

Student Baseline and Post-Instruction Checklist
Common Core Essential Elements and Instructional Achievement Level Descriptors
Mathematics Grade 6

Student Name: _____
 Teacher: _____

Student Grade: _____
 Date: _____

Common Core State Standard: 6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”*

6.RP.2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”¹*

6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

- Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
- Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.RP.1. Demonstrate a simple ratio relationship.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> • Use a ratio to describe a relationship using numbers and objects. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> • Demonstrate a simple ratio relationship. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills:	___Y ___N

¹ Expectations for unit rates in this grade are limited to non-complex fractions.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
	<ul style="list-style-type: none"> Complete a pattern given a simple ratio. 	
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Identify a one-to-one relationship. 	___Y ___N

Common Core State Standard: 6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.)* How much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi? Compute fluently with multi-digit numbers and find common factors and multiples.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.NS.1. Compare the relationships between two unit fractions.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Compare the relationships between the three unit fractions ($1/2$, $1/4$, $1/8$). 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Compare the relationships between two unit fractions. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Demonstrate an amount of $1/2$. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Distinguish between more or less. 	___Y ___N

Common Core State Standard: 6.NS.2. Fluently divide multi-digit numbers using the standard algorithm.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.NS.2. Apply the concept of fair share and equal shares to divide.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Solve a division problem using the concept of equal shares. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Apply the concept of fair share and equal shares to divide. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Identify the concept of division using fair and equal shares. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Replicate equal sets. 	___Y ___N

Common Core State Standard: 6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.NS.3. Solve two factor multiplication problems with products up to 50 using concrete objects and/or calculators.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Solve multiplication problems with whole number products to 50 using numerical representations. 	___Y ___N

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Solve two factor multiplication problems with products up to 50 using concrete objects and/or calculators. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Solve repeated addition problems where the addends are the same (i.e., $5 + 5 + 5 = 15$ is equal to three groups of five) using concrete manipulatives and/or a calculator. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Identify a group of a given quantity. 	___Y ___N

Common Core State Standard: 6.NS.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express $36 + 8$ as $4(9 + 2)$. Apply and extend previous understandings of numbers to the system of rational numbers.*

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.NS.4. N/A		Indicate Yes or No

Common Core State Standard: 6.NS.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.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.

- Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
- Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

- Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.7. Understand ordering and absolute value of rational numbers.

- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
- Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3^{\circ}C > -7^{\circ}C$ to express the fact that $-3^{\circ}C$ is warmer than $-7^{\circ}C$.*
- Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.*

Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.*

6.NS.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.NS.5-8. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Apply positive and negative numbers to a real-world context from greater than positive 10 and less than negative 10. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero). 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Order positive numbers from least to greatest. 	___Y ___N

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Identify which is greater than and less than using fewer than 10. 	___Y ___N

Common Core State Standard: 6.EE.1. Write and evaluate numerical expressions involving whole-number exponents.

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

- Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as $5 - y$.*
- Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.*

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.*

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.EE.1-2. Identify equivalent number sentences.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Generate a two-step math sentence using appropriate numbers and symbols. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Identify equivalent number sentences. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Match number sentence with the correct picture representation. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Identify math symbol "=" as meaning equal to. 	___Y ___N

Common Core State Standard: 6.EE.3. Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.*

6.EE.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for. Reason about and solve one-variable equations and inequalities.*

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.EE.3-4. Demonstrate understanding of equivalent expressions.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Solve equivalent expressions to illustrate that they are equivalent. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Demonstrate understanding of equivalent expressions. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Recognize different displays of the equal quantities. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Match different displays of the same quantity. 	___Y ___N

Common Core State Standard: 6.EE.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

6.EE.8. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.EE.5-8. Match an equation to a real-world problem in which variables are used to represent numbers.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Using a variable, generate an equivalent equation that represents a real-world problem. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Match an equation to a real-world problem in which variables are used to represent numbers. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Determine what is unknown in an equation. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Identify the letter in a mathematical sentence. 	___Y ___N

Common Core State Standard: 6.EE.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.EE.9. N/A		Indicate Yes or No

Common Core State Standard: 6.G.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real world and mathematical problems.

6.G.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by

multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real world and mathematical problems.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.G.1-2. Demonstrate area.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Find area. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Demonstrate area. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Determine what is the larger area. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Indicate the inside of a space. 	___Y ___N

Common Core State Standard: 6.G.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.G.3. N/A		Indicate Yes or No

Common Core State Standard: 6.G.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.G.4. Identify common three-dimensional shapes.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Relate real-world items as three-dimensional shapes to their two-dimensional representations. 	___Y ___N

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Identify common three-dimensional shapes. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Sort three-dimensional shapes and two-dimensional shapes. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Match shapes. 	___Y ___N

Common Core State Standard: 6.SP.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.*

6.SP.2. Understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.SP.1-2. Display data on a graph or table that shows variability in the data.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> Collect, display, and describe data on a graph or table. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> Display data on a graph or table that shows variability of data. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> Organize data. 	___Y ___N
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> Sort information into categories of same and different. 	___Y ___N

Common Core State Standard: 6.SP.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.SP.3. N/A		Indicate Yes or No

Common Core State Standard: 6.SP.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.SP.4. N/A (See EE6.SP.1-2)		Indicate Yes or No

6.SP.5. Summarize numerical data sets in relation to their context, such as by:

- Reporting the number of observations.
- Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
EE6.SP.5. Summarize data distributions on a graph or table.		Indicate Yes or No
Level IV	Student demonstrates the content knowledge and skills at a higher level of complexity than described in Level 3: <ul style="list-style-type: none"> • Summarize the data on a graph or table. 	___Y ___N
Level III	Student demonstrates the content knowledge and skills: <ul style="list-style-type: none"> • Summarize data distributions on a graph or table. 	___Y ___N
Level II	Student demonstrates some of the content knowledge and skills: <ul style="list-style-type: none"> • Use a graph to determine which category has the most. 	___Y ___N

Common Core Essential Elements - Math	Instructional Achievement Level Descriptors	Estimated Level of Student Proficiency
Level I	Student attempts to perform the task <u>with support</u> : <ul style="list-style-type: none"> • Identify which has more or less. 	___Y ___N