rvert$, and $\lvert 7 - 9\rvert$
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Evaluate positive and negative numbers and represent them on a number line. • Evaluate and represent absolute values.	For example, when given the set of values $\left\{5, \frac{2}{3}, -3, -\frac{3}{4}, -(-3), -2.5, -0\right\}$, represent them on a number line. For example, when given the set of values $\left\{\lvert 4\rvert, \lvert -3\rvert, 5, \left\lvert\frac{2}{5}\right\rvert, -3, \lvert -8\rvert, \left\lvert-\frac{2}{3}\right\rvert, \lvert -4\rvert\right\}$, represent them on a number line.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary**: negative number, opposite of a number, positive number **Perform basic processes such as:** • Locate a given negative number on a number line by counting backwards from zero. • Describe a positive number and its corresponding negative number as "opposites" of each other. For example, describe -3 as the opposite of 3. • Explain that a number and its opposite are reflections of each other across zero on a number line. • Explain that the opposite of the opposite of a number is the original number. For example, $-(-3) = 3$. • Explain that a negative number with a larger magnitude is actually less than a negative number with a smaller magnitude. For example, -9 is less than -5. **The student will recognize or recall specific vocabulary:** absolute value, magnitude **Perform basic processes such as:** • Explain that the absolute value of a number is the distance between that number and zero on a number line. • Explain that an absolute value will always be positive. • Interpret absolute value notation. • Explain that the absolute value of a number will be equal to the absolute value of its opposite. For example, $\lvert 6\rvert = \lvert -6\rvert$. • Explain that a negative sign outside absolute value bars represents the opposite of the absolute value. For example, $\lvert -5\rvert = 5$, but $-\lvert -5\rvert = -5$.	

1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **solve real-world and mathematical problems.**

Prioritized Standard:

7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

Supporting Standards: 7.EE.2, 7.EE.4

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Apply the properties of signed numbers to other mathematical processes and operations.	For example, explain how to calculate the distance between the points $(5, 3)$ and $(5, -3)$ on a coordinate plane or explain why $(-5)^2 = 5^2$.
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Use positive and negative numbers and absolute values to describe real-world contexts .	For example, when given a map on which east/west coordinates are measured from zero beginning at the leftmost border, describe the coordinates of a person who travels a given distance westward beyond the border of the map using negative numbers, and describe their total distance traveled as an absolute value.
	• Use positive and negative numbers and absolute values to solve problems with real-world contexts.	For example, given that a $40ft$ telephone pole is placed in a hole whose bottom is $-6ft$ relative to ground level, calculate the above-ground height of the pole by subtracting $\|-6\|$ from 40.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary:** number line, rational numbers, absolute value **Perform basic processes such as:** • Explain that numbers can be used to represent properties or values in real-world and mathematical contexts. For example, numbers can be used to represent coordinates on a map, quantities, or physical measurements such as temperature. • Identify real-world or mathematical contexts in which a property or value could be represented by the number 0. For example, contexts might include representing altitude at sea level, representing a starting point on a map, or defining fixed reference points such as when using $0°C$ to represent the freezing point of water.	

	• Identify real-world or mathematical contexts in which a property or value could be represented by a number below zero. For example, contexts might include measuring a temperature that has dropped lower than $0°C$, identifying a location beyond a border represented by zero on a map, or representing relative reductions in quantity such as losing weight. • Explain that absolute values are useful for describing the size or magnitude of a property or value represented by a negative number, such as when describing the amount of money owed on a bank balance of $-\$50$. **Recognize or recall specific vocabulary**: absolute value **Perform basic processes such as:** • Explain that the absolute value of the difference of two values represents the distance between those values. For example, $\lvert(-5)-3\rvert$ represents the distance between -5 and 3. • State that an absolute value will always be positive. • Calculate absolute values. For example, calculate the value of $\lvert(-5)-3\rvert$. • Use numerical relationships to model real-world contexts. For example, represent eastward travel on a map as a positive value and westward travel as a negative value. • Identify when a problem calls for an absolute value calculation. For example, absolute value is used when calculating measurements such as distance or speed.
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **interpret algebraic expressions.**

Prioritized Standard:

7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2 Understand 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. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.

Supporting Standards: 6.EE.3

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Add and simplify two or more algebraic expressions	For example, when given the algebraic expressions $8 - 4x$ and $5(x + 7)$, add the expressions and simplify the resulting sum
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Evaluate algebraic expressions for a given value of the variable (7.EE.1) • Generate equivalent algebraic expressions (7.EE.2) • Write an algebraic expression to represent a mathematical statement. (6.EE.2)	For example, evaluate the expression $50 - 3x^2$ when $x = 3$, $x = 0$, $x = \frac{2}{3}$, and $x = 0.5$. For example, rewrite the expression $25x - 10$ as $5(5x - 2)$, and then evaluate both expressions for the same value of x to verify that they are equivalent. For example, express the calculation "Subtract y from 5" as 5 – y.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary:** dot operator, variable **Perform basic processes such as:** • Explain that a variable in an algebraic expression represents an unknown value. • Explain that a variable in an algebraic expression can take on different values, each of which may change the value of the expression. • Interpret algebraic notation (for example, explain that the dot operator [·] indicates multiplication, or that a variable written next to a value represents the multiplication of the variable by that value [$7x$ represents $7 \cdot x$]). • Explain that an algebraic expression can be evaluated for a given value by substituting that value for the variable.	

	• Make predictions about the evaluation of an expression for different values of the variable by reasoning about the structure of the expression. For example, predict that the value of the expressions $50 - x$ and $\frac{7}{x}$ will decrease as the value of x increases. **The student will recognize or recall specific vocabulary:** coefficient, constant, equivalent expressions, factor, term **Perform basic processes such as:** • Factor values from terms in a numerical or algebraic expression. For example, factor the 2 from the expression $2x + 12$ to create the expression $2(x + 6)$. • Describe the properties of, and interactions between, the different components (terms, variables, constants) of algebraic expressions. For example, explain that the terms of an expression are the values or groupings of values that are added or subtracted together, that factors are values within a term that are multiplied together, and that a coefficient is a constant factor of a term containing a variable. • Describe one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as the product of two factors (2 and $(8 + 7)$, in which $(8 + 7)$ is viewed both as a sum of two terms and as a single entity). • Combine like terms in algebraic expressions. • Identify equivalent algebraic expressions. For example, identify $x + x + x$ as being equivalent to $3x$ or identify x as being equivalent to $1 \cdot x$. **The student will recognize or recall specific vocabulary:** dot operator, variable, add, subtract, multiply, divide, distribute **Perform basic processes such as:** • Describe the properties of, and interactions between, the different components (terms, variables, constants) of algebraic expressions. For example, explain that the terms of an expression are the values or groupings of values that are added or subtracted together, that factors are values within a term that are multiplied together, and that a coefficient is a constant factor of a term containing a variable. • Identify words and the corresponding operations they represent. • define a variable to represent an unknown value within a statement.
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 **Beginning**	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **solve mathematical problems using numerical and algebraic equations.**

Prioritized Standard:

8.EE.7 Solve linear equations in one variable.
7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically.
7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Supporting Standards: 6.EE.2, 6.EE.4, 6.EE.5, 6.EE.7, 6.EE.8, 7.EE.1, 7.EE.2, 7.NS.1, 7.NS.2, 7.NS.3

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Write linear equations in two variables to model and solve real-world problems .	For example, given that a farmer can sell 100 pounds of potatoes for $\$6$, and given production costs of $\$150,000$ per year, write an equation to determine the amount of profit the farmer will make for producing a given number of pounds of potatoes in a year.
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Explain why the same amount or value can be added to or subtracted from both sides of an equation without changing the relationship it represents. (7.EE.3) • Write and s olve equations in one variable (8.EE.7)(7>EE.4)	For example, compare an algebraic equation to a balance and explain that, as with an equation, adding equal weights to each side of a balance will result in the same relationship even though the total weight on the balance has increased. For example, solve the equation $210(t - 5) = 41,790$ for t.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary:** algebraic expression, solution **Perform basic processes such as:** • Write linear equations to represent problems given as verbal descriptions and word problems. • Isolate the variable of a linear equation on one side of the equation. • List the steps used to solve a given linear equation. For example, when given the equation $5x + 2 = 12$, explain that the equation can be solved by first subtracting 2 from both sides and then dividing both sides by 5 to arrive at the solution $x = 2$. • Verify the solution to a linear equation by substituting the solution back into the original equation.	

	The student will recognize or recall specific vocabulary: Opposites, variable, coefficient, equivalent expression **Perform basic processes such as:** • Eliminate a term from one side of an equation or inequality by adding its opposite to both sides of the equation or inequality. For example, add $-\ 3$ to both sides of the equation $9x\ +\ 3\ =\ 21$ to produce the equation $9x\ =\ 18$. • Eliminate a coefficient from a term by dividing both sides of an equation by the coefficient. • Eliminate fractions from an equation by multiplying both sides of the equation or inequality by the least common denominator of any fractions within it. For example, multiply both sides of $7\ -\ \frac{10}{x}\ =\ 2\ +\ \frac{15}{x}$ by x to produce the equation $7x\ -\ 10\ =\ 2x\ +\ 15$.
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **write and solve linear inequalities.**

Prioritized Standard:
A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
A.CED.1 Create equations and inequalities in one variable and use them to solve problems.

Supporting Standards: A.REI.1

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Develop a strategy to solve equations and inequalities that include absolute values.	For example, if an equation includes the absolute value of an expression, treat the absolute value expression as a variable, solve for it first, then split the equation into two parts which are equal to the positive and negative values of the expression on the other side of the equation, and solve each equation for the variable to produce two solutions.
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Express solutions to inequalities in one variable algebraically and visually. (A.REI.3) • Create and solve inequalities in one variable. (A.CED.1)	For example, plot the solution set $-1 \leq x \leq 17$ on a number line and using interval notation For example, solve the inequality $3x \leq 1000$ for x
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary:** Constant, variable, inverse operations, balance, equality **Perform basic processes such as:** • Explain the notation used to plot solutions and solution sets on a number line. For example, a closed circle means the point is included, an open circle means the point is not included, a shaded line means the interval is included, and a shaded arrow means the interval includes positive or negative infinity. • Use interval notation to denote the solution set of an inequality. For example, use square brackets to indicate a closed interval (endpoint included) and parentheses to indicate an open interval (endpoint not included); always use parentheses when infinity is indicated; use the "union" symbol U to indicate a set with two intervals. **The student will recognize or recall specific vocabulary:** Inequality, greater than, less than,greater than or equal to, less than or equal to **Perform basic processes such as:** • Separate compound inequalities into two separate inequalities before solving. For example, express $-5 \leq x-4 \leq 13$ as $-5 \leq x-4$ and $x-4 \leq 13$ before solving each inequality.	

	• Eliminate a coefficient from a term by dividing both sides of an equation or inequality by the coefficient. For example, divide both sides of the inequality $8x > 32$ by 8 to produce the solution $x > 4$. • Eliminate fractions from an inequality by multiplying both sides of the inequality by the least common denominator of any fractions within it. • Reverse the inequality symbol when multiplying or dividing both sides of an inequality by a negative number. For example, when dividing both sides of $-4x < 135$ by -4, reverse the inequality to produce the solution set $x > -\frac{135}{4}$.
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **write a function rule to represent a set of data.**

Prioritized Standard:

8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

Supporting Standards: F.IF.1, F.IF.4, F.I, BF.1

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Solve real-world problems involving the construction of two or more linear functions.	For example, given that two trains each leave a separate city at the same time and head toward each other at a constant speed, and given the distance between the cities and the speed of each train, construct linear functions modeling each train's distance from one of the cities as a function of time and then determine how long it will take for the trains to pass each other
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Construct a function to model a linear relationship between two quantities. (8.F.4)	For example, when given that an energy company bills electricity at a rate of $0.12 per kilowatt hour, and when given that each monthly bill includes a flat-rate service charge of $23, write a function describing the total monthly electric bill as a function of electricity usage
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary: (8.F.4)** function definition, relationship, input, output **Perform basic processes such as:** • Identify the independent and dependent variables when given two quantities in a function relationship. For example, when given that the battery of a cellular phone drains a given amount per every hour of use, explain that the amount of charge left in the battery is dependent on the amount of time the phone has been in use. • Explain that an equation describing a function relationship depicts the rule being applied to the inputs in order to produce the outputs. For example, when given the linear equation $y = 3x - 1$ describing a function relationship, explain that the function is taking every input x, multiplying it by 3 and subtracting 1, then returning the resulting value as the output y. • Write the equation of a line when given its slope and *y*-intercept. • Calculate the rate of change when given two or more pairs of variables (inputs and outputs) in a linear function relationship.	

	• Calculate the initial value when given two or more pairs of variables (inputs and outputs) in a linear function relationship. For example, when given two input/output pairs belonging to a linear function, calculate the rate of change of the function, then insert the rate of change and the values of either set of variables into the equation $y = mx + b$ to calculate the initial value of the function (the constant of the equation).
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **graph equations of lines and calculate slope.**

Prioritized Standard:

5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Predict changes in the graph of a line from changes in its equation.	For example, when given the equation $y = 2x + 3$, graph the line and then sketch what the lines $y = 4x + 3$, $y = 2x + 15$, and $y = -2x + 3$ might look like
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Graph points on a coordinate plane. (5.G.A.1) • Graph linear equations on a coordinate plane (8.EE.5) • Calculate the slope of a given line as the ratio of the line's change in *y* to its change in x (8.EE.6)	For example, when given a set of ordered pairs, graph the pairs as points on a coordinate plane. For example, graph the equation $y = 2x - 3$ \
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary: (5.G.A.1)** Cartesian coordinate plane, coordinates, ordered pair, origin, point, x-axis, x-coordinate, y-axis, y-coordinate **Perform basic processes such as:** • Explain that a Cartesian coordinate plane is a graph that takes the shape of a two-dimensional grid defined by a horizontal number line known as the *x*-axis and a vertical number line known as the *y*-axis that meet at 0. • Explain that the location of a point on a coordinate plane can be specified by identifying the values on the *x*- and *y*-axes with which the point aligns.	

	• Explain that the values on the *x*- and *y*-axes with which a given point aligns are known as the point's *x*- and *y*-coordinates and are typically notated as an ordered pair in which the *x*-coordinate is listed first and the *y*-coordinate is listed second. • Identify the *x*- and *y*-coordinates of a given point on a coordinate plane. • Explain that a point can be plotted on a coordinate plane by beginning at the origin and first counting along the *x*-axis until reaching the value that corresponds to the point's *x*-coordinate, then counting upward until reaching the location that aligns with the value on the *y*-axis that corresponds to the point's *y*-coordinate. **The student will recognize or recall specific vocabulary: (8.EE.5)** *slope*, y-*intercept* **Perform basic processes such as:** • Graph a linear equation by plotting two ordered pairs and connecting them. For example, generate ordered pairs by inserting *x*-values into a linear equation and calculating their corresponding *y*-values. • Graph a linear equation by plotting the *y*-intercept and using the slope to find another point on the line. For example, convert a linear equation to slope-intercept form, plot the *y*-intercept, and then use the slope to plot another point on the line. **The student will recognize or recall specific vocabulary: (8.EE.6)** Rate of change, x-coordinate, y-coordinate, vertical, horizontal **Perform basic processes such as:** ● Locate a point in the coordinate plane ● Subtract coordinate values ● Identify horizontal and vertical lines
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **solve systems of equations and inequalities.**

Prioritized Standard:

8.EE.8.B Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.
HSA.REI.D.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Supporting Standards: HSA.CED.2, HSA.REI.D.10

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Develop a strategy to solve a system of linear equations in three variables.	For example, reason that because a solution to a system of equations is the solution to each equation in the system it must preserve information from all the equations; apply that reasoning in using the substitution or elimination methods to solve the system of equations $x - y = 2$, $3x + z = 11$, and $y - 2z = -3$.
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Solve systems of two linear equations in two variables. (8.EE.8.B) • Solve systems of linear inequalities visually. (HSA.REI.D.12)	For example, find the values of both x and y in the system of linear equations including $2x + 3y = 12$ and $x + 4y = 11$ using both the elimination and substitution methods. For example, graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary: (8.EE.8.B)** elimination method, substitution method, system of equations, intersection point **Perform basic processes such as:** • Explain that the solution to a system of equations satisfies every equation in the system. • Solve linear equations in two variables in terms of one of the variables. For example, solve a linear equation containing both x and y variables in terms of x. • Explain that the solution to a single variable for one equation of a system of equations in two variables can be plugged into a different equation in the system to find the solution of the other variable. • Add or subtract two equations.	

	• Multiply an equation by a constant. **The student will recognize or recall specific vocabulary: (HSA.REI.D.12)** system of linear inequalities, intersection, half-plane, solution set **Perform basic processes such as:** • Determine if an ordered pair is a solution to a system of inequalities. • Determine which side of a line the plane expressed by a linear inequality lies on. For example, "greater than" denotes the area above a line; "less than" denotes the area below a line. • Explain the notation used to denote strict and nonstrict linear inequalities. For example, a dashed line is used to indicate strict inequality boundaries and a solid line is used to indicate nonstrict inequality boundaries; closed circles are used to indicate points along a nonstrict inequality boundary and open circles are used to indicate points along a strict inequality boundary.
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.

Learning Requirement: I can **evaluate exponential expression**

Prioritized Standard:

8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27.

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Select the most suitable way to express the value of expressions containing bases raised to integer exponents.	For example, defend the claim that, in a specific situation, $\frac{1}{27}$ is the best way to express the value of $3^2 \times 3^{-5}$, rather than 3^{-3} or $\frac{1}{3^3}$.
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Explain how to evaluate exponential expressions involving the same base raised to integer exponents. (8.EE.1)	For example, explain why $3^2 \times 3^{-5} = 3^{-3}$ and $\left(5^2\right)^3 = 5^6$.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary: (8.EE.1)** exponential expression, base, exponent **Perform basic processes such as:** • Use the correct order of operations to evaluate exponential expressions. • Explain why two exponential terms with the same base can be multiplied by adding the exponents and keeping the same base. For example, $2^2 \times 2^3 = (2\times2) \times (2\times2\times2) = 2^5 = 2^{(2+3)}$. • Explain why two exponential terms with the same base can be divided by subtracting the exponents and keeping the base. For example, $3^5 \div 3^3 = 3\times3\times3\times3\times3\div3\div3\div3 = 3\times3 = 3^2 = 3^{(5-3)}$. • Explain why an exponential term can be raised to a power by multiplying the exponents and keeping the same base. For example, $\left(4^2\right)^3 = (4\times4) \times (4\times4) \times (4\times4) = 4^6 = 4^{(2\times3)}$.	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
1.0 **Beginning**	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
0.0	Even with help, no understanding or skill demonstrated.	

Learning Requirement: I can **simplify polynomials.**

Prioritized Standard:
HSA.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Supporting Standards: HSA.SSE.1

Level of Proficiency	Progression of Learning	Sample Performance Tasks
4.0 **Exceeds Grade Level Standard**	**In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught. The student will:** • Develop a strategy for simplifying polynomials.	For example, first distribute any factors or negative signs across the polynomials to which they apply, then rewrite the expression with like terms next to each other, finally add and subtract like terms and write the final form of the expression with terms in order of descending degree
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0 **Meets Grade Level Standard**	**The student will:** • Add and subtract polynomials. (HSA.APR.1) • Simplify polynomials with more than one variable. (HSA.APR.1)	For example, $\left(x^3 + 3x - 6\right) + \left(-2x^2 + x - 2\right)$- $(3x - 4)$ For example, $4x^2y - 3x^2 - 2y + 8xy - 3x^2 + 2x^2y + 4$
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
2.0 **Approaching Grade Level Standard**	**The student will recognize or recall specific vocabulary: (HSA.APR.1)** Polynomial, terms, coefficients, exponents, degree of a polynomial **Perform basic processes such as:** • Add two polynomials. For example, $\left(5x^2 + 8x - 3\right) + \left(2x^2 - 7x + 13x\right) = 7x^2 + 14x - 3.$ • Subtract two polynomials. For example, $(16x + 14) - \left(3x^2 + x - 9\right) = -3x^2 + 15x + 23.$ • Distribute the negative sign across the entire polynomial to which it applies when subtracting polynomials. For example, $(16x + 14) - \left(3x^2 + x - 9\right) = 16x + 14 - 3x^2 - x + 9.$ **The student will recognize or recall specific vocabulary: (HSA.APR.1)** like terms, unlike terms, coefficients **Perform basic processes such as:** • Use the correct order of operations when simplifying polynomials. • Use the commutative property to group like terms in a polynomial. • Use the distributive property to simplify polynomial expressions. • Simplify polynomial expressions with one variable. For example, $3x^2 - 8x + 7 + 2x^3 - x^2 + 8x - 3 = 2x^3 + 2x^2 + 4.$ • Use the properties of exponents to simplify polynomials.	

1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.
1.0 Beginning	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
0.0	Even with help, no understanding or skill demonstrated.