

Math				
Timeline (# of days)	Topic	Standards	Key Vocabulary	Connections
30	<input type="checkbox"/> Proportional Relationship Cluster	NC.7.RP.1 NC.7.RP.2 NC.7.RP.3 NC.7.G.1	Unit rates, proportional relationships, coordinate pair	NC.7.EE.2 NC.7.EE.3 NC.7.EE.4 NC.7.NS.2
30	<input type="checkbox"/> Reasoning with Rational Numbers Cluster	NC.7.NS.1 NC.7.NS.2 NC.7.NS.3	Rational numbers, properties of operations, multiplication, division, quotient, integer, fractions, decimal, long division	NC.7.EE.2 NC.7.EE.3 NC.7.RP.3 NC.7.G.1
15	<input type="checkbox"/> Probabilistic Reasoning Cluster	NC.7.SP.5 NC.7.SP.6 NC.7.SP.7 NC.7.SP.8	Probability, experimental probability, relative frequency, prediction, probability model, uniform probability, equal probability, tree diagram, simulation	NC.7.RP.1 NC.7.RP.2 NC.7.RP.3
15	<input type="checkbox"/> Reasoning About Expressions Cluster	NC.7.EE.1 NC.7.EE.2	Linear expressions, rational coefficient, GCF, equivalent expression,	NC.7.NS.1 NC.7.NS.2
30	<input type="checkbox"/> Reasoning About Equations and Inequalities Cluster	NC.7.EE.3 NC.7.EE.4 NC.7.G.2	Positive and negative numbers, multi step equation, algebraic solution	NC.7.NS.1 NC.7.NS.2

		NC.7.G.5	vs. arithmetic solution, sequence of operations, angles, side lengths, unique triangle, supplementary, complementary, vertical, and adjacent angles	
15	<input type="checkbox"/> Geometric and Measurement Reasoning Cluster	NC.7.G.4 NC.7.G.6	Area and Circumference of Circle, radius, diameter, perimeter, two-dimensional objects, triangles, quadrilaterals, polygons, volume and surface area of pyramids, prisms, cubes, pyramids, right prisms	NC.7.NS.2 NC.7.EE.2 NC.7.RP.2
20	<input type="checkbox"/> Reasoning about Population Samples Cluster	NC.7.SP.1 NC.7.SP.2	Random sampling, representative samples, valid inference, predictions	NC.7.RP.1 NC.7.RP.2 NC.7.RP.3
15	<input type="checkbox"/> Comparing Populations Cluster	NC.7.SP.3 NC.7.SP.4	Variability, data set, mean absolute deviation, average distance, range, interquartile range	

NC Check-Ins Assessed Standards		
Check-In 1	Check-In 2	Check-In 3
7.G.1 7.NS.3* 7.RP.1 7.RP.2 7.RP.3 * 7.NS.3 will also incorporate skills presented in standard 7.NS.2	7.EE.1 7.NS.3 7.RP.2 7.SP.7 7.SP.8	7.EE.3 7.EE.4 7.G.4 7.G.5 7.G.6

Standards/I Can Statements

NC.7.RP.1 Compute unit rates associated with ratios of fractions to solve real-world and mathematical problems.

I Can

- I can calculate unit rates using ratios of fractions (complex fractions).

NC.7.RP.2 Recognize and represent proportional relationships between quantities.

- Understand that a proportion is a relationship of equality between ratios.
 - Represent proportional relationship using tables and graphs.
 - Recognize whether ratios are in a proportional relationship using tables and graphs.
 - Compare two different proportional relationships using tables, graphs, equations, and verbal descriptions.
- Identify the unit rate (constant of proportionality) within two quantities in a proportional relationship using tables, graphs, equations, and verbal descriptions.
- Create equations and graphs to represent proportional relationships.
- Use a graphical representation of a proportional relationship in context to:
 - Explain the meaning of any point (x,y) .
 - Explain the meaning of $(0,0)$ and why it is included.
 - Understand that the y -coordinate of the ordered pair $(1,y)$ corresponds to the unit rate and explain its meaning.

I Can

- I can recognize and represent proportional relationships between quantities.
- I can understand that a proportion is a relationship of equality between ratios.
- I can represent proportional relationships using tables and graphs.
- I can recognize whether ratios are in a proportional relationship using tables and graphs.
- I can compare two different proportional relationships using tables, graphs, equations, and verbal descriptions.
- I can identify the unit rate within two quantities in a proportional relationship using tables, graphs, equations, and verbal descriptions.
- I can create equations and graphs to represent proportional relationships.
- I can use a graphical representation of a proportional relationship in context to explain the meaning of any point.
- I can explain the meaning of $(0,0)$ and why it is included.
- I can understand that the y -coordinate of the ordered pair $(1, y)$ corresponds to the unit rate and explain its meaning.

NC.7.RP.3 Use scale factors and unit rates in proportional relationships to solve ratio and percent problems.

I Can

I can use scale factors and unit rates in proportional relationships to solve ratio and percent problems.

NC.7.G.1 Solve problems involving scale drawings of geometric figures by:

- Building an understanding that angle measures remain the same and side lengths are proportional.
- Using a scale factor to compute actual lengths and areas from a scale drawing.
- Creating a scale drawing.

I Can

- I can build an understanding that angle measures remain the same and side lengths are proportional.
- I can use a scale factor to compute actual lengths and areas from a scale drawing.
- I can create a scale drawing.

NC.7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers, using the properties of operations, and describing real-world contexts using sums and differences.

I Can

- I can apply and extend previous understandings of addition and subtraction using the properties of operations.

NC.7.NS.2 Apply and extend previous understandings of multiplication and division.

- Understand that a rational number is any number that can be written as a quotient of integers with a non-zero division.
- Apply properties of operations as strategies, including the standard algorithms, to multiply and divide rational numbers and describe the product and quotient in real world contexts.
- Use division and previous understandings of fractions and decimals.
 - Convert a fraction to a decimal using long division.
 - Understand that the decimal form of a rational number terminates in 0s or eventually repeats.

I Can

- I can multiply and divide rational numbers.
- I can apply properties of operations.
- I can convert a fraction to a decimal.

NC.7.NS.3 Solve real-world and mathematical problems involving numerical expressions with rational numbers using relationships using the four operations.

I Can

- I can solve real world problems involving all four operations with rational numbers.

NC.7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

I Can

- I can determine the likelihood of an event occurring.

NC.7.SP.6 Collect data to calculate the experimental probability of a chance event, observing its long-run relative frequency. Use this experimental probability to predict the approximate relative frequency.

I Can

- I can collect data to calculate the experimental probability of an event happening.
- I can use this experimental probability to predict relative frequency.

NC.7.SP.7 Develop a probability model and use it to find probabilities of simple events.

- Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
- Develop a probability model (which may not be uniform) by repeatedly performing a chance process and observing frequencies in the data generated.
- Compare theoretical and experimental probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

I Can

- I can develop a probability model to determine probabilities of events.
- I can develop a probability model by repeatedly performing a process and observing frequencies.
- I can compare theoretical and experimental probabilities from observed frequencies and explain possible sources of discrepancy.

NC.7.SP.8 Determine probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

- Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- For an event described in everyday language, identify the outcomes in the sample space which compose the event, when the sample space is represented using organized lists, tables, and tree diagrams.
- Design and use a simulation to generate frequencies for compound events.

I Can

- I can determine probability of compound events and design and use a simulation to generate frequencies for compound events.

NC.7.EE.1 Apply properties of operations as strategies to:

- Add, subtract, and expand linear expressions with rational coefficients.
- Factor linear expression with an integer GCF

I Can

- I can use properties of operations to add, subtract, and expand linear expressions with rational coefficients.
- I can factor linear expression with a GCF.

NC.7.EE.2 Understand that equivalent expressions can reveal real-world and mathematical relationships. Interpret the meaning of the parts of each expression in context.

I Can

- I can understand that equivalent expressions can reveal real-world and mathematical relationships and interpret the meaning of the parts of each expression in context.

NC.7.EE.3 Solve multi-step real-world and mathematical problems posed with rational numbers in algebraic expressions.

- Apply properties of operations to calculate with positive and negative numbers in any form.
- Convert between different forms of a number and equivalent forms of the expression as appropriate.

I Can

- I can solve multi-step real-world and mathematical problems by applying properties of operations to calculate with positive and negative numbers and convert between different forms of a number and equivalent forms of an expression.

NC.7.EE.4 Use variables to represent quantities to solve real world or mathematical problems.

- Construct equations to solve problems by reasoning about the quantities.
 - Fluently solve multistep equations with the variable on one side, including those generated by word problems.
 - Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
 - Interpret the solution in context.
- Construct inequalities to solve problems by reasoning about the quantities.
 - Fluently solve multi-step inequalities with the variable on one side, including those generated by word problems.
 - Compare an algebraic solution process for equations and an algebraic solution process for inequalities.
 - Graph the solution set of the inequality and interpret in context.

I Can

- I can fluently solve multi-step equations with one variable including those generated in word problems.
- I can compare an algebraic solution to an arithmetic solution and identify sequence of operations in both.
- I can interpret the solution in context.
- I can fluently solve multi-step inequalities with one variable including those generated in word problems.
- I can compare an algebraic solution process for equations and an algebraic solution process for inequalities.
- I can graph the solution set of the inequality and interpret in context.

NC.7.G.2 Understand the characteristics of angles and side lengths that create a unique triangle, more than one triangle or no triangle. Build triangles from three measures of angles and/or sides.

I Can

- I can understand characteristics of angles and side lengths that create a unique triangle, more than one triangle or no triangle.
- I can determine if three given lengths create a triangle.

NC.7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.

I Can

- I can write equations using facts about supplementary, complementary, vertical and adjacent angles to solve for an unknown angle in a figure.

NC.7.G.4 Understand area and circumference of a circle.

- Understand the relationships between the radius, diameter, circumference, and area.
- Apply the formulas for area and circumference of a circle to solve problems.

I Can

- I can explain the relationship between the radius and diameter of a circle to generate the formulas for circumference and area.
- I can use the formula for circumference and area of circles to solve problems.

NC.7.G.6 Solve real-world and mathematical problems involving:

- Area and perimeter of two-dimensional objects composed of triangles, quadrilaterals, and polygons.
- Volume and surface area of pyramids, prisms, or three dimensional objects composed of cubes, pyramids, and right prisms.

I Can

- I can solve real-world and mathematical problems involving area and perimeter of two-dimensional objects composed of triangles, quadrilaterals, and polygons.
- I can solve real-world and mathematical problems involving volume and surface area of pyramids, prisms, or three dimensional objects composed of cubes, pyramids, and right prisms.

NC.7.SP Use random sampling to draw inferences about a population.

I Can

- I can use random sampling to draw inferences about population.

NC.7.SP.1 Understand that statistics can be used to gain information about a population by:

- Recognizing that generalizations about a population from a sample are valid only if the sample is representative of that population.
- Using random sampling to produce representative samples to support valid inferences.

I Can

- I can identify how statistics can be used to gain information about a population.

NC.7.SP.2 Generate multiple random samples (or simulated samples) of the same size to gauge the variation in estimates or predictions, and use this data to draw inferences about a population with an unknown characteristic of interest.

I Can

- I can create a random sample from a population and draw inferences about results.

NC.7.SP.3 Recognize the role of variability when comparing two populations.

- Calculate the measure of variability of a data set and understand that it describes how the values of the data set vary with a single number.
 - Understand the mean absolute deviation of a data set is a measure of variability that describes the average distance that points within a data set are from the mean of the data set.
 - Understand that the range describes the spread of the entire data set.
 - Understand that the interquartile range describes the spread of the middle 50% of the data.
- B. Informally assess the difference between two data sets by examining the overlap and separation between the graphical representations of two data sets.

I Can

- I can calculate and compare measures of central tendency and variability for two sets of data.
- I can compute measures of variability (range, interquartile range, and mean absolute deviation) and compare the values for the two groups noting how larger values indicate more variability.
- I can understand that measures of variability are necessary to measure how far apart the centers of two different groups are to assess if they are significantly different or not.
- I can compare two data sets visually by examining the degree of overlap and separation in the graphs of data distribution noting similarities and differences.

NC.7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw comparative inferences about two populations.

I Can

- I can analyze two sets of data by comparing the measures of center and variability.

Resources

Mental Math Strategies

https://drive.google.com/file/d/1OKi6sll8-P-ti4S1_uXl72Myx5djSe8N/view?usp=sharing

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 7th grade.

EOG Math Weight Distribution

Domain	Grade 6
Ratios and Proportional Relationships	24-28%
The Number System	8-12%
Expressions and Equations	20-24%
The Number System, Expressions and Equations	-
Functions	-

Geometry	12-16%
Statistics and Probability	12-16%
Total	100%