



# ThinkUp!™

## MATH

Correlation of  
ThinkUp! Math (NCSCOS-aligned) to the  
NC Collaborative Instructional Framework  
**Grade 4**

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

## I Grade 4 Mathematics

The purpose of this document is to connect the resources in ThinkUp! Math (Aligned to North Carolina Standard Course of Study) to the Fourth 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 4 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: Building a Math Community through Real Data** (Duration: 1–2 weeks)

**NCSCoS**

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

**Content Standards**

**NC.4.MD.4**

Represent and interpret data using whole numbers.

- Collect data by asking a question that yields numerical data.
- Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot.
- Determine whether a survey question will yield categorical or numerical data.

**Unit 23—Represent and Interpret Data**

**Teacher Edition (pp. 234–264)**

**Student Edition (pp. 221–230)**

**Supporting Standards**

**NC.4.NBT.4**

Add and subtract multi-digit whole numbers using the standard algorithm with place value understanding.

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

**Unit 9—Add and Subtract Multi-Digit Whole Numbers\***

**Teacher Edition**

- Getting Started (pp. 93–94) \*
- Instruction: Concept Exploration and Formative Assessment (p. 95) \*
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 96)
- Instruction: Literature Connection (p. 96)
- Instruction: Concept Development Activities and Formative Assessment (p. 97) \*
- Instruction: Concept Application/Concept Practice (p. 98) \*
- Assessment: Concept Check and Test-taking Tips (p. 99)
- Intervention Activities and Formative Assessment (pp. 99–100) \*
- Extension: Reflect on My Learning (p. 100) \*
- Extension: Extending Student Thinking Activity (p. 100)
- Extension: Home Connection (p. 101) \*
- Extension: Teacher Reflection (p. 101)
- Answer Keys and Codings (pp. 102–104)

**Student Edition**

- Getting Started (p. 81)
- Instruction: Concept Exploration p. 82) \**Activity could result in sums up to 1,332.*
- Instruction: Vocabulary Mastery (p. 83)
- Instruction: Concept Development (p. 84) \*
- Instruction: Concept Application (p. 85) \*
- Instruction: Concept Practice (p. 86) \*
- Instruction: Motivation Station (p. 87) \*
- Extension: Math Challenge (p. 88) \**Activity results in a sum of 1,010.*
- Extension: Reflection on My Learning (p. 88)
- Extension: Reflection on Critical Thinking (p. 88)
- Assessment: Concept Check (pp. 89–90) \*

*\*Addition and subtraction are limited to numbers up to and including 1,000 for this cluster. Addition and subtraction with larger numbers will be addressed in Cluster 3. Much of the addition and subtraction practice for this cluster is a review of grade 3 skills. Teachers may also reinforce these skills by asking addition and subtraction questions from the graphs in NC.4.MD.4 (Unit 23).*

## Cluster 2: Explore Multiplicative Comparison, Area and Perimeter, Factors, and Multiples

(Duration: 3–4 Weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<p><b>NC.4.OA.1</b></p> <p>Interpret a multiplication equation as a comparison. Multiply or divide to solve word problems involving multiplicative comparisons using models and equations with a symbol for the unknown number. Distinguish multiplicative comparison from additive comparison.</p>	<p><b>Unit 1 – Interpret Multiplication as a Comparison *</b> <b>Teacher Edition (pp. 1–11)</b> <b>Student Edition (pp. 1–10)</b></p> <p><b>Unit 2 – Solve Word Problems: Multiplication and Division Comparisons *</b> <b>Teacher Edition (pp. 12–24)</b> <b>Student Edition (pp. 11–20)</b></p> <p><i>*Problems should be limited to comparisons within 100. This standard is also included as a supporting standard in Clusters 3 and 4.</i></p>
<p><b>NC.4.OA.4</b></p> <p>Find all factor pairs for whole numbers up to and including 50 to:</p> <ul style="list-style-type: none"><li>• Recognize that a whole number is a multiple of each of its factors.</li><li>• Determine whether a given whole number is a multiple of a given one-digit number.</li><li>• Determine if the number is prime or composite.</li></ul>	<p><b>Unit 4 – Identify Factor Pairs, Multiples, Prime and Composite Numbers</b> <b>Teacher Edition (pp. 36–46)</b> <b>Student Edition (pp. 31–40)</b></p>

## Cluster 2: Explore Multiplicative Comparison, Area and Perimeter, Factors, and Multiples

(Duration: 3–4 Weeks)

### NCSCoS

#### NC.4.MD.3

Solve problems with area and perimeter.

- Find areas of rectilinear figures with known side lengths.
- Solve problems involving a fixed area and varying perimeters with a fixed perimeter and varying areas.

### ThinkUp! Math (NCSCoS-aligned)

#### Unit 22 – Apply Area and Perimeter Formulas for Rectangles \*

##### Teacher Edition

- Getting Started (pp. 241–242) \*
- Instruction: Concept Exploration and Formative Assessment (p. 243) \*
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 244)
- Instruction: Literature Connection (p. 244)
- Instruction: Concept Development Activities and Formative Assessment (p. 245) \*
- Instruction: Concept Application/Concept Practice (p. 246) \*
- Assessment: Concept Check and Test-taking Tips (p. 247)
- Intervention Activities 1 and 4 (pp. 247–248)
- Intervention Activities 2, 3 and Formative Assessment (pp. 247–248) \*
- Extension: Reflect on My Learning (p. 249)
- Extension: Extending Student Thinking Activity (p. 249) \*
- Extension: Home Connection (p. 250) \*
- Extension: Teacher Reflection (p. 250)
- Answer Keys and Codings (pp. 251–253)

##### Student Edition

- Getting Started (p. 211) \*
- Instruction: Concept Exploration p. 212
- Instruction: Vocabulary Mastery (p. 213) *Omit the term “formula”*
- Instruction: Concept Development (p. 214) \*
- Instruction: Concept Application (p. 215) \*
- Instruction: Concept Practice (p. 216) \*
- Instruction: Motivation Station (p. 217)
- Extension: Math Challenge (p. 218) \*
- Extension: Reflection on My Learning (p. 218)
- Extension: Reflection on Critical Thinking (p. 218)
- Assessment: Concept Check (pp. 219–220) \*

*\*Delay emphasis on applying the area and perimeter formulas until Cluster 4. In this cluster, students investigate area and perimeter and solve problems using multiplicative comparisons. Color Tiles and centimeter grid paper are very useful for these investigations.*

*Students also explore the concepts that it is possible to have different rectangles with the same perimeters but different areas and that it is also possible to have different rectangles with the same areas but different perimeters.*

## Cluster 2: Explore Multiplicative Comparison, Area and Perimeter, Factors, and Multiples

(Duration: 3–4 Weeks)

### NCSCoS

#### NC.4.OA.3

Solve two-step word problems involving the four operations with whole numbers.

- Use estimation strategies to assess reasonableness of answers.
- Interpret remainders in word problems.
- Represent problems using equations with a letter standing for unknown quantity.

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

### ThinkUp! Math (NCSCoS-aligned)

#### Unit 3 – Solve Two-Step Word Problems with Whole Numbers \*

**Teacher Edition (pp. 25–35)**

**Student Edition (pp. 21–30)**

*\*In this cluster, it is suggested that students work with problems containing smaller numbers and focus on problem solving strategies such as acting out the problem, using manipulatives to represent the problem, and drawing pictorial models to solve the problems.*

**Cluster 3: Use Place Value Strategies to Add and Subtract Whole Numbers** (Duration: 3–4 Weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<b>Content Standards</b>	
<b>NC.4.NBT.1</b> Explain that in a multi-digit whole number, a digit in one place represents 10 times as much as it represents in the place to its right, up to 100,000.	<b>Unit 6 – Understand Place Value</b> <b>Teacher Edition (pp. 58–69)</b> <b>Student Edition (pp. 51–60)</b>
<b>NC.4.NBT.2</b> Read and write multi-digit whole numbers up to and including 100,000 using numerals, number names, and expanded form.	<b>Unit 7 – Read and Write Multi-Digit Whole Numbers</b> <b>Teacher Edition (pp. 70–81)</b> <b>Student Edition (pp. 61–70)</b>
<b>NC.4.NBT.7</b> Compare two multi-digit numbers up to and including 100,000 based on the values of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of the comparisons.	<b>Unit 8 – Compare Multi-Digit Whole Numbers</b> <b>Teacher Edition (pp. 82–92)</b> <b>Student Edition (pp. 71–80)</b>
<b>NC.4.NBT.4</b> Add and subtract multi-digit whole numbers up to and including 100,000 using the standard algorithm with place value understanding.	<b>Unit 9 – Add and Subtract Multi-Digit Whole Numbers</b> <b>Teacher Edition (pp. 93–104)</b> <b>Student Edition (pp. 81–90)</b>
<b>NC.4.OA.3</b> Solve two-step word problems involving the four operations with whole numbers. <ul style="list-style-type: none"><li>• Use estimation strategies to assess reasonableness of answers</li><li>• Interpret remainders in word problems</li><li>• Represent problems using equations with a letter standing for the unknown quantity.</li></ul>	<b>Unit 3 – Solve Two-Step Word Problems with Whole Numbers *</b> <b>Teacher Edition (pp. 25–35)</b> <b>Student Edition (pp. 21–30)</b> <i>*Problems to reinforce this standard are addressed in NC.4.NBT.4 (Unit 9) which contains both one-step and two-step problems that focus on addition and subtraction.</i>
<b>Supporting Standards</b>	
<b>NC.4.OA.1</b> Interpret a multiplication equation as comparison. Multiply or divide to solve word problems involving multiplicative comparisons using models and equations with a symbol for the unknown number. Distinguish multiplicative comparison from additive comparison.	This standard is applied and reinforced in Unit 6 when students work with the multiplicative comparisons in NC.4.NBT.1 and explore numbers that are 10 times greater or 10 times less than other numbers in the base 10 place value system.

**Cluster 3: Use Place Value Strategies to Add and Subtract Whole Numbers** (Duration: 3–4 Weeks)

**NCSCoS**

**NC.4.MD.8**

Solve word problems involving addition and subtraction of time intervals that cross the hour.

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

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

**Unit 21 – Solve Word Problems about Time Intervals**

**Teacher Edition**

- Intervention Activities 2–3 and Formative Assessment (p. 236) \*

Use these activities to review the third-grade concept of solving word problems involving the addition and subtraction of time intervals within the same hour, allowing students to use geared clocks and elapsed time number lines as problem solving tools. This standard will be fully addressed in Cluster 9.



**4: Develop Multi-Digit Multiplication and Division Strategies Through Meaningful Contexts and Models**  
(Duration: 5–6 Weeks)

**NCSCoS**

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

**Content Standards**

**NC.4.NBT.5**

Multiply a whole number of up to three digits by a one-digit whole number and multiply up to two two-digit numbers with place value understanding using area models, partial products, and the properties of operations. Use models to make connections and to develop the algorithm.

**Unit 10 – Multiply Whole Numbers**

**Teacher Edition (pp. 105–115)**

**Student Edition (pp. 91–100)**

**NC.4.NBT.6**

Find whole-number quotients and remainders with up to three-digit dividends and one-digit divisors with place value understanding using rectangular arrays, area models, repeated subtraction, partial quotients, properties of operations, and/or the relationship between multiplication and division.

**Unit 11 – Divide Whole Numbers**

**Teacher Edition (pp. 116–126)**

**Student Edition (pp. 101–110)**

**NC.4.MD.3**

Solve problems with area and perimeter.

- Find areas of rectilinear figures with known side lengths.
- Solve problems involving a fixed area and varying perimeters and a fixed perimeter and varying areas.
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

**Unit 22 – Apply Area and Perimeter Formulas for Rectangles \***

**Teacher Edition (pp. 241–243)**

**Student Edition (pp. 211–220)**

*\*Students previously investigated area and perimeter and solved problems using multiplicative comparison in Cluster 2. In this cluster, students apply area and perimeter formulas.*

**NC.4.OA.3**

Solve two-step word problems involving the four operations with whole numbers.

- Use estimation strategies to assess reasonableness of answers.
- Interpret remainders in word problems.
- Represent problems using equations with a letter standing for unknown quantity

**Unit 3 – Solve Two-Step Word Problems with Whole Numbers \***

**Teacher Edition (pp. 25–35)**

**Student Edition (pp. 21–30)**

*\*In Cluster 2, students worked with problems containing smaller numbers and focused on problem solving strategies. Note that many of the activities in the teacher edition can be used again as different and more rigorous content is introduced.*

**4: Develop Multi-Digit Multiplication and Division Strategies Through Meaningful Contexts and Models**  
(Duration: 5–6 Weeks)

**NCSCoS**

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

**Supporting Standards**

**NC.4.OA.1**

Interpret a multiplication equation as a comparison. Multiply or divide to solve word problems involving multiplicative comparisons using models and equations with a symbol for the unknown.

*This standard is applied and reinforced when students work with the solving of problems for the identified content standards in this cluster.*

**NC.4.NBT.1**

Explain that in a multi-digit whole number, a digit in one place represents 10 times as much as it represents in the place to its right, up to 100,000.

*This standard is applied and reinforced when students work with the solving of problems for the identified content standards in this cluster.*

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

**Cluster 5: Extend Understanding of Fractions** (Duration: 2–3 Weeks)

**NCSCoS**

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

**Content Standards**

**NC.4.NF.1**

Explain why a fraction is equivalent to another fraction by using area and length fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size.

**Unit 12 – Model and Explain Equivalent Fractions**

**Teacher Edition (pp. 127–137)**

**Student Edition (pp. 111–120)**

**NC.4.NF.2**

Compare two fractions with different numerators and different denominators, using the denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions by:

- Reasoning about their size and using area and length models.
- Using benchmark fractions 0,  $\frac{1}{2}$ , and a whole.
- Comparing common numerator or common denominators.

**Unit 13 – Compare Fractions**

**Teacher Edition (pp. 138–149)**

**Student Edition (pp. 121–130)**

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

**Cluster 6: Making Connections to Decimal Notation** (*Duration: 1–2 Weeks*)

**NCSCoS**

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

**Content Standards**

**NC.4.NF.6**

Use decimal notation to represent fractions.

- Express, model and explain the equivalence between fractions with denominators of 10 and 100.
- Use equivalent fractions to add two fractions with denominators of 10 or 100.
- Represent tenths and hundredths with models, making connections between fractions and decimals.

**Unit 17 – Represent Fractions as Decimal Numbers \***

**Teacher Edition**

- Getting Started (pp. 185–186) \*
- Instruction: Concept Exploration (p. 187) \*
- Formative Assessment (p. 187)
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 188)
- Instruction: Literature Connection (p. 188)
- Instruction: Concept Development Activities 1 and 4 and Formative Assessment (p. 189)
- Instruction: Concept Development Activities 2 and 3 and Formative Assessment (p. 189) \*
- Instruction: Concept Application/Concept Practice (p. 190) \*
- Assessment: Concept Check and Test-taking Tips (p. 191)
- Intervention Activities (p. 191) \*
- Formative Assessment (p. 191)
- Extension: Reflect on My Learning (p. 192)
- Extension: Extending Student Thinking Activity (p. 192)
- Extension: Home Connection (p. 193)
- Extension: Teacher Reflection (p. 193)
- Answer Keys and Codings (pp. 194–196)

**Student Edition**

- Getting Started (p. 161) \*
- Instruction: Concept Exploration p. 162)
- Instruction: Vocabulary Mastery (p. 163)
- Instruction: Concept Development (p. 164) \*
- Instruction: Concept Application (p. 165) \*
- Instruction: Concept Practice (p. 166) \*
- Instruction: Motivation Station (p. 167)
- Extension: Math Challenge (p. 168)
- Extension: Reflection on My Learning (p. 168)
- Extension: Reflection on Critical Thinking (p. 168)
- Assessment: Concept Check (pp. 169–170) \*

*\*Note that the addition of fractions with denominators of 10 or 100 is addressed in Cluster 7.*

**Cluster 6: Making Connections to Decimal Notation** (Duration: 1–2 Weeks)

**NCSCoS**

**NC.4.NF.7**

Compare two decimals to hundredths by reasoning about their size using area and length models, and recording the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ . Recognize that comparisons are valid only when the two decimals refer to the same whole.

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

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

**Unit 18 – Compare Decimal Numbers**

**Teacher Edition (pp. 197–207)**

**Student Edition (pp. 171–180)**

**Cluster 7: Understanding Operations of Fractions and Decimals** (Duration: 4–5 Weeks)

**NCSCoS**

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

**NC.4.NF.4**

Apply and extend previous understandings of multiplication to:

- Model and explain how fractions can be represented by multiplying a whole number by a unit fraction, using this understanding to multiply a whole number by any fraction less than one.
- Solve word problems involving multiplication of a fraction by a whole number

**Unit 16 – Multiply a Fraction by a Whole Number**

**Teacher Edition (pp. 173–184)**

**Student Edition (pp. 151–160)**

**NC.4.NF.6**

Use decimal notation to represent fractions.

- Express, model and explain the equivalence between fractions with denominators of 10 and 100.
- Use equivalent fractions to add two fractions with denominators of 10 or 100.
- Represent tenths and hundredths with models, making connections between fractions and decimals

**Unit 17 – Represent Fractions as Decimal Numbers \***

**Teacher Edition (pp. 185–196)**

**Student Edition (pp. 161–170)**

*\* In Cluster 6, students used decimal notation to represent fractions, but they did not add fractions.*

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

**Cluster 8: Applying Geometric Concepts** (Duration: 2–3 Weeks)

NCSCoS	ThinkUp! Math (NCSCoS-aligned)
<b>Content Standards</b>	
<p><b>NC.4.G.1</b></p> <p>Draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.</p>	<p><b>Unit 25 – Draw and Identify: Points, Lines, Line Segments, Rays, Angles</b> <b>Teacher Edition (pp. 277–288)</b> <b>Student Edition (pp. 241–250)</b></p>
<p><b>NC.4.G.2</b></p> <p>Classify quadrilaterals and triangles based on angle measure, side lengths, and the presence or absence of parallel or perpendicular lines.</p>	<p><b>Unit 26 – Classify Quadrilaterals and Triangles</b> <b>Teacher Edition (pp. 289–299)</b> <b>Student Edition (pp. 251–260)</b></p>
<p><b>NC.4.G.3</b></p> <p>Recognize symmetry in a two-dimensional figure and identify and draw lines of symmetry.</p>	<p><b>Unit 27 – Recognize and Draw Lines of Symmetry</b> <b>Teacher Edition (pp. 300–310)</b> <b>Student Edition (pp. 261–270)</b></p>
<p><b>NC.4.MD.6</b></p> <p>Develop an understanding of angles and angle measurement.</p> <ul style="list-style-type: none"><li>• Understand angles as geometric shapes that are formed wherever two rays share a common endpoint and are measured in degrees.</li><li>• Measure and sketch angles in whole-number degrees using a protractor.</li></ul> <p>Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems.</p>	<p><b>Unit 24 – Solve Problems about Angle Measures</b> <b>Teacher Edition (pp. 265–276)</b> <b>Student Edition (pp. 231–240)</b></p>
<b>Supporting Standards</b>	
<p><b>NC.4.OA.3</b></p> <p>Solve two-step word problems involving the four operations with whole numbers.</p> <ul style="list-style-type: none"><li>• Use estimation strategies to assess reasonableness of answers.</li><li>• Interpret remainders in word problems.</li><li>• Represent problems using equations with a letter standing for unknown quantity.</li></ul>	<p><i>This standard is reinforced as students work with the solving of problems for the identified content standards in this cluster.</i></p>

**Cluster 8: Applying Geometric Concepts** (Duration: 2–3 Weeks)

**NCSCoS**

**NC.4.OA.5**

Generate and analyze a shape pattern that follows a given rule.

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

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

**Unit 5 – Generate and Analyze Number or Shape Patterns**

**Teacher Edition**

- Getting Started (pp. 47–48) \*
- Instruction: Concept Exploration and Formative Assessment (p. 49)
- Instruction: Vocabulary Mastery term list, Activity, and Formative Assessment (p. 50) \*
- Instruction: Literature Connection (p. 50) \*
- Instruction: Concept Development Activities 2 and 3 (p. 51)
- Instruction: Concept Development Activities 1 and Formative Assessment (p. 51) \*
- Instruction: Concept Application/Concept Practice (p. 52) \*
- Assessment: Concept Check and Test-taking Tips (p. 53)
- Intervention Activities and Formative Assessment (p. 53) \*
- Extension: Reflect on My Learning (p. 54) \*
- Extension: Extending Student Thinking Activity (p. 54) \*
- Extension: Home Connection (p. 55) \*
- Extension: Teacher Reflection (p. 55)
- Answer Keys and Codings (pp. 56–57)

**Student Edition**

- Getting Started (p. 41) \*
- Instruction: Concept Exploration p. 42) \*
- Instruction: Vocabulary Mastery (p. 43) \*
- Instruction: Concept Development (p. 44) \*
- Instruction: Concept Application (p. 45) \*
- Instruction: Concept Practice (p. 46) \*
- Instruction: Motivation Station (p. 47) \*
- Extension: Math Challenge (p. 48) \*
- Extension: Reflection on My Learning (p. 48) \*
- Extension: Reflection on Critical Thinking (p. 48) \*
- Assessment: Concept Check (pp. 49–50) \*

*\*Note that the focus in this cluster is on shape patterns. Number patterns are emphasized in Cluster 9.*



**Cluster 9: Using Place Value to Understand Metric Measurement** (Duration: 2–3 Weeks)

**NCSCoS**

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

**Content Standards**

**NC.4.MD.1**

Know the relative sizes of measurement units. Solve problems involving metric measurement.

- Measure to solve problems involving metric units: centimeter, meter, gram, kilogram, liter, milliliter.
- Add, subtract, multiply, and divide to solve one-step word problems involving whole-number measurements of length, mass, and capacity that are given in metric units.

**Unit 19 – Solve Word Problems about Length, Mass, and Capacity**

**Teacher Edition (pp. 208–218)**

**Student Edition (pp. 181–190)**

**NC.4.MD.2**

Use multiplicative reasoning to convert metric meters from a larger unit to a smaller unit using place value understanding, two-column tables, and length models.

**Unit 20 – Convert Metric Measurements**

**Teacher Edition (pp. 219–229)**

**Student Edition (pp. 191–200)**

**NC.4.MD.8**

Solve word problems involving addition and subtraction of time intervals that cross the hour.

**Unit 21 – Solve Word Problems about Time Intervals**

**Teacher Edition (pp. 230–240)**

**Student Edition (pp. 201–210)**

**NC.4.NF.6**

Use decimal notation to represent fractions (second two bullets only)

- Use equivalent fractions to add two fractions with denominators of 10 or 100.

Represent tenths and hundredths with models, making connections between fractions and decimals.

**Unit 17 – Represent Fractions as Decimal Numbers**

**Teacher Edition (pp. 134–141)**

**Student Edition (pp. 129–136)**

*This standard is reinforced as students work with the solving of problems for the identified content standards in this cluster.*

**NC.4.NF.7**

Compare two decimals to hundredths by reasoning about their size using area and length models, and recording the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ . Recognize that comparisons are valid only when the two decimals refer to the same whole.

*This standard was addressed in Cluster 6. In this cluster, the standard is reinforced as students work with metric measures and solve problems involving metric measures.*

**Cluster 9: Using Place Value to Understand Metric Measurement** (Duration: 2–3 Weeks)

**NCSCoS**

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

**NC.4.OA.5**

Generate and analyze a number that follows a given rule.

**Unit 5 – Generate and Analyze Number or Shape Patterns**

**Teacher Edition (pp. 47–57)**

**Student Edition (pp. 41–50)**

*\*Note that the focus in this cluster is on number patterns that follow a rule, so select the practice items accordingly. Shape patterns were emphasized in Cluster 8.*

**Supporting Standards**

**NC.4.MD.3**

Solve problems with area and perimeter.

- Find areas of rectilinear figures with known side lengths.
- Solve problems involving a fixed area and varying perimeters with a fixed perimeter and varying areas.

Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Although this standard was addressed in previous clusters, it provides some background information for the study of metric measurement in Cluster 9. This standard is reinforced in Cluster 9 through the problem-solving activities included in Unit 19, NC.4.MD.1.

**NC.4.MD.4**

Represent and interpret data using whole numbers.

- Collect data by asking a question that yields numerical data.
- Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot.

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

This standard was introduced early in the framework and can be addressed in Cluster 9 through the use of problem-solving using data from graphs or by gathering measurement data to be represented on a graph or plot.