

Reporting Categories	Needs Support	Close	Ready	Exceeding
<p><b>The Number System</b> Students deepen understanding and fluency with rational numbers and learn that there are irrational numbers, which are close to rational numbers.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>approximates a multiple of <math>\pi</math> by multiplying an approximation of <math>\pi</math>.</li> <li>uses a calculator to approximate an irrational number.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>uses rational approximations of irrational numbers to compare and order rational and irrational numbers.</li> <li>finds a rational approximation of an irrational number expressed as a square root by using properties of square roots.</li> <li>recognizes the difference between rational and irrational numbers in terms of the structure of their decimal expansions.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>understands that an approximation of an irrational number to a given number of decimal places cannot be exact.</li> <li>uses the regularity of a repeating decimal to understand conversion of a repeating decimal to fraction form.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>understands and can show that if one adds two rational numbers, the result must be a rational number.</li> </ul>
<p><b>Expressions and Equations</b> Focus is on reasoning about expressions and equations, in particular linear equations. Students work with radicals and integer exponents.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>recognizes that the slope of a line can be positive, negative, zero, or undefined.</li> <li>substitutes known values for variables to solve a linear equation with whole number coefficients and results.</li> <li>recognizes that the solution to a system of linear equations in two variables is the intersection point of the lines.</li> <li>understands a number expressed in scientific notation.</li> <li>looks for and makes use of structure of a linear equation as needed to test a solution through substitution.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>finds square roots of small perfect squares.</li> <li>converts to and from scientific notation.</li> <li>finds slope as change in <math>y</math> divided by change in <math>x</math> between two points on a line.</li> <li>recognizes that the procedure for finding slope, when applied to a vertical line, requires division by zero, which is undefined and so is consistent with undefined slope for the line.</li> <li>estimates the solution to a system of linear equations by inspecting the graph.</li> <li>looks for and makes use of structure of a linear equation as needed to solve an equation with a variable on one side.</li> <li>recognizes that division by zero is undefined.</li> <li>recognizes that the solution to a linear system of equations is the intersection point of the lines on the graph.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>estimates square roots of decimals and rounds the results.</li> <li>understands that a constant rate of change indicates a linear equation.</li> <li>identifies from the graphs of linear equations whether a system has one solution, no solution, or infinitely many solutions.</li> <li>compares and orders numbers in scientific notation.</li> <li>solves a system of simple linear equations algebraically.</li> <li>looks for and makes use of structure as needed to guide the solution of a multiple step linear equation.</li> <li>recognizes through the structure of a problem when the average rate of change is constant.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>recognizes that expressions with negative integer exponents can be rewritten with whole number exponents using reciprocals.</li> <li>creates a system of simple linear equations from a context.</li> <li>creates a moderately complex linear equation from a context and solves the equation algebraically.</li> <li>performs operations on numbers written in scientific notation.</li> <li>uses the structure of expressions containing exponents to avoid errors.</li> </ul>
<p><b>Functions</b> Focus is on understanding linear functions and using them in modeling. Students think about general functions and the idea that for a valid input there is a well-defined output, contrasting with statistical variability.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>evaluates a function when given the function and the value of the independent variable.</li> <li>identifies whether the slope of a given line is positive or negative.</li> <li>makes use of structure of a function in order to identify the quantities being related.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>constructs a linear function to model the relationship between two quantities with values given in a table.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>recognizes a linear function that represents a given table of values.</li> <li>recognizes the graph of a linear function that represents a contextual situation.</li> <li>matches a linear equation to its graph.</li> <li>reasons and draws conclusions from graphical models of a function.</li> <li>uses the structure of the graph to determine the nature of the solution.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>creates an algebraic representation of a linear function to model a contextual situation.</li> </ul>
<p><b>Geometry</b> Focus is on congruence and similarity as well as the Pythagorean theorem. Students continue to solve real-world geometry problems and incorporate cylinders, cones, and spheres.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>uses the structure of congruence notation to determine corresponding parts of congruent triangles.</li> <li>recognizes that similar figures have the same shape but not necessarily the same size.</li> <li>identifies angles having the same measure and angle pairs whose measures sum to <math>180^\circ</math> for angles formed when two lines are cut by a transversal.</li> <li>recognizes when to use the Pythagorean theorem.</li> <li>identifies a cylinder along with its radius and height.</li> <li>makes use of the structure of 3-dimensional figures in identifying the figures and their components.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>finds the image of a point in the coordinate plane that has been translated by given amounts horizontally and vertically.</li> <li>finds a scale factor given similar figures.</li> <li>understands that corresponding angles of similar figures are congruent.</li> <li>finds the volume of a cylinder.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>identifies or sketches the image of a figure in the coordinate plane that has been reflected over the <math>x</math>- or <math>y</math>-axis.</li> <li>finds the measure of any angle formed by parallel lines cut by a transversal, given the measure of other angles.</li> <li>determines graphically whether two lines are parallel or perpendicular.</li> <li>uses the Pythagorean theorem to solve problems involving distances between points in the coordinate plane.</li> <li>uses proportions to find missing parts of similar figures.</li> <li>uses the volume of a cylinder in real-world application.</li> <li>uses structure to identify situations where the Pythagorean theorem might be useful.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>recognizes that in similar figures the lengths of corresponding sides are proportional.</li> <li>makes and justifies conjectures about the relationships between the angles formed by parallel lines cut by a transversal.</li> <li>reasons abstractly by applying general properties of similar and congruent figures.</li> </ul>
<p><b>Statistics and Probability</b> Focus is on association and modeling appropriate associations with linear functions.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>recognizes whether a pattern of association in a scatterplot is nearly linear.</li> <li>creates a scatterplot model given real-world data.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>distinguishes clear positive or negative association in data presented in a scatterplot.</li> <li>identifies or sketches a line that has good fit to the data on a scatterplot.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>determines approximate slope or <math>y</math>-intercept of an estimated line of best fit for a data set presented in a scatterplot.</li> <li>distinguishes clear positive or negative association in data summarized in a two-way table.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>creates and uses a linear model for a set of bivariate data to solve problems in context.</li> </ul>
<p><b>Modeling</b> Producing, interpreting, understanding, evaluating, and improving mathematical models.</p>	<p><i>A student performing at the Needs Support level:</i></p> <ul style="list-style-type: none"> <li>determines relationships between quantities in routine mathematical or real-world contexts, and solves related problems involving two or fewer steps.</li> <li>uses a coordinate plane and understands its parts.</li> <li>identifies the components of a given linear model.</li> </ul>	<p><i>A student performing at the Close level:</i></p> <ul style="list-style-type: none"> <li>identifies important information, determines relationships between quantities in mathematical or real-world contexts, and provides a limited interpretation of the results in the context of the problem.</li> <li>identifies parts of a coordinate plane to include: axes, quadrants, origin, and the signs of the ordered pairs as they occur in each quadrant.</li> <li>uses a simple equation to solve problems.</li> </ul>	<p><i>A student performing at the Ready level:</i></p> <ul style="list-style-type: none"> <li>uses the relationship between two quantities to create a linear function to model the situation.</li> <li>uses a coordinate plane to model linear equations and systems.</li> <li>solves equations when that requires multiple steps.</li> </ul>	<p><i>A student performing at the Exceeding level:</i></p> <ul style="list-style-type: none"> <li>interprets and evaluates a linear model for effectiveness in solving a problem and, if indicated, makes adjustments to improve the model as it applies to the situation.</li> </ul>

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<b>Integrating Essential Skills</b> Integrate and continue to grow with topics from prior grades.	<i>A student performing at the Needs Support level:</i> <ul style="list-style-type: none"> <li>identifies perfect squares.</li> <li>recognizes rational numbers in decimal form.</li> <li>creates and solves linear equations of the form <math>px = r</math> or <math>x + q = r</math>.</li> <li>graphs geometric figures in the coordinate plane.</li> <li>solves problems involving mean and range.</li> </ul>	<i>A student performing at the Close level:</i> <ul style="list-style-type: none"> <li>creates expressions and equations including from two-variable data.</li> <li>creates and solves linear equations of the form <math>px + q = r</math> or <math>p(x + q) = r</math>.</li> <li>uses simple geometric theorems about angles.</li> <li>solves problems with measures of central tendency.</li> <li>draws inferences about a population based on the results of a random sample.</li> <li>converts among measurement units and systems.</li> <li>uses place value accurately.</li> <li>maintains accuracy in comparing and ordering numbers.</li> </ul>	<i>A student performing at the Ready level:</i> <ul style="list-style-type: none"> <li>rounds to an appropriate place value to promote proper comparing and ordering.</li> <li>graphs the solution set of an inequality of the form <math>px + q &lt; r</math> or <math>px + q &gt; r</math> on a number line.</li> <li>recognizes spread of data in terms of the range.</li> <li>computes the probability of compound events using, organized lists, tables, tree diagrams, or simulation.</li> </ul>	<i>A student performing at the Exceeding level:</i> <ul style="list-style-type: none"> <li>understands that random sampling tends to avoid extremely unrepresentative samples.</li> </ul>
<b>Mathematical Practices</b> Collected PLDS that focus on mathematical practices.	<i>A student performing at the Needs Support level:</i> <ul style="list-style-type: none"> <li>uses a calculator to approximate an irrational number.</li> <li>looks for and makes use of structure of a linear equation as needed to test a solution through substitution.</li> <li>makes use of structure of a function in order to identify the quantities being related.</li> <li>makes use of the structure of 3-dimensional figures in identifying the figures and their components.</li> <li>creates a scatterplot model given real-world data.</li> <li>determines relationships between quantities in routine mathematical or real-world contexts, and solves related problems involving two or fewer steps.</li> <li>uses a coordinate plane and understands its parts.</li> <li>identifies the components of a given linear model.</li> <li>uses conditional statements.</li> <li>draws and labels relevant visual representations.</li> <li>explains steps of a procedure.</li> <li>provides a counterexample.</li> <li>uses a pattern or sequence to draw a conclusion.</li> </ul>	<i>A student performing at the Close level:</i> <ul style="list-style-type: none"> <li>recognizes the difference between rational and irrational numbers in terms of the structure of their decimal expansions.</li> <li>looks for and makes use of structure of a linear equation as needed to solve an equation with a variable on one side.</li> <li>recognizes that division by zero is undefined.</li> <li>recognizes that the solution to a linear system of equations is the intersection point of the lines on the graph.</li> <li>identifies or sketches a line that has good fit to the data on a scatterplot.</li> <li>uses place value accurately.</li> <li>maintains accuracy in comparing and ordering numbers.</li> <li>identifies important information, determines relationships between quantities in mathematical or real-world contexts, and provides a limited interpretation of the results in the context of the problem.</li> <li>identifies parts of a coordinate plane to include: axes, quadrants, origin, and the signs of the ordered pairs as they occur in each quadrant.</li> <li>uses a simple equation to solve problems.</li> <li>uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.</li> <li>draws conclusions using both a specific and general evidentiary statement or provide general support for a claim in order to reach a conclusion.</li> </ul>	<i>A student performing at the Ready level:</i> <ul style="list-style-type: none"> <li>uses the regularity of a repeating decimal to understand conversion to fraction form.</li> <li>rounds to an appropriate place value to promote proper comparing and ordering.</li> <li>looks for and makes use of structure as needed to guide the solution of a multiple step linear equation.</li> <li>recognizes through the structure of a problem when the average rate of change is constant.</li> <li>reasons and draws conclusions from graphical models of a function.</li> <li>uses the structure of the graph to determine the nature of the solution.</li> <li>uses structure to identify situations where the Pythagorean theorem might be useful.</li> <li>uses the relationship between two quantities to create a linear function to model the situation.</li> <li>uses a coordinate plane to model linear equations and systems.</li> <li>solves equations when that requires multiple steps.</li> <li>justifies and defends conclusions by explaining errors in reasoning or calculations, providing counterexamples, applying relevant classification schemes, and/or verifying statements or claims used to draw a conclusion.</li> </ul>	<i>A student performing at the Exceeding level:</i> <ul style="list-style-type: none"> <li>understands and can show that if one adds two rational numbers, the result must be a rational number.</li> <li>uses the structure of expressions containing exponents to avoid errors.</li> <li>reasons abstractly by applying general properties of similar and congruent figures.</li> <li>interprets and evaluates a linear model for effectiveness in solving a problem and, if indicated, makes adjustments to improve the model as it applies to the situation.</li> <li>provides a coherent, logical argument or solution pathway by providing evidence to support claims.</li> <li>provides thorough justification and defends conclusions by using multiple, connected statements and incorporating justification techniques such as explaining errors in reasoning or calculations, providing counterexamples, applying relevant classification schemes, and/or verifying statements or claims used to draw a conclusion.</li> </ul>