



ThinkUp!™

MATH

Correlation of
ThinkUp! Math (NCSCOS-aligned) to the
NC Collaborative Instructional Framework
Grade 8

Correlation of ThinkUp! Math (NCSCOS-aligned) to the NC Collaborative Instructional Framework

I Grade 8 Mathematics

The purpose of this document is to connect the resources in ThinkUp! Math (Aligned to North Carolina Standard Course of Study) to the Eighth Grade Instructional Framework developed by the North Carolina Collaborative for Mathematics Learning (NC2ML). This correlation assists educators in planning effective instruction for the standards identified in the NCSCoS for Grade 8 Mathematics using the clusters and sequencing suggested in the framework. When using the correlation, note the following points.

- ✔ The ThinkUp! Math Teacher Edition (TE) and Student Edition (SE) are meant to be used together to provide engaging instructional activities coupled with reinforcement of the concepts and skills. The TE provides instructional activities, formative assessment ideas, interventions, and extensions to assist in the instruction of the identified standard(s). The SE provides focused practice in a variety of formats while also addressing critical thinking through the application of the 9 Traits of Critical Thinking™.
- ✔ Instruction of the Standards for Mathematical Practice is integrated into the instruction of the content standards. The Getting Started page of each unit in the TE outlines the mathematical practices that are addressed in that unit. Note that this does not imply that the identified practices are the only mathematical practices that students may use while engaging in the rich mathematical tasks and activities offered by ThinkUp! Math.
- ✔ The use of activities and practice pages in ThinkUp! Math is designed to be flexible. Teachers do not have to use all activities or assign all unit pages to deliver effective instruction. Teachers may choose to use some activities multiple times, increasing the content rigor as appropriate.
- ✔ Though suggested student groupings and categories of activities are recommended in the ThinkUp! Math Teacher Edition, flexible use and delivery of the content allows an educator to scaffold instruction for greater student success. For example, an activity recommended for small group instruction may be adapted for individual or large group instruction as needed. A TE activity listed under “Interventions” might be used in the instruction of the large group if additional explorations with models are needed. The materials in ThinkUp! Math were written by seasoned educators and were purposefully designed for flexible use in the classroom.

The NC Collaborative Instructional Framework occasionally includes boundaries for standards, while the units in ThinkUp! Math are built to comprehensively cover each standard in its entirety. Asterisks have been placed next to the impacted unit titles to inform educators of content that may need modification to fit within the scope of the framework.

Recommended Order

Reasoning about Similarity and Transformations
 Functional Reasoning/System unit
 Reasoning about Equations/Angles unit
 Statistical Reasoning unit
 Reasoning with Real Numbers/
 Pythagoras/Volume unit
 Reasoning with Exponents/
 Scientific
 Notation unit

Alternative A

Reasoning about Similarity and Transformations
Functional Reasoning/System unit
Statistical Reasoning unit
Reasoning about Equations/Angles unit
 Reasoning with Real Numbers/
 Pythagoras/Volume unit**
 Reasoning with Exponents/
 Scientific
 Notation unit**
 ** Real numbers and exponents units can be switched according to your preference

Alternative B

Reasoning about Similarity and Transformations
Reasoning about Equations/Angles unit
Functional Reasoning/System unit
Statistical Reasoning unit
 Reasoning with Real Numbers/
 Pythagoras/Volume unit**
 Reasoning with Exponents/
 Scientific
 Notation unit**
 ** Real numbers and exponents units can be switched according to your preference

Cluster 1: Problem solving and environment-building activities *(Duration 1 week)*

NCSCoS

The intention of the first week(s) of class is to establish a mindset that math is about patterns and struggle is good in math. Also, use this time to establish norms of participating in a discussion-oriented classroom.

ThinkUp! Math (NCSCoS-aligned)

Teacher Edition – 9 Traits of Critical Thinking™

Introduce the 9 Traits of Critical Thinking. Discuss how these 9 traits can be applied in math. Note that although many traits can be applied in various settings, each unit includes two focus traits.

Cluster 2: Reasoning about Similarity and Transformations Cluster (Duration 4 weeks)

Start with transformations, then define congruence/similarity

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.G.2</p> <p>Use transformations to define congruence.</p> <ul style="list-style-type: none">• Verify experimentally the properties of rotations, reflections, and translations that create congruent figures.• Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. <p>Given two congruent figures, describe a sequence that exhibits the congruence between them.</p>	<p>Unit 14 – Verify Congruence with Transformations NC.8.G.2</p>
<p>NC.8.G.4</p> <p>Use transformations to define similarity.</p> <ul style="list-style-type: none">• Verify experimentally the properties of dilations that create similar figures.• Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations.• Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	<p>Unit 16 – Confirm Similarity Using Transformations NC.8.G.4</p>
<p>Supporting Standards</p> <ul style="list-style-type: none">• 7th grade standards on similarity and ratio• 7.G.1• 8.G.5	<p>Unit 17 – Use Informal Arguments to Establish Facts about Angle Relationships NC.8.G.5</p>

Cluster 3: Functional Reasoning Cluster (Duration 8 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.F.1</p> <p>Understand that a function is a rule that assigns to each input exactly one output.</p> <ul style="list-style-type: none">• Recognize functions when graphed as the set of ordered pairs consisting of an input and exactly one corresponding output.• Recognize functions given a table of values or a set of ordered pairs.	<p>Unit 9 – Identify Functions NC.8.F.1</p>
<p>NC.8.F.2</p> <p>Compare properties of two linear functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</p>	<p>Unit 10 – Compare Properties of Functions NC.8.F.2</p>
<p>NC.8.F.3</p> <p>Identify linear functions from tables, equations, and graphs.</p>	<p>Unit 11 – Identify Linear Functions NC.8.F.3</p>
<p>NC.8.F.4</p> <ul style="list-style-type: none">• Analyze functions that model linear relationships. Understand that a linear relationship can be generalized by $y = mx + b$.• Write an equation in slope-intercept form to model a linear relationship by determining the rate of change and the initial value, given at least two (x, y) values or a graph.• Construct a graph of a linear relationship given an equation in slope-intercept form.• Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of the slope and y-intercept of its graph or a table of values.	<p>Unit 12 – Write an Equation to Model a Linear Relationship NC.8.F.4</p>
<p>NC.8.F.5</p> <p>Qualitatively analyze the functional relationship between two quantities.</p> <ul style="list-style-type: none">• Analyze a graph determining where the function is increasing or decreasing; linear or non-linear.• Sketch a graph that exhibits the qualitative features of a real-world function.	<p>Unit 13 – Describe Functional Relationships Qualitatively NC.8.F.5</p>

Cluster 3: Functional Reasoning Cluster (Duration 8 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.8.EE.8

Analyze and solve a system of two linear equations in two variables in slope-intercept form.

- Understand that solutions to a system of two linear equations correspond to the points of intersection of their graphs because the point of intersection satisfies both equations simultaneously.
- Solve real-world and mathematical problems leading to systems of linear equations by graphing the equations. Solve simple cases by inspection.

Unit 8 – Solve Pairs of Simultaneous Linear Equations
NC.8.EE.8

Supporting Standards

- **Builds on grade 7 equations**
-

Cluster 4: Reasoning about Equations and Angles Cluster (Duration 6 weeks)

(Integrate solving equations with geometric angle relationships.)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.EE.7</p> <p>Solve real-world and mathematical problems by writing and solving equations and inequalities in one variable.</p> <ul style="list-style-type: none">• Recognize linear equations in one variable as having one solution, infinitely many solutions, or no solutions.• Solve linear equations and inequalities including multi-step equations and inequalities with the same variable on both sides.	<p>Unit 7 – Solve Linear Equations and Inequalities NC.8.EE.7</p>
<p>NC.8.G.5</p> <p>Use informal arguments to analyze angle relationships.</p> <ul style="list-style-type: none">• Recognize relationships between interior and exterior angles of a triangle.• Recognize the relationships between the angles created when parallel lines are cut by a transversal.• Recognize the angle-angle criterion for similarity of triangles.• Solve real-world and mathematical problems involving angles.	<p>Unit 17 – Use Informal Arguments to Establish Facts about Angle Relationships NC.8.G.5</p>
<p>Supporting Standards</p> <ul style="list-style-type: none">• Supporting standards in transformations• 8.G.4	<p>Unit 16 – Confirm Similarity Using Transformations NC.8.G.4</p>

Cluster 5: Statistical Reasoning Cluster (Duration 4 weeks)

Please remember to incorporate Function standards as a support/re-loop in the statistics standards.

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.SP.1</p> <p>Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</p>	<p>Unit 22 – Construct and Interpret Scatter Plots NC.8.SP.1</p>
<p>NC.8.SP.2</p> <p>Model the relationship between bivariate</p> <ul style="list-style-type: none">• quantitative data to:• Informally fit a straight line for a scatter plot that suggests a linear association.• Informally assess the model fit by judging the closeness of the data points to the line.	<p>Unit 23 – Fit a Trend Line to Data NC.8.SP.2</p>
<p>NC.8.SP.3</p> <p>Use the equation of a linear model to solve problems in the context of bivariate quantitative data, interpreting the slope and y-intercept.</p>	<p>Unit 24 – Use Linear Equations to Solve Problems Involving Bivariate Data NC.8.SP.3</p>
<p>NC.8.SP.4</p> <p>Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.</p> <ul style="list-style-type: none">• Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.• Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	<p>Unit 25 – Understand Patterns in Bivariate Categorical Data NC.8.SP.4</p>
<p>Supporting Standards</p> <p>NC.8.EE.7</p>	<p>Unit 7 – Solve Linear Equations and Inequalities NC.8.EE.7</p>

Cluster 6: Reasoning with Rational/Irrational numbers (and Pythagorean Theorem) Cluster (Duration 8 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.NS.1</p> <p>Understand that every number has a decimal expansion. Building upon the definition of a rational number, know that an irrational number is defined as a non-repeating, non-terminating decimal.</p>	<p>Unit 1 – Distinguish Between Rational and Irrational Numbers NC.8.NS.1</p>
<p>NC.8.NS.2</p> <p>Use rational approximations of irrational numbers to compare the size of irrational numbers and locate them approximately on a number line. Estimate the value of expressions involving:</p> <ul style="list-style-type: none">• Square roots and cube roots to the tenths.• π to the hundredths	<p>Unit 2 – Approximate and Locate the Value of Irrational Numbers NC.8.NS.2</p>
<p>NC.8.EE.2</p> <p>Use square root and cube root symbols to:</p> <ul style="list-style-type: none">• Represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number.• Evaluate square roots of perfect squares and cube roots of perfect cubes for positive numbers less than or equal to 400.	<p>Unit 4 – Evaluate Square Roots and Cube Roots NC.8.EE.2</p>

Cluster 6: Reasoning with Rational/Irrational numbers (and Pythagorean Theorem) Cluster *(Duration 8 weeks)*

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
NC.8.G.6 Explain the Pythagorean Theorem and its converse.	Unit 18 – Prove the Pythagorean Theorem and its Converse NC.8.G.6
NC.8.G.7 Apply the Pythagorean Theorem and its converse to solve real-world and mathematical problems.	Unit 19 – Use the Pythagorean Theorem to Solve Problems NC.8.G.7
NC.8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Unit 20 – Use the Pythagorean Theorem to Find Distance Between Points NC.8.G.8
NC.8.G.9 Understand how the formulas for the volumes of cones, cylinders, and spheres are related and use the relationship to solve real-world and mathematical problems.	Unit 21 – Solve Problems Involving Volume of Cones, Cylinders, and Spheres NC.8.G.9
Supporting Standards NC.8.EE.7	Unit 7 – Solve Linear Equations and Inequalities NC.8.EE.7

Cluster 7: Reasoning about Exponents/Scientific Notation Cluster (Duration 3 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p>NC.8.EE.1</p> <p>Develop and apply the properties of integer exponents to generate equivalent numerical expressions.</p>	<p>Unit 3 – Apply Properties of Exponents NC.8.EE.1</p>
<p>NC.8.EE.3</p> <p>Use numbers expressed in scientific notation to estimate very large or very small quantities and to express how many times as much one is than the other.</p>	<p>Unit 5 – Express Numbers in Scientific Notation NC.8.EE.3</p>
<p>NC.8.EE.4</p> <p>Perform multiplication and division with numbers expressed in scientific notation to solve real-world problems, including problems where both decimal and scientific notation are used.</p>	<p>Unit 6 – Multiply and Divide with Scientific Notation NC.8.EE.4</p>