



# ThinkUp!<sup>TM</sup>

## MATH

Correlation of  
ThinkUp! Math (NCSCOS-aligned) to the  
NC Collaborative Instructional Framework  
**Grade 7**

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

## I Grade 7 Mathematics

The purpose of this document is to connect the resources in ThinkUp! Math (Aligned to North Carolina Standard Course of Study) to the Seventh Grade Instructional Framework developed by the North Carolina Collaborative for Mathematics Learning (NC<sup>2</sup>ML). This correlation assists educators in planning effective instruction for the standards identified in the NCSCoS for Grade 7 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.

**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: Proportional Relationships Cluster** (Duration 6 weeks)

**NCSCoS**

**ThinkUp! Math (NCSCoS-aligned)**

**NC.7.RP.1**

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

**Unit 1** – Compute Unit Rates NC.7.RP.1

**NC.7.RP.2**

Recognize and represent proportional relationships between quantities.

- a. Understand that a proportion is a relationship of equality between ratios.
- Represent proportional relationships 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.
- b. Identify the unit rate (constant of proportionality) within
- two quantities in a proportional relationship using tables,
  - graphs, equations, and verbal descriptions.
- c. Create equations and graphs to represent proportional relationships.
- d. 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

**Unit 2** – Determine Proportional Relationships NC.7.RP.2a

**Unit 3** – Identify the Constant of Proportionality NC.7.RP.2ab

**Unit 4** – Represent Proportional Relationships NC.7.RP.2c

**Unit 5** – Explain Ordered Pairs in Context NC.7.RP.2d

**NC.7.RP.3**

Use scale factors and unit rates in proportional relationships to solve ratio and percent problems.

**Unit 6** – Solve Problems Involving Ratios and Percents NC.7.RP.3

**Unit 7** – Create and Interpret Circle Graphs NC.7.RP.3

**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.

**Unit 16** – Solve Problems Involving Scale Drawings NC.7.G.1

**Cluster 2: Proportional Relationships Cluster** (Duration 6 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
Supporting Standards <b>NC.7.EE.2</b> <b>NC.7.EE.3</b> <b>NC.7.EE.4</b> <b>NC.7.NS.2</b>	<b>Unit 13</b> – Model Problem Solving with Equivalent Expressions NC.7.EE.2 <b>Unit 14</b> – Solve Multi-Step Problems with Rational Numbers NC.7.EE.3 <b>Unit 15</b> – Write and Solve Equations and Inequalities NC.7.EE.4ab <b>Unit 9</b> – Multiply and Divide Rational Numbers NC.7.NS.2ab <b>Unit 10</b> – Convert a Rational Number to a Decimal NC.7.NS.2c

**Cluster 3: Reasoning with Rational Numbers Cluster** (Duration 6 weeks)

**NCSCoS**

**ThinkUp! Math (NCSCoS-aligned)**

**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.

**Unit 8** – Add and Subtract Rational Numbers NC.7.NS.1

**NC.7.NS.2**

Apply and extend previous understandings of multiplication and division.

- e. Understand that a rational number is any number that can be written as a quotient of integers with a non-zero divisor.
- f. 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.
- g. 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.

**Unit 9** – Multiply and Divide Rational Numbers NC.7.NS.2ab

**Unit 10** – Convert a Rational Number to a Decimal NC.7.NS.2c

**NC.7.NS.3**

Solve real-world and mathematical problems involving numerical expressions with rational numbers using the four operations.

**Unit 11** – Solve Problems Involving Rational Numbers NC.7.NS.3

Supporting Standards

**NC.7.EE.2**

**NC.7.EE.3**

**NC.7.RP.3**

**NC.7.G.1**

**Unit 13** – Model Problem Solving with Equivalent Expressions NC.7.EE.2

**Unit 14** – Solve Multi-Step Problems with Rational Numbers NC.7.EE.3

**Unit 6** – Solve Problems Involving Ratios and Percents NC.7.RP.3

**Unit 7** – Create and Interpret Circle Graphs NC.7.RP.3

**Unit 16** – Solve Problems Involving Scale Drawings NC.7.G.1

**Cluster 4: Probabilistic Reasoning Cluster** (Duration 3 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p><b>NC.7.SP.5</b></p> <p>Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.</p>	<p><b>Unit 26</b> – Determine the Likelihood of an Event NC.7.SP.5</p>
<p><b>NC.7.SP.6</b></p> <p>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.</p>	<p><b>Unit 27</b> – Approximate Probabilities of Chance Events NC.7.SP.6</p>
<p><b>NC.7.SP.7</b></p> <p>Develop a probability model and use it to find probabilities of simple events.</p> <p>h. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</p> <p>i. Develop a probability model (which may not be uniform) by repeatedly performing a chance process and observing frequencies in the data generated.</p> <p>j. Compare theoretical and experimental probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy</p>	<p><b>Unit 28</b> – Develop Probability Models NC.7.SP.7abc</p>
<p><b>NC.7.SP.8</b></p> <p>Determine probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>k. 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.</p> <p>l. 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.</p> <p>m. Design and use a simulation to generate frequencies for compound events.</p>	<p><b>Unit 29</b> – Find Probabilities of Compound Events NC.7.SP.8ab</p> <p><b>Unit 30</b> – Design Simulations for Compound Events NC.7.SP.8c</p>

**Cluster 4: Probabilistic Reasoning Cluster** (Duration 3 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
Supporting Standards <b>NC.7.RP.1</b> <b>NC.7.RP.2</b> <b>NC.7.RP.3</b>	<b>Unit 1</b> – Compute Unit Rates NC.7.RP.1 <b>Unit 2</b> – Determine Proportional Relationships NC.7.RP.2a <b>Unit 3</b> – Identify the Constant of Proportionality NC.7.RP.2ab <b>Unit 4</b> – Represent Proportional Relationships NC.7.RP.2c <b>Unit 5</b> – Explain Ordered Pairs in Context NC.7.RP.2d <b>Unit 6</b> – Solve Problems Involving Ratios and Percents NC.7.RP.3 <b>Unit 7</b> – Create and Interpret Circle Graphs NC.7.RP.3



**Cluster 5: Reasoning About Expressions Cluster** (Duration 3 weeks)

**NCSCoS**

**ThinkUp! Math (NCSCoS-aligned)**

**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.

**Unit 12** – Generate Equivalent Expressions NC.7.EE.1

**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.

**Unit 13** – Model Problem Solving with Equivalent Expressions NC.7.EE.2

Supporting Standards

**NC.7.NS.1**

**NC.7.NS.2**

**Unit 8** – Add and Subtract Rational Numbers NC.7.NS.1

**Unit 9** – Multiply and Divide Rational Numbers  
NC.7.NS.2ab

**Unit 10** – Convert a Rational Number to a Decimal  
NC.7.NS.2c

**Cluster 6: Reasoning About Equations and Inequalities Cluster** (Duration 6 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p><b>NC.7.EE.3</b></p> <p>Solve multi-step real-world and mathematical problems posed with rational numbers in algebraic expressions.</p> <ul style="list-style-type: none"><li>• Apply properties of operations to calculate with positive and negative numbers in any form.</li><li>• Convert between different forms of a number and equivalent forms of the expression as appropriate.</li></ul>	<p><b>Unit 14</b> – Solve Multi-Step Problems with Rational Numbers NC.7.EE.3</p>
<p><b>NC.7.EE.4</b></p> <p>Use variables to represent quantities to solve real world or mathematical problems.</p> <p>n. Construct equations to solve problems by reasoning about the quantities.</p> <ul style="list-style-type: none"><li>• Fluently solve multistep equations with the variable on one side, including those generated by word problems.</li><li>• Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. Interpret the solution in context.</li></ul> <p>o. Construct inequalities to solve problems by reasoning about the quantities.</p> <ul style="list-style-type: none"><li>• Fluently solve multi-step inequalities with the variable on one side, including those generated by word problems.</li><li>• 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.</li></ul>	<p><b>Unit 15</b> – Write and Solve Equations and Inequalities NC.7.EE.4ab</p>
<p><b>NC.7.G.2</b></p> <p>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.</p>	<p><b>Unit 17</b> – Construct Triangles NC.7.G.2</p>
<p><b>NC.7.G.5</b></p> <p>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.</p>	<p><b>Unit 19</b> – Solve Problems Involving Angles NC.7.G.5</p>
<p>Supporting Standards</p> <p><b>NC.7.NS.1</b></p> <p><b>NC.7.NS.2</b></p>	<p><b>Unit 8</b> – Add and Subtract Rational Numbers NC.7.NS.1</p> <p><b>Unit 9</b> – Multiply and Divide Rational Numbers NC.7.NS.2ab</p> <p><b>Unit 10</b> – Convert a Rational Number to a Decimal NC.7.NS.2c</p>

**Cluster 7: Geometric and Measurement Reasoning Cluster** (Duration 3 weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p><b>NC.7.G.4</b></p> <p>Understand area and circumference of a circle.</p> <ul style="list-style-type: none"><li>Understand the relationships between the radius, diameter, circumference, and area.</li></ul> <p>Apply the formulas for area and circumference of a circle to solve problems.</p>	<p><b>Unit 18</b> – Find Area and Circumference of Circles NC.7.G.4</p>
<p><b>NC.7.G.6</b></p> <p>Solve real-world and mathematical problems involving:</p> <ul style="list-style-type: none"><li>Area and perimeter of two-dimensional objects composed of triangles, quadrilaterals, and polygons.</li><li>Volume and surface area of pyramids, prisms, or three-dimensional objects composed of cubes, pyramids, and right prisms.</li></ul>	<p><b>Unit 20</b> – Solve Problems Involving Perimeter, Area, Volume, and Surface Area NC.7.G.6</p>
<p>Supporting Standards</p> <p><b>NC.7.NS.2</b> <b>NC.7.EE.2</b> <b>NC.7.RP.2</b></p>	<p><b>Unit 9</b> – Multiply and Divide Rational Numbers NC.7.NS.2ab <b>Unit 10</b> – Convert a Rational Number to a Decimal NC.7.NS.2c <b>Unit 13</b> – Model Problem Solving with Equivalent Expressions NC.7.EE.2 <b>Unit 2</b> – Determine Proportional Relationships NC.7.RP.2a <b>Unit 3</b> – Identify the Constant of Proportionality NC.7.RP.2ab <b>Unit 4</b> – Represent Proportional Relationships NC.7.RP.2c <b>Unit 5</b> – Explain Ordered Pairs in Context NC.7.RP.2d</p>

**Cluster 8: Reasoning about Population Samples Cluster** (Duration 4 weeks)

**NCSCoS**

**ThinkUp! Math (NCSCoS-aligned)**

**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.

**Unit 21** – Understand Random Sampling of a Population NC.7.SP.1

**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.

**Unit 22** – Draw Inferences from Random Samples NC.7.SP.2

Supporting Standards

**NC.7.RP.1**

**NC.7.RP.2**

**NC.7.RP.3**

**Unit 1** – Compute Unit Rates NC.7.RP.1

**Unit 2** – Determine Proportional Relationships NC.7.RP.2a

**Unit 3** – Identify the Constant of Proportionality NC.7.RP.2ab

**Unit 4** – Represent Proportional Relationships NC.7.RP.2c

**Unit 5** – Explain Ordered Pairs in Context NC.7.RP.2d

**Unit 6** – Solve Problems Involving Ratios and Percents NC.7.RP.3

**Unit 7** – Create and Interpret Circle Graphs NC.7.RP.3

**Cluster 9: Comparing Populations Cluster** (Duration 3 weeks)

**NCSCoS**

**NC.7.SP.3**

Recognize the role of variability when comparing two populations.

- a. 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.

**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.

**ThinkUp! Math (NCSCoS-aligned)**

**Unit 23** – Describe Plane Sections of Three-Dimensional Figures NC.7.G.3

**Unit 24** – Assess Differences in Between Two Data Sets NC.7.SP.3b

**Unit 25** – Draw Inferences about Two Populations NC.7.SP.4