

A Guided Tour through NCSC Wiki Resources

Fraction Example

Ricki Sabia, JD

edCount LLC

Senior Associate and NCSC Technical Assistance and Parent
Training Specialist



National Center and State Collaborative

The contents of this product were developed under a grant from the Department of Education (PR/Award #: H373X100002, Project Officer, Susan.Weigert@Ed.gov). However, the contents do not necessarily represent the policy of the Department of Education and no assumption of endorsement by the Federal government should be made.

National Center and State Collaborative (NCSC) Background

- NCSC received federal funding in 2010 and began developing a new alternate assessment in math and English Language Arts (ELA) to be completed by the 2014-15 school year.*
- Twenty-four states and 5 national centers are part of NCSC: <http://www.ncscpartners.org>.
- NCSC also developed curriculum and instructional resources for teaching students with significant cognitive disabilities, which can be used in any state: <https://wiki.ncscpartners.org>.


*Each state may have different implementation timelines for NCSC assessment.



Resources for Parents and Others: Links on NCSC Wiki Main Page

- Numerous summaries about the NCSC project and related concepts can be found by clicking on **NCSC Partners - Parent Resources** under “Quick Links.”
- Wiki navigation documents and an eight document series called Wiki Tips for Parents can be found by clicking on **Parent Tips and Tools** under “Wiki Resources.”
- Parent Modules about the NCSC curriculum and instructional resources and the NCSC resources for parents (and others) can be found by clicking on **Educator Professional Development and Parent Resources** under “Wiki Resources.”

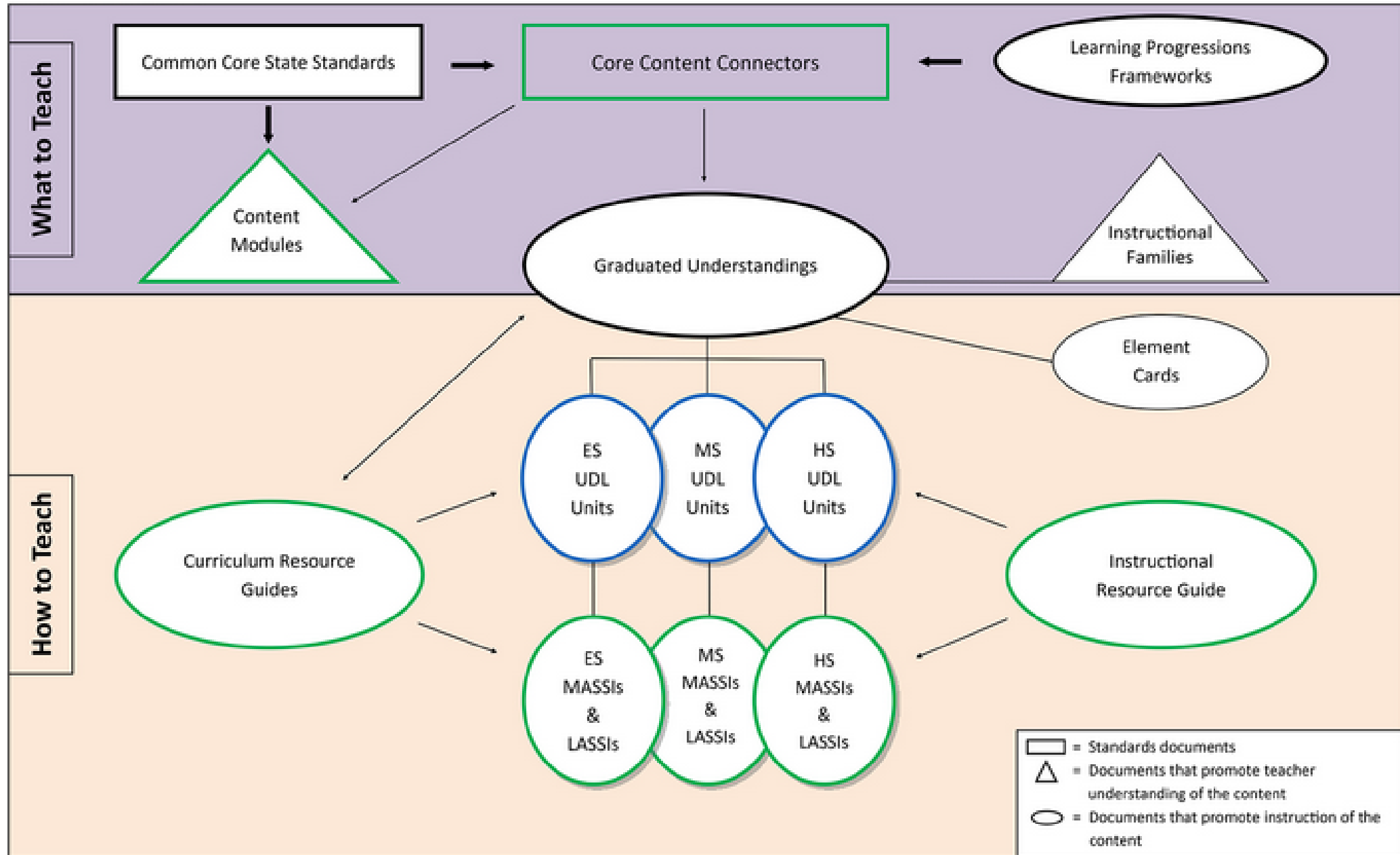
How to Locate Curriculum and Instructional Resources on the NCSC Wiki

- Click on the name of the resource you want to explore on the interactive NCSC Schema, which can be found on the main page of the wiki.
- Find resources by name on the All Resources toolbar via a link in the navigation toolbar located on the left side of every wiki page and a link on the main page of the wiki under “Quick Links.”
- Click on the wiki logo  to return to the main page from any wiki page.

Key Information for this PowerPoint

- The purpose is to demonstrate how to find information on the wiki for a specific topic using the example of 4th grade fractions.
- The curriculum and instructional resources on the wiki are also provided for other math topics, as well as for many ELA topics, covering kindergarten through high school.
- The references to college and career readiness in the resources focus on communicative competence; fluency in reading, writing and math; age appropriate social skills; independent work behaviors; and skills in accessing support systems.
- For information on Universal Design for Learning (UDL), which is an important component of the wiki resources, visit www.udlcenter.org.

SCHEMA for Common Core State Standards Resources NCSC Curriculum and Instructional Resources



NCSC and Common Core State Standards (CCSS)

- NCSC's work is based on the CCSS because almost all states had adopted those standards at the time the NCSC Project started.
- Some partner states are no longer using CCSS, but still value the NCSC resources.
- Much of the content covered by the NCSC instructional resources would be covered in any math and ELA state standard.

CURRICULUM RESOURCES

Reference materials created to reinforce educators' understanding of curriculum content (found in the top half of the NCSC Schema with the label "What to Teach")

Learning Progressions Framework (LPF)

- Shows the steps students typically take to make progress in a content area (e.g., math) to get a deeper, broader, more sophisticated understanding
- Represents the essential core concepts and processes learned in a content area (sometimes called the “big ideas”)

Core Content Connectors (CCCs)

- CCCs operate as starting points for instruction based on the Common Core State Standards (CCSS).
- Through the LPF, NCSC identified the key knowledge and skills (the “big ideas”) in the CCSS that are needed in each grade to make progress in later grades.
- The “big ideas” were broken down into more teachable and assessable segments of content called CCCs.

Math Topics for CCCs

CCCs in Mathematics:

Data Analysis, Probability, and Statistics 1

Data Analysis, Probability, and Statistics 2

Geometry

Measurement 1

Measurement 2

Numbers and Operations 1

Numbers and Operations 2

Numbers and Operations 3

Patterns, Relations, and Functions 1

Patterns, Relations, and Functions 2

Symbolic Expression 1



Example of CCC for 4th Grade Fractions Under Numbers and Operations 1

Progress Indicator: E.NO.1I identifying and locating fractions on the number line or as regions, or parts of a set or unit, and recognizing that whole numbers are a subset of rational numbers

Core Content Connectors: 4	CCSS Domain/Cluster	Common Core State Standard
<p>4.NO.1I6 Locate fractions on a number line</p>	<p>Number and Operations - Fractions 3 NF Develop understanding of fractions as numbers.</p>	<p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>a) Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.</p> <p>b) Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.</p>

Content Modules

Provide teachers with a deeper understanding of content to support effective planning, teaching, and learning. The Content Modules include:

- explanations and examples of the concepts;
- CCCs for the topic;
- key vocabulary;
- UDL tables with adaptations and modifications for a variety of student needs;
- ideas for linking academic activities to real-world uses and college and career ready skills; and
- additional resources, such as links, articles, PowerPoints, and sample lesson plans.

Topics for Math Content Modules

Mathematics

Coordinate Plane Content Module

Expressions Content Module

[Fractions and Decimals Content Module](#)

Functions Content Module

Linear Equations Content Module

Perimeter, Area and Volume Content Module

Radicals and Exponents Content Module

Ratios and Proportions Content Module



Table of Contents for Fractions and Decimals Content Module

Contents [hide]

- 1 Plot the Course
 - 1.1 The rationale
 - 1.2 Module Goal
 - 1.3 Module Objectives
- 2 Time for Take Off
 - 2.1 Vocabulary
 - 2.2 Ideas to support vocabulary learning
- 3 Floating on Air
 - 3.1 Elementary School
 - 3.2 Middle School
- 4 Sharing the Sky
- 5 Prepare for Landing
 - 5.1 Additional Resources
 - 5.2 Supplemental Materials
 - 5.3 Module Assessments
 - 5.4 Sample General Education Lesson Plans

Floating on Air:

Provides CCCs for each grade covered by the Module

Sharing the Sky:

Provides information about teaching a wide range of students with a variety of learning needs

Sharing the Sky Section of Fractions/Decimals

Module: Representation Portion of UDL Table

Some examples of options for teaching Fractions and Decimals to students who may present instructional challenges due to:

	Visual Impairment or Deaf/Blind	Physical Impairment: Little/No Hand Use	Lacks Basic Numeracy Concepts	Motivational/Attention Issues
Representation	Use a talking calculator when solving equations; use a ruler with raised measurement lines, use objects to represent fractions and decimals; use raised lines to represent portions of the whole object. Use items that are velcroed together to represent the whole and have the student separate the whole into parts.	Count the parts of fractions or decimals using a step by step process which progresses through numbers; student scans an array of possible options and uses a switch to select the number to identify the numerator; use computer representation of figures that can be manipulated with switch; place fraction representations on a slant board or eye gaze board; create a grid on a large surface on the floor that the student can walk over or ride over in wheelchair.	Use fraction and decimal manipulatives that can be separated and placed on a number line. Have student use talking calculator to count along. Students can use one to one correspondence to match equal number of parts on representation of fraction or decimals. Color code equations and corresponding parts of calculator to support students correctly entering equations.	Find fractions of motivating objects (e.g., pizza, coloring markers in a box, piece of a Lego set). Incorporate technology including computer representations, videos, animations, and talking calculators. Use token economy system that embeds fractions ("you earned $\frac{1}{4}$ of your Lego piece, you have $\frac{3}{4}$ left and then you get Lego time.")

UDL Table also includes strategies for Expression and Engagement (not shown)

Instructional Families

- Related CCCs that are grouped together into families to show how they develop and interact across all the grades, across a few grades (e.g., grades K-5), and within a grade
- Help educators see what is coming next so they can prepare students for future learning
- Can be used to inform standards-based IEP goal-writing

Topics for Math Instructional Families (Fractions are included under Number Operations)

Instructional Families in Mathematics

Instructional Families: Data Analysis, Probability, and Statistics

Instructional Families: Geometry

Instructional Families: Measurement

Instructional Families: Number Operations

Instructional Families: Patterns



Table of Contents for Number Operations: Views of Instructional Families Related to 4th Grade Fractions

Contents [hide]

1 Additional References

2 Labeling Reference Key

3 View of Learning Progressions Frameworks (LPF) Targets and Instructional Families across Grades

3.1 Distribution of Instructional Families: LPF Strand- Number Operations (Real Numbers)

3.2 Distribution of Instructional Families: LPF Strand- Number Operations (Real Numbers)

3.3 Distribution of Instructional Families: LPF Strand- Number Operations (Real Numbers)

4 View of Grade Band Core Content Connectors (CCCs) by Learning Progressions Frameworks Targets and Instructional Families

4.1 Overview of CCCs: Number Operations (Real Numbers) - Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.2 Overview of CCCs : Number Operations (Real Numbers)- Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.3 Overview of CCCs: Number Operations (Real Numbers)- Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.4 Overview of CCCs: Number Operations (Real Numbers)- Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.5 Overview of CCCs: Number Operations (Real Numbers)- Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.6 Overview of CCCs: Number Operations (Real Numbers)- Counting and Representing Numbers; Understanding Base Ten Number System; Determining R

4.7 Overview of CCCs: Number Operations (Fractions/Ratios/Proportions)-Representation; Determine Equivalency; Perform Operations and; Problem Solving

4.8 Overview of CCCs: Number Operations (Fractions/Ratios/Proportions)-Representation; Determine Equivalency; Perform Operations and; Problem Solving

5 View By Instructional Families and CCSS Domains

5.1 Instructional Family: Number Operations (Real Numbers)

5.2 Instructional Family: Number Operations (Real Numbers)

5.3 Instructional Family CCCs: Number Operations (Real Numbers)

5.4 Instructional Family CCCs: Number Operations (Real Numbers)

5.5 Instructional Family: Number Operations (Real Numbers)

5.6 Instructional Families: Number Operations (Fractions/Ratios/Proportions)

4.7 in Table of Contents: Overview of CCCs by Instructional Families

*This screenshot only shows part of the chart.

CCSS Domain Names: Number Operations – Fractions and Ratios and Proportional Relationships	CCSS Domain Names: Number Operations – Fractions and Ratios, Number Operations in Base Ten, The Number System and Proportional Relationships	CCSS Domain Names: Number Operations – Fractions and Ratios, The Number System and Proportional Relationships	CCSS Domain Names: Number Operations – Fractions and Ratios, The Number System and Proportional Relationships
Representing	Determining Equivalency	Performing Operations	Problem Solving
3.NO.111 Identify the number of highlighted parts (numerator) of a given representation (rectangles and circles) 3.NF.1	4.NO.116 Locate fractions on a number line 3.NF.2	4.NO.2h1 Add and subtract fractions with like denominators of (2,3,4, or 8) 4.NF.3 a, b	4.NO.2h3 Solve word problems involving addition and subtraction of fractions with like denominators (2, 3, 4, or 8) 3.NF.3d
3.NO.112 Identify the total number of parts (denominator) of a given representation (rectangles and circles) 3.NF.1	4.NO.117 Order fractions on a number line 3.NF.2	4.NO.2h2 Add and subtract fractions with like denominators (2,3,4, or 8) using representations 4.NF.3 a, b	5.NO.2c2 Solve word problems involving the addition, subtraction, multiplication or division of fractions 5.NF.2
3.NO.113 Identify the fraction that matches the representation (rectangles and circles; halves, fourths, and thirds, eighths) 3.NF.1	4.NO.1m1 Determine equivalent fractions 3. NF.3	5.NO.2b1 Add and subtract fractions with unlike denominators by replacing fractions with equivalent fractions (identical denominators) 5.NF.1	6.NO.2c4 Solve word problems involving the addition, subtraction, multiplication or division of fractions 5.NF.7c

First number of code is the grade number (e.g., 4.NO.2h1 is a 4th grade CCC reference and 4.NF.3a, b is a 4th grade Common Core State Standard reference). Fourth grade CCCs for “Representing” can’t be seen in this partial chart; you have to scroll further down the page.



INSTRUCTIONAL RESOURCES

Reference materials created to support classroom teaching for students with significant cognitive disabilities (found in the bottom half of the NCSC Schema labeled “How to Teach”)

Element Cards

Each Element Card:

- focuses on one or more CCCs from a specific instructional family;
- provides “essential understandings” that include measurable and observable content that is challenging, yet attainable; and
- provides a wide range of suggested instructional strategies and supports to promote instruction for students with diverse learning needs, including those without prior knowledge.

Element Cards are already written for many CCCs, but are meant to serve as models for teachers to make their own, as needed.



Topics for Math Element Cards

Mathematics Element Cards

- Data Probability and Statistics
- Geometry
- Patterns, Relations, and Functions
- Measurement
- Real Number Operations
- Number Operations Fractions
- Symbolic Expression

Information Found on Element Cards Landing Page for “Number Operations Fractions”

In addition to Element Cards related to Fractions, you will see:

Websites

http://www.teachingideas.co.uk/maths/contents_fractions.htm 

<http://www.mathsisfun.com/converting-decimals-fractions.html> 

<http://www.mathplayground.com/> 

<https://www.khanacademy.org/> 

<http://www.mathhelp.com/> 

Other Resources

<http://www.jstor.org/stable/10.5951/teacchilmath.19.1.0050?origin=JSTOR-pdf> 

<http://www.ncpublicschools.org/acre/standards/common-core-tools/> 



CCSS: 3.NF.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.		
CCC:	4.NO.1n1	Select a model of given fraction (halves, thirds, fourths, sixths, eighths).
Strand: Number Operations (Fractions/Ratios/Proportions)	Family: Representing	
Progress Indicator: <i>E.NO.1n Comparing and modeling fractions, including with different denominators</i>		
Essential Understandings	<p>Concrete Understandings:</p> <ul style="list-style-type: none"> Differentiate between parts of a whole and the whole itself. Understand the structure of a fraction (i.e., Describe that the denominator of a fraction represents the number of equal parts within a whole (length unit or region). 	<p>Representation:</p> <ul style="list-style-type: none"> Understand the components of a fraction (numerator and denominator). Understand the following concepts, symbols, and vocabulary: fraction, numerator and denominator
Instructional Strategies:		
<ul style="list-style-type: none"> Teach numerator = part, and denominator = whole using a model. Types of models may include area or region models (e.g., pattern blocks, pie pieces, and grid or dot paper), length models (e.g., number lines, Cuisenaire rods, fraction rods, line segment drawings, etc.), and set models (e.g., drawings using X's and O's, two-color counters in loops on paper). Time Delay* Have students demonstrate a fraction by shading in the correct number of units given a fraction bar with 2, 3, 4, 6 or 8, units Have students show a subset of a set (1 of the 6 objects are red/square/rough) Use multiple exemplar training* Use Least-to-Most prompting* Have the student give fraction statements that are true for a provided group of objects. For example, say, "2/6 of the pencils are yellow. Show the corresponding/matching fraction." Using a shaded fraction bar, say "This show 2 parts out of 6/6 parts with 2 shaded/2 parts shaded out of 6. Show the corresponding/matching fraction." 		
Supports and Scaffolds:		
<ul style="list-style-type: none"> 2-dimensional rectangle segmented into parts (vs. a pizza) Objects to model fractions One-dimensional linear models (fraction bars, number lines) Software such as Smart boards to create and manipulate models of fractions 		

Curriculum Resource (CR) Guides

CR Guides provide:

- examples of how the content is taught in general education;
- CCCs for the topic;
- performance examples;
- ideas for real life use;
- ways to promote college and career readiness;
- examples for differentiating instruction for a wide range of student needs (UDL tables); and
- links to resources.



Topics for Math Curriculum Resource Guides

Mathematics

Data Analysis

Equations

Measurement and Geometry

Fractions and Decimals

Ratio and Proportions

Table of Contents for Fractions and Decimals Curriculum Resource Guide

Contents [\[hide\]](#)

1 Curriculum Resource Guide - **Mathematics Content: Fractions and Decimals**

1.1 Questions about:

1.2 What are "fractions" and how are they taught in general education settings?

2 The essential knowledge in this content area

3 Common misunderstandings in this content area

4 Prior Knowledge/skills needed (can be taught concurrently)

5 What are "decimals" and how are they taught in general education settings?

5.1 The essential knowledge in this content area

6 What are some of the types of activities general educators will use to teach this skill?

6.1 Activities from General Education Resources

6.1.1 Fractions

6.1.2 Links Across Content Areas

7 What Connectors to the Common Core Standards Are Addressed in Teaching "Fractions and Decimals"?

8 What are Some Additional Activities That Can Promote Use of this Academic Concept in Real World Contexts?

9 How Can I Further Promote College and Career Readiness when Teaching "Fractions and Decimals"?

9.1 Ideas for Promoting Career/ College Ready Outcomes

10 How Do I Make Instruction on "Fractions and Decimals" Accessible to ALL the Students I Teach?

10.1 Teach Prerequisites and Basic Numeracy Skills Concurrently: Remember that students can continue to learn

10.2 Incorporate UDL: Universal Design of Learning When Teaching Fractions and Decimals

10.3 CCR & Standards for Mathematical Practice Table



#8 in Table of Contents: What are Some Additional Activities That Can Promote Use of this Academic Concept in Real World Contexts?

Measuring out fractions of ingredients for cooking.

Using a ruler to measure out fractions of a foot and inch to cut wood to make a birdhouse.

Students can learn to sort items using the Dewey decimal system in the library.¹⁰

Working as a cashier and counting money to make change.

Calculating batting averages for sports team.

Balancing a checkbook

Measuring out medications

Calculating a cost of an item in sales promotion (1/2 off sale)

Measuring someone's height in a doctor's office.

Cutting hair (customer wants 2 and ½ inches cut)

Universal Design for Learning (UDL) Units and Lessons

(for more info on UDL visit www.udlcenter.org)

- Purpose: to model how to plan for ALL students using the principles of UDL
- One unit for math and one for ELA for each grade-span: Elementary School (ES), Middle School (MS), and High School (HS)
- Several lessons in each unit plus a “culminating activity” Provide additional considerations for Emerging Readers and Emerging Communicators
- Contain objectives, essential questions, vocabulary, and a list of materials
- Provide links to printable resources

Mathematics UDL Instructional Units

The Math UDL Instructional Units cover the topic of measurement with a unit for Elementary, Middle, and High School. They provide models for creating UDL units for other topics, such as fractions.

Mathematics

- [Elementary Mathematics UDL Instructional Unit](#)
- [Middle School Mathematics UDL Instructional Unit](#)
- [High School Mathematics UDL Instructional Unit](#)

Elementary Mathematics UDL Instructional Unit Contents Page

Click on the link to this unit to see the contents below as well as a section of links to all the printable resources related to the unit.

UDL Elementary Measurement Unit

Cole, A., Land, L., Burdge, M., & Clayton, J. (2013) UDL Elementary Measurement Unit. Lexington: University of Kentucky.

Before beginning with a lesson review the resources and standards that are related to the material you will be teaching.

[Elementary Measurement Unit Standards Overview](#)

[Elementary Measurement Unit Key Vocabulary](#)

To see sample lesson plans, follow the links below:

[Elementary Measurement - Lesson 1](#)

[Elementary Measurement - Lesson 2](#)

[Elementary Measurement - Lesson 3](#)

[Elementary Measurement - Lesson 4](#)

[Elementary Measurement - Lesson 5 - Culminating Activity](#)



ES Mathematics UDL Instructional Unit-Lesson 1

Contents [hide]

1 Objectives

2 Essential Questions

3 Vocabulary

4 Materials

5 Introduction

5.1 Activate Previous Knowledge

5.2 Additional Considerations for Emerging Readers and Emerging Communicators

5.3 Establish Goals/Objectives for the Lesson

5.4 Additional Considerations for Emerging Readers and Emerging Communicators

6 Body

6.1 Additional Considerations for Emerging Readers and Emerging Communicators

7 Practice

7.1 Additional Considerations for Emerging Readers and Emerging Communicators

8 Closure

8.1 Additional Considerations for Emerging Readers and Emerging Communicators:

8.2 Exit Assessment

8.3 Additional Considerations for Emerging Readers and Emerging Communicators:



Practice: Additional Considerations for Emerging Readers and Emerging Communicators

There are lengthy sections of additional considerations throughout every UDL lesson. For example, as part of the considerations for practicing measurement in UDL Lesson 1 for Elementary School Mathematics, there are suggestions for adapting the measuring tool:








- a ruler with tactile qualities or a piece of paper;
- digital rulers;
- bendable/foldable rulers;
- tactile rulers;
- transparent/translucent rulers;
- simplified rulers with only inches marked; and
- rulers adapted with hook-and-loop tape or a "handle".

Math/Language Activities for Scripted Systematic Instruction (MASSIs and LASSIs)

- Provide intensive systematic instruction in math (MASSIs) or English language arts (LASSIs), when appropriate, on key concepts and symbols for use in any instructional setting
- Are generally designed for use with UDL lessons
- Incorporate evidence-based instructional practices (e.g., prompting)
- Provide teaching scripts to help teachers with systematic instruction
- Are designed with graduating levels of difficulty (starting with steps for teaching students with little or no knowledge of the content)

Topics for MASSIs

The main MASSI page contains a link to MASSI presentations, the Instructor Cue Key (icons that appear in the MASSIs and LASSIs), plus links to MASSIs for the topics listed in #3-6 of the Table of Contents.

Cue	Definition
	System of Least Prompts
	Constant Time Delay
	Example/Non-Example Training
	Model, Lead, Test
	Stopping Point
	Standards for Mathematical Practice
	Career & College Readiness

Contents [hide]

- 1 MASSI Presentations
- 2 Instructor Cue Key
- 3 Equations
- 4 Measurement and Geometry
- 5 Data Analysis
- 6 Ratio and Proportions

MASSIs on Ratios and Proportions

If you click on Ratios and Proportions on the MASSI landing page it will bring you to this set of links. To find a MASSI script and printable materials most closely related to 4th grade fractions, click on Elementary.

Ratio and Proportions

[Elementary](#)

[Middle](#)

[High](#)

Elementary MASSI for Ratio and Proportions

This is an activity in the MASSI called “Going on a Field Trip” for grades 3-5. A chart identifies the related CCSS, the CCCs and the MASSI objectives. Here is the part of the chart for grades 3 and 4. The grade 3 activity can be used to review concepts for students in grade 4.

Common Core State Standard	Core Content Connectors	MASSI OBJECTIVES
<p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<p>3rd 3.NO.2e1 Solve and check one or two-step word problems requiring addition, subtraction, or multiplication with answers up to 100.</p>	<p>Given a word problem with number of groups and total number of students calculate number of students in each group.</p>
<p>3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as 5×7.</i></p>	<p>4th 4.PRF.1d2 Use objects to model multiplication and division situations involving up to 10 groups with up to 5 objects in each group and interpret the results.</p>	<p>Given number of activity buses and number of groups of students in each bus, decide how many students in all are going on the field trip.</p>

Components of the Scripted MASSI Lessons

Each part of the scripted MASSI lessons directs the teacher in how to do the following and suggests good stopping points:

- Build essential understanding of concepts and symbols
- Introduce the activity
- Introduce the problem
- Model the process
- Provide student practice
- Check and score

Portion of the MASSI scripted lesson



STUDENT PRACTICE: Now it's your turn. **Display the counters, bus, and "count by" graphic organizers.** Your problem says, Mr. Burton's class left to go to the strawberry farm. 3 groups of 10 students got on the bus. How many students in all were on the bus? **Use LEAST INTRUSIVE PROMPTS script as needed to help students with each step.**

****Note:** If you teach this section several times in a row, change the amount of groups and number in each group to ensure the students are not memorizing but correctly displaying the skills needed to solve the problems.

CHECK AND SCORE

STEP	Teacher Says/Does	Student Response
23.	Wait three seconds. If student does not begin then prompt, "Find the groups of ten."	Selects groups of ten.
24.	Wait three seconds. If student does not begin then prompt, "Count out 3 groups."	Counts out three groups of ten.
25.	Wait three seconds. If student does not begin then prompt, "Count by 10 to find the answer."	Counts by tens to 30.
26.	How many students in all rode the bus?	Says or indicates 30.

Other Resources in the MASSIs

- A skills test
- Troubleshooting and data-based decision making for the skills test
- A culminating activity (e.g., plan and go on the field trip from the activity)
- Ideas for building toward grade-level competence
- Printable materials

Ideas to Build Toward Grade-Level Competency in Elementary MASSI for Ratio and Proportions

Component	Activity	What Student Does	'Generalization/ Fluency'
Check word problems	Identify opposite operations (opposite of multiply is divide, etc.) to check work completed in this lesson.	Uses opposite operation to check work. Students will need be able to identify which numbers to enter into opposite equation.	Complete problems not related to field trips. Use manipulatives to show how to check work. Complete word problems related to other themes and real world applications.
Use four digit dividends and two digit divisors	Solve word problems related to whole grade levels or whole school attending a field grip.	Similar to word problems completed in lessons but must use manipulatives in larger sets, count by larger sets (e.g., 100s), use calculator to enter four digit dividends and two digit divisors.	Complete word problems related to other themes and real world applications.

Instructional Resource (IR) Guide

- Serves as a source of information about evidence-based best practice in instruction for students with significant cognitive disabilities
- Reviews instructional strategies, including prompting, systematic instruction, and use of feedback and data
- Primarily designed for use with the LASSIs and MASSIs, but can also be used with UDL lessons

IR Guide Table of Contents

Contents [\[hide\]](#)

- 1 Systematic Instruction
- 2 Time Delay
- 3 Additional Prompting Strategies
- 4 Additional Resources
- 5 Finding a Response Mode
- 6 Point to the correct response when given an array
- 7 Pull-off
- 8 Eye gaze
- 9 Say or Type
- 10 Show
- 11 Write or type on computer
- 12 Use material from the lesson
- 13 Constant Time Delay (CTD)
 - 13.1 Zero Delay Round
 - 13.2 Time Delay Round
 - 13.3 Sample Script for CTD (Teaching Expressive Symbol Identification)
 - 13.4 Sample Script for CTD (Teaching Receptive Word Identification)
- 14 Some Tips for Using Time Delay
- 15 System of Least Prompts (also known as Least Intrusive Prompting [LIP] or Least to Most Prompting)
- 16 Guidelines for Using System of Least Prompts
- 17 Examples of Prompting Hierarchies
- 18 Sample Script for System of Least Prompts (Calculator Use)
 - 18.1 Sample Script for System of Least Prompts (Text Based Literal Recall)
- 19 Model, Lead, Test
- 20 Sample Script for Model, Lead, Test (Measuring Length in Inches with Ruler)
- 21 Example/Non-Example Training
- 22 Sample Script for Example, Non-Example Training (Teaching Concept of <)
- 23 Generalization When Using Example, Non-Example Training
- 24 Sample Script for Example, Non-Example Training (Teaching Setting)
- 25 References

Examples of Prompting Hierarchies



Generalization When Using Example, Non-Example Training

In order to promote generalization, use different objects/pictures on different days (e.g., on day two use apples, day three use cars, day four use hats, day five use star stickers). Do not vary objects within a session (e.g., if you are using apples, continue to use apples for that entire session). Use the same script as above, simply using the other objects.



Once the student masters greater than in the above format now introduce new formats. These include greater than with volume and greater than with numbers.



5 6 9 2

Professional Development

- Communities of Practice in partner states received professional development about the curriculum and instructional resources via webinars that are now publicly available at <http://www.ncscpartners.org/resources-cop-presentations>.
- Interactive professional development modules, including a communication toolkit, are available on the NCSC wiki at <https://wiki.ncscpartners.org> by clicking on the link called “Educator Professional Development and Parent Resources”
 - Register with name/email (this info will not be used to contact you)
 - Badges are earned for completing modules, and can be used for continuing education credit at the discretion of state/local agencies.

Parent Resources

- There are parent modules at the same link described in the prior slide.
- There is a link to Parent Tips and Tools on the main page of the wiki, where navigation guides and a series of documents call Wiki Tips for Parents can be found.
- There is also a link to written materials for parents and others interested in summaries of the project and related topics, which are housed on the NCSC Partners website.

Table of Contents and List of Professional Development and Parent Modules

Contents [hide]

1 Professional Development and Parent Modules (University of Kentucky)

1.1 COMING SOON!

[2 Obtaining Badges for Module Completion](#)

3 NCSC Resources for Parents (and for others interested in summaries of our project)

4 MASSI and LASSI Presentations (University of North Carolina)

COMING SOON!

Making Math Accessible

Making English Language Arts Accessible

Communication

College and Career Readiness

Teacher and Principle Modules

Parent Modules

Instructional Technique

Using the Wiki

