



ThinkUp!TM

MATH

Correlation of
ThinkUp! Math (NCSCOS-aligned) to the
NC Collaborative Instructional Framework
Grade 5

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I Grade 5 Mathematics

The purpose of this document is to connect the resources in ThinkUp! Math (Aligned to North Carolina Standard Course of Study) to the Fifth 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 5 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: Creating Classroom Community through Data and Graphing (Duration: 2–3 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.MD.2

Represent and interpret data.

- Collect data by asking a question that yields data that changes over time.
- Make and interpret a representation of data using a line graph.
- Determine whether a survey question will yield categorical or numerical data, or data that changes over time.

Unit 20 – Represent and Interpret Data

- ☑ Teacher Edition (pp. 241–252)
- ☑ Student Edition (pp. 191–200)

NC.5.G.1

Graph points in the first quadrant of a coordinate plane and identify and interpret the x and y coordinates to solve problems.

Unit 23 – Understand and Use the Coordinate Plane

- ☑ Teacher Edition (pp. 279–290)
- ☑ Student Edition (pp. 221–220)

NC.5.OA.3

Generate two numerical patterns using two given rules.

- Identify apparent relationships between corresponding terms.
- Form ordered pairs consisting of corresponding terms from the two patterns.
- Graph the ordered pairs on a coordinate plane.

Unit 3 – Analyze Patterns and Form Ordered Pairs

- ☑ Teacher Edition (pp. 26–37)
- ☑ Student Edition (pp. 21–30)

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

Cluster 2: Using Models to Explore Properties of Multiplication and Division (Duration: 4–5 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.OA.2

Write, explain, and evaluate numerical expressions involving the four operations to solve up to two-step problems. Include expressions involving:

- Parentheses, using the order of operations.
- Commutative, associative, and distributive properties.

NC.5.NBT.5

Demonstrate fluency with the multiplication of two whole numbers up to a three-digit number by a two-digit number.

Unit 1 – Understand Properties

- ☑ Teacher Edition (pp. 1–13)
- ☑ Student Edition (pp. 1–10)

Unit 2 – Write, Explain, and Evaluate Expressions

- ☑ Teacher Edition (pp. 14–25)
- ☑ Student Edition (pp. 11–20)

Unit 7 – Multiply Whole Numbers *

Teacher Edition

- Getting Started (pp. 80–82) *
- Instruction: Concept Exploration and Formative Assessment (p. 83) *
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 84)
- Instruction: Literature Connection (p. 84) *
- Instruction: Concept Development Activities and Formative Assessment (p. 85) *
- Instruction: Concept Application/Concept Practice (p. 86) *
- Assessment: Concept Check and Test-Taking Tips (p. 87)
- Intervention Activities and Formative Assessment (p. 87) *
- Extension: Reflect on My Learning (p. 88)
- Extension: Extending Student Thinking Activity (p. 88) *
- Extension: Home Connection (p. 88) *
- Extension: Teacher Reflection (p. 89)
- Answer Keys and Codings (p. 90–91)

Student Edition

- Getting Started (p. 61) *
- Instruction: Concept Exploration (p. 62) *
- Instruction: Vocabulary Mastery (p. 63) *
- Instruction: Concept Development (p. 64) *
- Instruction: Concept Application (p. 65) *
- Instruction: Concept Practice (p. 66) *
- Instruction: Motivation Station (p. 67)
- Extension: Math Challenge (p. 68)
- Extension: Reflection on My Learning (p. 68)
- Extension: Reflection on Critical Thinking (p. 68)
- Assessment: Concept Check (pp. 69–70) *

**Delay emphasis on the standard algorithm for multiplication until Cluster 6.*

Cluster 2: Using Models to Explore Properties of Multiplication and Division (Duration: 4–5 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.NBT.6

Find quotients with remainders when dividing whole numbers with up to four-digit dividends and two-digit divisors using rectangular arrays, area models, repeated subtraction, partial quotients, and/or the relationship between multiplication and division.

Unit 8 – Divide Whole Numbers *

Teacher Edition

- Getting Started (pp. 92–93) *
- Instruction: Concept Exploration and Formative Assessment (p. 94)
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 95)
- Instruction: Literature Connection (p. 95) *
- Instruction: Concept Development Activities and Formative Assessment (pp. 96–98) *
- Instruction: Concept Application/Concept Practice (p. 99) *
- Assessment: Concept Check and Test-Taking Tips (p. 100)
- Intervention Activities and Formative Assessment (pp. 100–101) *
- Extension: Reflect on My Learning (p. 101)
- Extension: Extending Student Thinking Activity (p. 102)
- Extension: Home Connection (p. 102)
- Extension: Teacher Reflection (p. 102)
- Answer Keys and Codings (pp. 103–104)

Student Edition

- Getting Started (p. 71) *
- Instruction: Concept Exploration (p. 72)
- Instruction: Vocabulary Mastery (p. 73)
- Instruction: Concept Development (p. 74) *
- Instruction: Concept Application (p. 75) *
- Instruction: Concept Practice (p. 76) *
- Instruction: Motivation Station (p. 77) *
- Extension: Math Challenge (p. 78)
- Extension: Reflection on My Learning (p. 78)
- Extension: Reflection on Critical Thinking (p. 78)
- Assessment: Concept Check (pp. 79–80) *

**Delay the connection to the algorithm until Cluster 6.*

NC.5.MD.4

Recognize volume as an attribute of solid figures and measure volume by counting unit cubes, using cubic centimeters, cubic inches, cubic feet, and improvised units.

Unit 21 – Understand and Measure Volume in Cubic Units

- ☑ Teacher Edition (pp. 253–263)
- ☑ Student Edition (pp. 201–210)

Cluster 2: Using Models to Explore Properties of Multiplication and Division (Duration: 4–5 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.MD.5

Relate volume to the operations of multiplication and addition.

- Find the volume of a rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths.
- Build understanding of the volume formula for rectangular prisms with whole-number edge lengths in the context of solving problems.
- Find volume of solid figures with one-digit dimensions composed of two non-overlapping rectangular prisms.

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

Unit 22 – Relate Volume to Multiplication and Addition

- ☑ Teacher Edition (pp. 264–278)
- ☑ Student Edition (pp. 211–220)

Cluster 3: Using Models to Multiply and Divide Fractions (Duration: 3–4 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.NF.3

Use fractions to model and solve division problems.

- Interpret a fraction as an equal sharing context, where a quantity is divided into equal parts.
- Model and interpret a fraction as the division of the numerator by the denominator.
- Solve one-step word problems involving division of whole numbers leading to answers in the form of fractions and mixed numbers, with denominators of 2, 3, 4, 5, 6, 8, 10, and 12, using area, length, and set models or equations.

Unit 14 – Interpret Fractions as Division

- ☑ Teacher Edition (pp. 168–178)
- ☑ Student Edition (pp. 131–140)

NC.5.NF.4

Apply and extend previous understandings of multiplication to multiply or whole number by a fraction, including mixed numbers.

- Use area and length models to multiply a fraction by a whole number, with the denominators 2, 3, 4.
- Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number and when multiplying a given number by a fraction less than 1 results in a product smaller than the given number.

Unit 15 – Multiply Fractions *

- ☑ Teacher Edition (pp. 179–191)
- ☑ Student Edition (pp. 141–150)

**Using area and length models to multiply two fractions is addressed in Cluster 6. Limit activities to those involving multiplication of a fraction and a whole number.*

Unit 16 – Explain Fraction Multiplication *

- ☑ Teacher Edition (pp. 192–204)
- ☑ Student Edition (pp. 151–160)

**The concepts in Unit 16 are addressed again in Cluster 6.*

NC.5.NF.7

Solve one-step word problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions using area and length models, and equations to represent the problem.

Unit 18 – Divide Fractions and Whole Numbers *

- ☑ Teacher Edition (pp. 217–227)
- ☑ Student Edition (pp. 171–180)

**Note that this concept is also addressed in Cluster 6. Part of the instructional activities may be used in Cluster 3 and part in Cluster 6.*

Cluster 3: Using Models to Multiply and Divide Fractions (Duration: 3–4 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.OA.2

Write, explain, and evaluate numerical expressions involving the four operations to solve up to two-step problems. Include expressions involving:

- Parentheses, using the order of operations.
- Commutative, associative, and distributive properties.

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

NC.5.OA.2 is reinforced through the problem-solving activities in the other content standards in this cluster. If additional reinforcement is needed, revisit the activities in Teacher Edition Units 1 and 2.

Cluster 4: Understanding Place Value and Decimals in the Context of Metric Measurement (Duration: 3–4 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.NBT.1

Explain the patterns in the place value system from one million to the thousandths place.

- Explain that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- Explain patterns in products and quotients when numbers are multiplied by 1,000, 100, 10, 0.1, and 0.01 and/or divided by 10 and 100.

Unit 4 – Understand Base-10 Place Value

- ☑ Teacher Edition (pp. 41–52)
- ☑ Student Edition (pp. 31–40)

Unit 5 – Explain Patterns in Products and Quotients

- ☑ Teacher Edition (pp. 53–65)
- ☑ Student Edition (pp. 41–50)

NC.5.NBT.3

Read, write, and compare decimals to thousandths.

- Write decimals using base-ten numerals, number names, and expanded form.
- Compare two decimals to thousandths based on the value of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Unit 6 – Read, Write, and Compare Decimals

- ☑ Teacher Edition (pp. 66–79)
- ☑ Student Edition (pp. 51–60)

NC.5.MD.2

Represent and interpret data.

- Collect data by asking a question that yields data that changes over time.
- Make and interpret a representation of data using a line graph.
- Determine whether a survey question will yield categorical or numerical data, or data that changes over time.

Unit 20 – Represent and Interpret Data*

- ☑ Teacher Edition (pp. 241–252)
- ☑ Student Edition (pp. 191–200)

In Cluster 4, the focus of NC.5.MD.2 is on metric measurement and place value. The teacher should have students collect and display data that is measured in metric units.

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

Cluster 5: Using Models to Add and Subtract Decimals and Fractions (Duration: 4–5 weeks)

NCSCoS

NC.5.NF.1

Add and subtract fractions, including mixed numbers, with unlike denominators using related fractions: halves, fourths, and eighths; thirds, sixths, and twelfths; fifths, tenths, and hundredths.

- Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
- Solve one- and two-step word problems in context using area and length models to develop the algorithm. Represent the word problem in an equation.

NC.5.NBT.7

Compute and solve real-world problems with multi-digit whole numbers and decimal numbers.

- Add and subtract decimals to thousandths using models, drawings, or strategies based on place value.
- Use estimation strategies to assess reasonableness of answers.

NC.5.OA.2

Write, explain, and evaluate numerical expressions involving the four operations to solve up to two-step problems. Include expressions involving:

- Parentheses, using the order of operations.
- Commutative, associative, and distributive properties.

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

ThinkUp! Math (NCSCoS-aligned)

Unit 12 – Add and Subtract Fractions with Unlike Denominators

- ☑ Teacher Edition (pp. 142–154)
- ☑ Student Edition (pp. 111–120)

Unit 13 – Solve Word Problems: Add and Subtract Fractions

- ☑ Teacher Edition (pp. 155–167)
- ☑ Student Edition (pp. 121–130)

Unit 9 – Add and Subtract Decimals

- ☑ Teacher Edition (pp. 105–116)
- ☑ Student Edition (pp. 81–90)

NC.5.OA.2 is reinforced through the problem-solving activities in the other content standards in this cluster. If additional reinforcement is needed, revisit the activities in Teacher Edition Units 1 and 2.

Cluster 6: Using Models to Multiply and Divide Whole Numbers, Decimals, and Fractions. (Duration: 5–6 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.MD.1

Given a conversion chart, use multiplicative reasoning to solve one-step conversion problems within a given measurement system.

Unit 19 – Convert Measurement Units

- ☑ Teacher Edition (pp. 228–240)
- ☑ Student Edition (pp. 181–190)

NC.5.NBT.5

Demonstrate fluency with the multiplication of two whole numbers up to a three-digit number by a two-digit number using the standard algorithm.

Unit 7 – Multiply Whole Numbers

- ☑ Teacher Edition (pp. 80–91)
- ☑ Student Edition (pp. 61–70)

NC.5.NBT.6

Find quotients with remainders when dividing whole numbers with up to four-digit dividends and two-digit divisors using rectangular arrays, area models, repeated subtraction, partial quotients, and/or the relationship between multiplication and division. Use models to make connections and develop the algorithm.

Unit 8 – Divide Whole Numbers

- ☑ Teacher Edition (pp. 92–104)
- ☑ Student Edition (pp. 71–80)

NC.5.NBT.7

Compute and solve real-world problems with multi-digit whole numbers and decimal numbers.

Unit 10 – Multiply Decimals

- ☑ Teacher Edition (pp. 117–129)
- ☑ Student Edition (pp. 91–100)

Unit 11 – Divide Decimals *

- ☑ Teacher Edition (pp. 130–141)
- ☑ Student Edition (pp. 101–110)

**Decimals should be limited to hundredths.*

- Multiply decimals with a product to thousandths using models, drawings, or strategies based on place value.
- Divide a whole number by a decimal and divide a decimal by a whole number, using repeated subtraction or area models.
- Use estimation strategies to assess reasonableness of answers.

Cluster 6: Using Models to Multiply and Divide Whole Numbers, Decimals, and Fractions. (Duration: 5–6 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.NF.4

Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction, including mixed numbers.

- Use area and length models to multiply two fractions, with the denominators 2, 3, 4.
- Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number and when multiplying a given number by a fraction less than 1 results in a product smaller than the given number.
- Solve one-step word problems involving multiplication of fractions using models to develop the algorithm.

Unit 15 – Multiply Fractions

- ☑ Teacher Edition (pp. 179–191)
- ☑ Student Edition (pp. 141–150)

Unit 16 – Explain Fraction Multiplication

- ☑ Teacher Edition (pp. 192–204)
- ☑ Student Edition (pp. 151–160)

Unit 17 – Solve Word Problems: Multiply Fractions

- ☑ Teacher Edition (pp. 205–216)
- ☑ Student Edition (pp. 161–170)

NC.5.NF.7

Solve one-step word problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions using area and length models, and equations to represent the problem.

Unit 18 – Divide Fractions and Whole Numbers

- ☑ Teacher Edition (pp. 217–227)
- ☑ Student Edition (pp. 171–180)

For work with NC.5.NF.7 in Cluster 6, students may be encouraged to further explore fraction division and to look for patterns that lead them toward developing the algorithm (with which fluency is expected in grade 6).

NC.5.OA.2

Write, explain, and evaluate numerical expressions involving the four operations to solve up to two-step problems. Include expressions involving:

- Parentheses, using the order of operations.
- Commutative, associative, and distributive properties.

NC.5.OA.2 is reinforced through the problem-solving activities in the other content standards in this cluster. If additional reinforcement is needed, revisit the activities in Teacher Edition Units 1 and 2.

The Standards for Mathematical Practice are integrated into the instruction of the content standards.

Cluster 7 : Classifying Quadrilaterals (Duration: 1–2 weeks)

NCSCoS

ThinkUp! Math (NCSCoS-aligned)

NC.5.G.1

Graph points in the first quadrant of a coordinate plane and identify and interpret the x and y coordinates to solve problems.

Unit 24 – Represent Problems on the Coordinate Plane

- ☑ Teacher Edition (pp. 291–302)
- ☑ Student Edition (pp. 231–240)

NC.5.G.3

Classify quadrilaterals into categories based on their properties.

- Explain that attributes belonging to a category of quadrilaterals also belong to all subcategories of that category.
- Classify quadrilaterals in a hierarchy based on properties.

Unit 25 – Classify Quadrilaterals

- ☑ Teacher Edition (pp. 303–314)
- ☑ Student Edition (pp. 241–250)

The Standards for Mathematical Practice are integrated into the instruction of the content standards.