**5th Grade Level 1 Understanding**

**Priority Cluster**

**Number and Operations – Base Ten**

* **Target C:** Understand the place- value system.
  + Level 1 students should be able to read and write decimals to the thousandths using base-ten numerals, number names, and expanded form and round decimals to the hundredths.
* **Target D:** Perform operations with multi-digit whole numbers and with decimals to the hundredths.
  + Level 1 students should be able to multiply one- and two-digit whole numbers and find whole number quotients of whole numbers with up to three-digit dividends and one-digit divisors, using arrays or area models. They should be able to perform the four operations on decimals to the tenths and a whole number, e.g., 1.3 X 7.

**Number and Operations – Fractions**

* **Target E:** Use equivalent fractions as a strategy to add and subtract fractions.
  + Level 1 students should be able to add two fractions and mixed numbers with unlike denominators and subtract two fractions with unlike denominators when one denominator is a factor of the other in mathematical problems (denominators < 12). They should be able to use benchmark fractions (1/4s and 1/2s) and number sense with fractions to estimate mentally and assess the reasonableness of answers.
* **Target F:** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
  + Level 1 students should be able to apply their previous understandings of multiplication to multiply a fraction by a fraction; know the effect that whole number multiplication has on fractions; use or create visual models when multiplying a whole number by a fraction between 0 and 1; and interpret and perform division of a whole number by 1/2 or 1/3.

**Measurement and Data**

* **Target I:** Geometric measurement: understand concepts of volume and relate volume to multiplication and addition.
  + Level 1 students should be able to use unit cubes to find the volume of rectangular prisms with whole number edge lengths.

**Supporting Cluster**

**Operations and Algebraic Thinking**

* **Target A:** Write and interpret numerical expressions.
  + Level 1 students should be able to evaluate numerical expressions that have either parentheses, brackets, or braces.
* **Target B:**  Analyze patterns and relationships.
  + Level 1 students should be able to generate two numerical patterns using two given rules involving addition, subtraction, or multiplication.

**Measurement and Data**

* **Target G:** Convert like measurement units within a given measurement system.
  + Level 1 students should be able to convert a whole number metric measurement to a different metric measurement resulting in a whole number and convert a whole number customary measurement to a different customary measurement resulting in a whole number.
* **Target H:** Represent and interpret data.
  + Level 1 students should be able to make a line plot and represent data sets in whole units.

**Geometry**

* **Target J:** Graph points on the coordinate plane to solve real- world and mathematical problems.
  + Level 1 students should be able to graph whole number coordinate pairs in the first quadrant of a coordinate plane with unit axis increments.

**5th Grade Level 2 Understanding**

**Priority Cluster**

**Number and Operations – Base Ten**

**-Threshold:** The student who just enters Level 2 should be able to:

* Understand that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right.
* Demonstrate accuracy in multiplying multi-digit whole numbers and in finding whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
* **Target C:** Understand the place- value system.
  + Level 2 students should be able to use repeated reasoning to understand that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. They should be able to explain patterns in numbers of zeros and/or placement of a decimal point when a number is multiplied or divided by 10.
* **Target D:** Perform operations with multi-digit whole numbers and with decimals to the hundredths.
  + Level 2 students should be able to multiply three- and four-digit whole numbers; find whole number quotients of whole numbers with up to three-digit dividends and two-digit divisors; and perform the four operations on decimals to the tenths or on decimals to the hundredths and a whole number, e.g., 3.42 x 12.

**Number and Operations – Fractions**

**-Threshold:** The student who just enters Level 2 should be able to:

* Add two fractions and/or mixed numbers with unlike denominators (denominators less than or equal to 6) in mathematical problems.
* Use benchmark fractions to estimate and assess the reasonableness of answers (denominators less than or equal to 6).
* Multiply a whole number by a mixed number. Know the effect that a fraction greater than or less than 1 has on a whole number when multiplied.
* Use visual models when multiplying two fractions between 0 and 1.
* Perform division of a whole number by any unit fraction.
* Understand that division of whole numbers can result in fractions.
* **Target E:** Use equivalent fractions as a strategy to add and subtract fractions.
  + Level 2 students should be able to add fractions and mixed numbers with unlike denominators (denominators ≤ 12) in mathematical problems, subtract a mixed number from a whole number (denominators up to 4), and use benchmark fractions to estimate mentally and assess the reasonableness of answers (denominators ≤ 12).
* **Target F:** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
  + Level 2 students should be able to multiply a whole number by a mixed number; know the effect that a fraction greater than or less than 1 has on a whole number when multiplied; use or create visual models when multiplying two fractions between 0 and 1; extend their previous understandings of division to divide a unit fraction by a whole number; and understand that division of whole numbers can result in fractions.

**Measurement and Data**

**-Threshold:** The student who just enters Level 2 should be able to:

* Understand the concept that the volume of a rectangular prism packed with unit cubes is related to the edge lengths.
* **Target I:** Geometric measurement: understand concepts of volume and relate volume to multiplication and addition.
  + Level 1 students should be able to understand the concept that the volume of a rectangular prism packed with unit cubes is related to the edge lengths.

**Supporting Cluster**

**Operations and Algebraic Thinking**

**-Threshold:** The student who just enters Level 2 should be able to:

* Write numerical expressions having one set of parentheses, brackets, or braces.
* Graph whole number ordered pairs from two whole number numerical patterns on a coordinate plane.
* **Target A:** Write and interpret numerical expressions.
  + Level 2 students should be able to write and evaluate numerical expressions having two non-nested sets of parentheses, brackets, or braces.
* **Target B:**  Analyze patterns and relationships.
  + Level 2 students should be able to generate two numerical patterns using two given rules involving all operations. When working with two whole number numerical patterns, they should be able to graph the corresponding whole number ordered pairs on the coordinate plane

**Measurement and Data**

**-Threshold:** The student who just enters Level 2 should be able to:

* Convert a whole number measurement to a decimal or fractional valued measurement within the same system (e.g., 30 in =\_\_\_\_\_\_\_ ft.).
* Make a line plot and display data sets in whole and half units.
* **Target G:** Convert like measurement units within a given measurement system.
  + Level 2 students should be able to convert a metric measurement to the tenths place to a different metric measurement and convert a standard measurement given to the 1/4 unit (fractions/mixed numbers) from a larger measurement unit to a smaller one.
* **Target H:** Represent and interpret data.
  + Level 2 students should be able to make a line plot and display data sets in fractions of a unit (1/2, 1/4, 1/8).

**Geometry**

**-Threshold:** The student who just enters Level 2 should be able to:

* Graph whole number coordinate pairs on a coordinate plane with whole number increments of 2, 5, and 10.
* Classify two-dimensional figures into categories by their attributes or properties.
* **Target J:** Graph points on the coordinate plane to solve real- world and mathematical problems.
  + Level 2 students should be able to graph whole number coordinate pairs on a coordinate plane with whole number axis increments to solve problems.
* **Target K:** Classify two- dimensional figures into categories based on their properties.
  + Level 2 students should be able to classify two-dimensional figures into categories by their attributes or properties.

**5th Grade Level 3 Understanding**

**Priority Cluster**

**Number and Operations – Base Ten**

**-Threshold:** The student who just enters Level 3 should be able to:

* Use whole number exponents to denote powers of 10; round decimals to the thousandths; and read, write, and compare decimals to the thousandths using base-ten numerals, number names, and expanded form, using >, =, and < to record the results of the comparison.
* Fluently multiply multi-digit whole numbers and find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
* Perform the four operations on decimals to the hundredths.
* Relate a strategy to a written method and explain the reasoning used.
* **Target C:** Understand the place- value system.
  + Level 3 students should be able to use whole number exponents to denote powers of 10; use repeated reasoning to understand and explain patterns in numbers of zeros and/or placement of a decimal point when a number is multiplied or divided by powers of 10; read, write, and compare two decimals to the thousandths using base-ten numerals, number names, and expanded form, using >, =, and < to record the results of the comparison; and round decimals to any place.
* **Target D:** Perform operations with multi-digit whole numbers and with decimals to the hundredths.
  + Level 3 students should be able to fluently multiply multi-digit whole numbers using the standard algorithm, find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors, and perform the four operations on decimals to the hundredths. They should be able to relate the strategy to a written method and explain the reasoning used.

**Number and Operations – Fractions**

**-Threshold:** The student who just enters Level 3 should be able to:

* Subtract fractions and mixed numbers with unlike denominators in word problems.
* Use benchmark fractions and number sense of fractions to estimate and assess the reasonableness of answers.
* Multiply a mixed number by a mixed number.
* Use visual models when multiplying two fractions, including when one fraction is larger than 1.
* Interpret division of a whole number by any unit fraction.
* **Target E:** Use equivalent fractions as a strategy to add and subtract fractions.
  + Level 3 students should be able to add and subtract fractions and mixed numbers with unlike denominators in word problems and use number sense of fractions to estimate mentally and assess the reasonableness of answers.
* **Target F:** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
  + Level 3 students should be able to multiply a mixed number by a mixed number; know the effect that a fraction has on another fraction when multiplied (proper and improper fractions); use or create visual models when multiplying two fractions, including when one fraction is larger than 1; and interpret and perform division of any unit fraction by a whole number.

**Measurement and Data**

**-Threshold:** The student who just enters Level 3 should be able to:

* Use V = l\*w\*h and V = B\*h to find the volume of rectangular prisms.
* **Target I:** Geometric measurement: understand concepts of volume and relate volume to multiplication and addition.
  + Level 3 students should be able to use the formulas V = l\*w\*h and V = B\*h to find the volume of rectangular prisms. They should be able to find the volume of two non-overlapping right rectangular prisms.

**Supporting Cluster**

**Operations and Algebraic Thinking**

**-Threshold:** The student who just enters Level 3 should be able to:

* Write and interpret expressions with two different operations.
* Compare two related numerical patterns within sequences and tables.
* **Target A:** Write and interpret numerical expressions.
  + Level 3 students should be able to write, evaluate, and interpret numerical expressions having any number of non-nested sets of parentheses, brackets, or braces.
* **Target B:**  Analyze patterns and relationships.
  + Level 3 students should be able to compare and analyze two related numerical patterns and explain the relationship within sequences of ordered pairs, and they should be able to graph the ordered pairs on the coordinate plane.

**Measurement and Data**

**-Threshold:** The student who just enters Level 3 should be able to:

* Convert from a smaller unit of measurement to a larger one, resulting in one decimal place (metric system) or a small denominator fraction (standard system).
* Make a line plot to display data sets in fractions of a unit (1/2, 1/4, 1/8).
* Solve one-step problems using information from line plots that require addition, subtraction, and multiplication of fractions.
* **Target G:** Convert like measurement units within a given measurement system.
  + Level 3 students should be able to convert like measurements within a system using whole numbers, fractions (standard system), and decimals (metric system).
* **Target H:** Represent and interpret data.
  + Level 3 students should be able to interpret a line plot to display data sets in fractions of a unit (1/2, 1/4, 1/8) and solve problems using information from line plots that require addition, subtraction, and multiplication of fractions.

**Geometry**

**-Threshold:** The student who just enters Level 3 should be able to:

* Graph coordinate pairs where one term is a whole number and one is a fraction with a denominator of 2 or 4 on a coordinate plane with whole number axis increments.
* Classify two-dimensional figures into subcategories by their attributes or properties.
* **Target J:** Graph points on the coordinate plane to solve real- world and mathematical problems.
  + Level 3 students should be able to graph coordinate pairs where one term is a whole number and one is a fraction on a coordinate plane with whole number axis increments.
* **Target K:** Classify two- dimensional figures into categories based on their properties.
  + Level 3 students should be able to classify two-dimensional figures into subcategories by their attributes or properties.

**5th Grade Level 4 Understanding**

**Priority Cluster**

**Number and Operations – Base Ten**

**-Threshold:** The student who just enters Level 4 should be able to:

* Combine multiplying by powers of 10, comparing, and rounding to highlight essential understandings.
* **Target C:** Understand the place- value system.
  + Level 4 students should be able to combine multiplying by powers of 10, comparing, and rounding to highlight essential understandings.

**Number and Operations – Fractions**

**-Threshold:** The student who just enters Level 4 should be able to:

* Use or create visual models when multiplying two fractions that are larger than 1.
* **Target F:** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
  + Level 4 students should be able to understand and use the fact that a fraction multiplied by 1 in the form of a/a is equivalent to the original fraction.

**Measurement and Data**

**-Threshold:** The student who just enters Level 4 should be able to:

* Find the volume of a right rectangular prism after doubling the edge length of a side with a whole number measurement and compare it to the original.
* **Target I:** Geometric measurement: understand concepts of volume and relate volume to multiplication and addition.
  + Level 4 students should be able to find the volume of a right rectangular prism after doubling the edge length of a side and compare it to the original.

**Supporting Cluster**

**Operations and Algebraic Thinking**

**-Threshold:** The student who just enters Level 4 should be able to:

* Compare two related numerical patterns and explain the relationship within sequences of ordered pairs that are rational numbers.
* **Target B:**  Analyze patterns and relationships.
  + Level 4 students should be able to compare two related numerical patterns and explain the relationship within sequences of ordered pairs that are rational numbers.

**Geometry**

**-Threshold:** The student who just enters Level 4 should be able to:

* Graph coordinate pairs where one term is a whole number and one is a fraction on a coordinate plane with fractional axis increments of 1/2, 1/4, or 1/10.
* **Target J:** Graph points on the coordinate plane to solve real- world and mathematical problems.
  + Level 4 students should be able to graph coordinate pairs where both terms are fractions on a coordinate plane with fractional axis increments.