

Math				
Timeline (# of days)	Topic	Standards	Key Vocabulary	Connections
10	<input type="checkbox"/> Reasoning with Area and Surface Area	NC.6.G.1 NC.6.G.4	<ul style="list-style-type: none"> • Parallelogram, trapezoid, rhombus, Area of triangle, regular polygon • Net, pyramid, surface area, prism 	Supports standards: <ul style="list-style-type: none"> • NC.6.NS.1 • NC.6.NS.2 • NC.6.NS.3 • NC.6.EE.7
5	<input type="checkbox"/> Reasoning with Factors and Multiples	NC.6.NS.4	<ul style="list-style-type: none"> • GCF, Distributive Property, LCM 	Supports standards: <ul style="list-style-type: none"> • NC.6.EE.1 • NC.6.EE.3 • NC.6.EE.4 • NC.6.RP.3 • NC.6.NS.1
25	<input type="checkbox"/> Ratio Reasoning	NC.6.RP.1 NC.6.RP.2 NC.6.RP.3 NC.6.RP.4	<ul style="list-style-type: none"> • Ratio, Rate, Equivalent Ratios, Unit Rate, Comparison, Prediction, Proportion, Scale, Conversion Factor, Percent, Model, Equivalent Decimals, 	Supports standards: <ul style="list-style-type: none"> • NC.6.EE.9
10	<input type="checkbox"/> Division of Fractions Conceptions	NC.6.NS.1	<ul style="list-style-type: none"> • Fraction, Quotient, Reciprocal 	Supports standards: <ul style="list-style-type: none"> • NC.6.NS.4 • NC.6.RP.3 • NC.6.G.1
15	<input type="checkbox"/> Making Sense of Decimal Computations	NC.6.NS.2 NC.6.NS.3	<ul style="list-style-type: none"> • Quotient, Remainder, Interpret, Algorithm 	Supports standards <ul style="list-style-type: none"> • NC.6.G.1

15	<input type="checkbox"/> Integer and Rational Number Reasoning	NC.6.NS.5 NC.6.NS.6 NC.6.NS.7 NC.6.NS.9	<ul style="list-style-type: none"> • positive number, • negative number, interval, • Integers, • Opposites • absolute value, • Rational number, • Inequality • Coordinate plane, axes, x-axis, y-axis, origin, quadrants, ordered pair, coordinates, x-coordinate, y-coordinate • Inverse 	Supports standards: <ul style="list-style-type: none"> • NC.6.EE.7 • NC.6.EE.8
10	<input type="checkbox"/> Making Sense of Coordinate Planes	NC.6.NS.6 NC.6.NS.8 NC.6.G.3	<ul style="list-style-type: none"> • Coordinate plane, axes, x-axis, y-axis, origin, quadrants, ordered pair, coordinates, x-coordinate, y-coordinate • Reflection • Vertex, Polygon, Congruent 	Supports standards: <ul style="list-style-type: none"> • NC.6.NS.5 • NC.6.NS.6a • NC.6.NS.9
15	<input type="checkbox"/> Reasoning with Algebraic Expressions	NC.6.EE.1 NC.6.EE.2 NC.6.EE.3 NC.6.EE.4 NC.6.EE.6	<ul style="list-style-type: none"> • Exponents, base, power, Prime Factorization, Order of Operations • Expression, algebraic expression, variable, constant, evaluate • Equivalent expression • Variable 	Supports standards: <ul style="list-style-type: none"> • NC.6.NS.4
25	<input type="checkbox"/> Reasoning with Algebraic Equations	NC.6.EE.5 NC.6.EE.7 NC.6.EE.8 NC.6.EE.9	<ul style="list-style-type: none"> • Inequality • Quantity, Solution of an Inequality • Inverse 	Supports standards: <ul style="list-style-type: none"> • NC.6.EE.2 • NC.6.NS.9 • NC.6.NS.1-3

				<ul style="list-style-type: none"> • NC.6.NS.6 • NC.6.RP.3
10	<input type="checkbox"/> Making Sense of Volume	NC.6.G.2	<ul style="list-style-type: none"> • Volume, rectangular prism, base, height, area, cubic 	Supports standards <ul style="list-style-type: none"> • NC.6.NS.1 • NC.6.NS.3 • NC.6.EE.1 • NC.6.G.1 • NC.6.G.4
10	<input type="checkbox"/> Statistical Reasoning	NC.6.SP.1 NC.6.SP.2 NC.6.SP.3 NC.6.SP.4 NC.6.SP.5	<ul style="list-style-type: none"> • Measure of center, median, data, mean, mode 	Supports standards: <ul style="list-style-type: none"> • NC.6.NS.3
30	<input type="checkbox"/> Review for EOG/NCFE			

NC Check-Ins Assessed Standards		
Check-In 1	Check-In 2	Check-In 3
6.G.1 6.G.4 6.NS.4 6.RP.1 6.RP.3* *6.RP.3 will also incorporate skills presented in standard 6.RP.2	6.EE.1 6.NS.1 6.NS.2 6.NS.3 6.RP.4	6.EE.7 6.EE.8 6.EE.9 6.G.3 6.NS.9

Standards/I Can Statements
NC.6.G.1 Create geometric models to solve real-world and mathematical problems to: <ul style="list-style-type: none"> • Find the area of triangles by composing into rectangles and decomposing into right triangles. • Find the area of special quadrilaterals and polygons by decomposing into triangles or rectangles

I Can's

- I can discuss, develop, apply and justify formulas for triangles and parallelograms.
- I can apply the techniques of composing and/or decomposing to find the area of triangles, special quadrilaterals and polygons to solve mathematical and real world situations. (complex figures)

NC.6.G.4 Represent right prisms and right pyramids using nets made up of rectangles and triangles, and use nets to find the surface area of these figures. Apply these techniques in the context of solving real world and mathematical problems.

I Can's

- I can construct a net of three dimensional figures made up of rectangles and triangles.
- I can apply knowledge of calculating the area of rectangles and triangles to a net and combine the areas for each shape into one answer representing the surface area of a 3-d figure.
- I can solve real world and mathematical problems involving surface area using nets.

NC.6.NS.4 Understand and use prime factorization and the relationships between factors to:

- Find the unique prime factorization for a whole number.
- Find the greatest common factor of two whole numbers less than or equal to 100.
- Use the greatest common factor and the distributive property to rewrite the sum of two whole numbers, each less than or equal to 100.
- Find the least common multiple of two whole numbers less than or equal to 12 to add and subtract fractions with unlike denominators.

I Can's

- I can derive the greatest common factor of two whole numbers less than or equal to 100.
- I can derive the least common multiple of two whole numbers less than or equal to 12.
- I can identify the distributive property.
- I can apply the distributive property to express the sum of two whole numbers 1-100

NC.6.RP.1 Understand the concept of a ratio and use ratio language to:

- Describe a ratio as a multiplicative relationship between two quantities.
- Model a ratio relationship using a variety of representations.

I Can's

- I can describe a ratio relationship by comparing two quantities using ratio language.
- I can write a ratio notation using a colon, the word "to", and in fraction form.
- I can write a ratio in simplest form.

- I can analyze ratios to determine if they are equivalent.

NC.6.RP.2 Understand that ratios can be expressed as equivalent unit ratios by finding and interpreting both unit ratios in context.

I Can's

- I can define a unit.
- I can define a rate.
- I can write a unit rate as a ratio.
- I can describe a unit rate using rate language.

NC.6.RP.3 Use ratio reasoning with equivalent whole-number ratios to solve real-world and mathematical problems by:

- Creating and using a table to compare ratios.
- Finding missing values in the tables.
- Using a unit ratio.
- Converting and manipulating measurements using given ratios.
- Plotting the pairs of values on the coordinate plane.

I Can's

- I can complete a table of equivalent ratios with whole number values including measurements.
- I can create a function table and compare proportional quantities and plot those pairs of values on a coordinate plane.
- I can solve unit rate problems involving unit pricing.
- I can solve unit rate problems involving constant speed.

NC.6.RP.4 Use ratio reasoning to solve real-world and mathematical problems with percents by:

- Understanding and finding a percent of a quantity as a ratio per 100.
- Using equivalent ratios, such as benchmark percents (50%, 25%, 10%, 5%, 1%), to determine a part of any given quantity.
- Finding the whole, given a part and the percent.

I Can's

- I can convert among fractions, decimals, and percents.
- I can solve problems finding the whole, given the part and the percent. (Example: % x of= is)
- I can explain that a percent is a ratio of a number to 100.
- I can convert measurement units using ratios.

NC.6.NS.1 Use visual models and common denominators to:

- Interpret and compute quotients of fractions.
- Solve real-world and mathematical problems involving division of fractions

I Can's

- I can interpret and compute quotients of fractions and mixed numbers.
- I can interpret and solve word problems involving division of fractions by fractions using visual fraction models.
- I can interpret and solve word problems involving division of fractions by fractions using equations.
- I can create word problems involving division of fractions by fractions.

NC.6.NS.2 Fluently divide using long division with a minimum of a four-digit dividend and interpret the quotient and remainder in context.

I Can's

- I can fluently divide multi-digit whole numbers using the standard algorithm with speed and accuracy

NC.6.NS.3 Apply and extend previous understandings of decimals to develop and fluently use the standard algorithms for addition, subtraction, multiplication and division of decimals.

I Can's

- I can fluently add multi-digit decimals using the standard algorithm with speed and accuracy.
- I can fluently subtract multi-digit decimals using the standard algorithm with speed and accuracy.
- I can fluently multiply multi-digit decimals using the standard algorithm with speed and accuracy.
- I can fluently divide multi-digit decimals using the standard algorithm with speed and accuracy.

NC.6.NS.5 Understand and use rational numbers to:

- Describe quantities having opposite directions or values.
- Represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- Understand the absolute value of a rational number as its distance from 0 on the number line to:
 - Interpret absolute value as magnitude for a positive or negative quantity in a real-world context.
 - Distinguish comparisons of absolute value from statements about order.

I Can's

- I can represent and describe quantities in real world situations using positive and negative numbers.
- I can explain where zero fits into real world situation represented by integers
- I can understand the absolute value of a rational number as its distance from 0 on the number line to interpret absolute value as magnitude for a positive

- I can distinguish comparisons of absolute value from statements about order.

NC.6.NS.6 Understand rational numbers as points on the number line and as ordered pairs on a coordinate plane.

a. On a number line:

- Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.
- Find and position rational numbers on a horizontal or vertical number line.

I Can's

- I can understand rational numbers as points on the number line and as ordered pairs on a coordinate plane.
- I can recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself
- I can find and position rational numbers on a horizontal and vertical number line.

NC.6.NS.7 Understand ordering of rational numbers.

- a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.

I Can's

- I can interpret statements of inequality as statements about relative position of two numbers on a number line diagram.
- I can write statements of order for rational numbers in real-world contexts.
- I can interpret statements of order for rational numbers in real-world contexts.
- I can explain statements of order for rational numbers in real-world context

NC.6.NS.9 Apply and extend previous understandings of addition and subtraction.

- Describe situations in which opposite quantities combine to make 0.
- Understand $p + q$ as the number located a distance q from p , in the positive or negative direction depending on the sign of q . Show that a number and its additive inverse create a zero pair.
- Understand subtraction of integers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two integers on the number line is the absolute value of their difference.
- Use models to add and subtract integers from -20 to 20 and describe real-world contexts using sums and differences.

I Can's

- I can define inverse operation.
- I can use inverse operation to solve one-variable equations.
- I can write mathematical equations for real-world situations using nonnegative rational numbers.
- I can solve mathematical equations for real-world situations using nonnegative rational numbers.

NC.6.NS.6 Understand rational numbers as points on the number line and as ordered pairs on a coordinate plane.

- On a coordinate plane:
 - Understand signs of numbers in ordered pairs as indicating locations in quadrants.
 - 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 pairs of rational numbers on a coordinate plane.

I Can's

- I can identify a rational number as a point in the number line

NC.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.

I Can's

- I can solve real-world and mathematical problems by graphing points in all four quadrants.
- I can find the distance between two points on the coordinate plane given only coordinates.

NC.6.G.3 Use the coordinate plane to solve real-world and mathematical problems by:

- Drawing polygons in the coordinate plane given coordinates for the vertices.
- Using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.

I Can's

- I can construct polygons in the coordinate plane given the coordinates for the vertices in real-world/ mathematical problems.
- I can use given coordinates to find the length of a horizontal or vertical side joining points with the same first coordinates in realworld/mathematical problems.(If both the y-coordinates are the same $(-3,2)$ and $(4,2)$ then students recognize a horizontal line has been created and the distance between the coordinates is 7 units.)

NC.6.EE.1 Write and evaluate numerical expressions, with and without grouping symbols, involving whole-number exponents.

I Can's

- I can write numerical expressions involving whole-number exponents.
- I can evaluate numerical expressions involving whole-number exponents.
- I can solve order of operations that contain exponents.

NC.6.EE.2 Write, read, and evaluate algebraic expressions. • Write expressions that record operations with numbers and with letters standing for numbers. • Identify parts of an expression using mathematical terms and view one or more of those parts as a single entity. • Evaluate expressions at specific values of their variables using expressions that arise from formulas used in real-world problems.

I Can's

- I can translate written phrases into algebraic expressions.
- I can translate algebraic expressions into written phrases.
- I can evaluate algebraic expressions using variables.
- I can identify the parts of an expression using mathematical terms. (sum, term, product, factor, quotient, coefficient)
- I can identify the terms of an expression.
- I can identify parts of an expression as a single entity, even if not a monomial.
- I can evaluate expressions, substituting specific values for variables.
- I can apply a formula to evaluate expressions using real world problems.
- I can solve an expression with exponents.
- I can solve an expression with the Order of Operations without parentheses.

NC.6.EE.3 Apply the properties of operations to generate equivalent expressions without exponents.

I Can's

- I can apply the properties of operations to generate equivalent expressions without exponents.

NC.6.EE.4 Identify when two expressions are equivalent and justify with mathematical reasoning

I Can's

- I can justify that two expressions are equivalent regardless of which value is substituted.

NC.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem

I Can's

- I can use variables to represent unknown numbers.
- I can write variable expressions when solving real-world/mathematical problems.

- I can solve a variable expression using substitution in a real-world situation.

NC.6.EE.5 Use substitution to determine whether a given number in a specified set makes an equation true

I Can's

- I can solve equations.
- I can solve inequalities.
- I can determine whether a given number makes an equation or an inequality true using substitution.

NC.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form:

- $x + p = q$ in which p , q and x are all nonnegative rational numbers; and,
- $p \cdot x = q$ for cases in which p , q and x are all nonnegative rational numbers
-

NC.6.EE.8 Reason about inequalities by:

- Using substitution to determine whether a given number in a specified set makes an inequality true.
- Writing an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem.
- Recognizing that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions.
- Representing solutions of inequalities on number line diagrams.

I Can's

- I can write an inequality based on a number line.
- I can graph solutions to inequalities.
- I can justify that there are infinite solutions to an inequality.

NC.6.EE.9 Represent and analyze quantitative relationships by:

- Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another.
- Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).

I Can's

- I can use variables to represent two quantities in a real-world context that change in relationship to one another.
- I can analyze the relationship between quantities in multiple representations.

NC.6.G.2 Apply and extend previous understandings of the volume of a right rectangular prism to find the volume of right rectangular prisms with fractional edge lengths. Apply this understanding to the context of solving real-world and mathematical problems.

I Can's

- I can find the volume of a rectangular prism using unit cubes.
- I can find the volume of a rectangular prism using the formula $V=l*w*h$.

NC.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.

I Cans

- I can distinguish between a statistical and non-statistical question.
- I can recognize that data can have variability.

NC.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.

I Can's

- I can describe data distribution by its center (median/mean).
- I can describe data distribution by its spread (range).
- I can describe data distribution by its data clusters, peaks, gaps, symmetry, and overall shape (line plot).

NC.6.SP.3 Understand that both a measure of center and a description of variability should be considered when describing a numerical data set.

- a. Determine the measure of center of a data set and understand that it is a single number that summarizes all the values of that data set.
 - Understand that a mean is a measure of center that represents a balance point or fair share of a data set and can be influenced by the presence of extreme values within the data set.
 - Understand the median as a measure of center that is the numerical middle of an ordered data set.
- b. Understand that describing the variability of a data set is needed to distinguish between data sets in the same scale, by comparing graphical representations of different data sets in the same scale that have similar measures of center, but different spreads.

I Can's

- I can calculate the range, median, mean, and mode of a set of data.

- I can summarize a set of data using the measures of central tendencies.
- I can describe the variability by examining graphs of data for spread and overall shape.

NC.6.SP.4 Display numerical data in plots on a number line. • Use dot plots, histograms, and box plots to represent data. • Compare the attributes of different representations of the same data

I Can's

- I can identify the components of dot plots, histograms, and box plots.
- I can find the median quartile and interquartile range of a set of data.
- I can display numerical data on a number line.
- I can display numerical data on a scatter plot.
- I can display numerical data in a histogram.
- I can display numerical data on a box-and-whisker plot.

NC.6.SP.5 Summarize numerical data sets in relation to their context.

- a. Describe the collected data by:
 - Reporting the number of observations in dot plots and histograms.
 - Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement.
- b. Analyze center and variability by:
 - Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.
 - Justifying the appropriate choice of measures of center using the shape of the data distribution.

I Can's

- I can organize and display data in tables and graphs.
- I can summarize numerical data sets by reporting the number of observations in a data set or display.
- I can describe the collected data, including how it was measured and its units of measurement.
- I can find and choose the appropriate measure of central tendencies to represent the data.
- I can describe overall patterns on a variety of graphs.
- I can describe the striking deviations (outliers) on a variety of graphs.
- I can choose the appropriate measures of central tendency and variability and justify why this measure is appropriate in terms of the context.

Resources

NCDPI Unpacking Documents

<http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/current/6th-unpacking.pdf>

Illustrative Mathematics

<https://www.illustrativemathematics.org/curriculum>

Open-Up Resources

<https://im.openupresources.org/6/teachers/index.html>

Jo Boaler's Week of Inspiration Math - YouCubed

[Jo Boaler's Week of Inspirational Math - Week 2](#)

There are many other tasks from Boaler's website Youcubed, that can be used to address the mathematics practices and content of 6th grade.

6th EOG Math Weight Distribution

Domain	Grade 6
Ratios and Proportional Relationships	24-28%
The Number System	20-24%
Expressions and Equations	22-26%
The Number System, Expressions and Equations	-
Functions	-
Geometry	12-16%
Statistics and Probability	12-16%
Total	100%