



Are you Feeling Fractions? Connecting and Dissecting

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Newell Elementary

This curriculum unit is recommended for:
Elementary Math: Grades 3-5

Keywords: Equivalent Fraction, Compare, and Social and Emotional Learning.

Teaching Standards: See [Appendix 1](#) for teaching standards addressed in this unit.

Synopsis: The curriculum unit is designed to create a learning experience with action based and embodied teaching and learning activities. This will allow educators and students to connect through similar personal experiences or display empathy for one's beliefs. More specifically, students will acquire knowledge through movement and higher-order thinking on various math topics, such as fraction equivalence and ordering. The lessons can be implemented in math centers, small groups, or in various components of teacher-student instruction. As students engage they will be assessed three times by selecting a color and using one-word to describe their emotion after completing the lesson. The information collected will be used to analyze the relation of numerical data and social and emotional learning to not only improve future instruction, but to create a conversation of expressing oneself beyond the classroom.

*I plan to teach this unit during the coming year to **50** students of **two fourth grade math courses**.*

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Introduction

Social and Emotional Learning (SEL) is a significant component in the field of education. It is designed to make improvements school-wide that will allow students to understand and analyze their social relationships with peers and/or teachers, to determine responsible decision making, and to build self-awareness. Studies indicate that 886 schools nationwide implement social and emotional learning (SEL) curriculum to students (Zins, 2004). The curriculum is typically implemented during activities that are not content based, such as morning meetings or guidance. In which means the activities created are taught during designated times of the day, rather than the entire instructional day. Therefore, the focus of the curriculum unit will be based on integrating social and emotional learning (SEL) into the academic curriculum.

The curriculum unit will address the needs of elementary students, specifically fourth grade of a local title I school located in Charlotte-Mecklenburg Schools (CMS). The demographics of the school is comprised of 770 students, 50.4% Hispanic, 39% African American, 4.4% Caucasian, 3.8% Asian, and 99.6% students who receive free or reduced lunch (Anonymous, 2021). The intended vision is to introduce the curriculum unit in the spring of the 2021-2022 academic year to two fourth grade courses. After analyzing academic performance from a post-pandemic perspective, students are performing below grade level. Therefore, the goal is to implement lessons that embed movement and scholarly dialogue in thirty minute segments of instruction, such as small groups, or math centers. This will provide an opportunity for students to improve their social skills and rebuild their mathematical thinking.

As standards are analyzed, students tend to display difficulty in number and number sense and computation estimation. Therefore, fractions will be addressed as one of the power standards. The rigor of the curriculum unit will require a solid foundation of conceptualizing how fractions are formed, how they are represented, and how they are modeled. The students will be expected to recall facts from the previous year, in which include NC.3.NF.1, NC.3.NF.2, and NC.3.NF.3 (NCDPI, 2018). This will provide an opportunity for educators to understand where students are academically prior to introducing the new topic. The topic standards included in the unit will consist of NC.4.NF.1 and NC.4.NF.2 (NCDPI, 2018). The two standards will extend their knowledge by understanding fraction equivalency and ordering through various area models, length models, and number line. Students will make connections on how fraction pieces are the same or different based on the numerator and denominator. Overall, the content discussed will prepare students for the upcoming grade level by utilizing the standard NC.5.NF.1, using equivalent fractions as a strategy to add and subtract fractions (NCDPI, 2018).

Rationale

The curriculum unit will connect to student lives by providing engaging activities that contain SEL integration, real life practical application, and critical thinking stimulation. Educators experience daily how one's external environment can impact their academic performance inside of the classroom, such as behavior rates, student achievement, or school climate. This requires observation of home life, background, patterns and/or trends of the students. More specifically, the students' social interactions with peers and teachers. Therefore, the curriculum unit will allow students to "Connect and Dissect" their emotions through enriched mathematical tasks.

The lessons created can be extended through other content areas, such as English language arts (ELA) or science. The students will use a digital mood meter to express their emotions through descriptive words. Furthermore, students can associate color with their emotions by analyzing how it affects their body. The unit will contain action based and embodied teaching and learning activities to assist in developing their critical thinking skills and acquiring more knowledge as students continue to connect and dissect.

As the curriculum unit is being implemented, educators will develop an understanding of integrating social and emotional learning into academic curriculum. In addition, they will identify how students are grasping the content by expressing their emotions. These components will build self-awareness in effort to increase relationship building among students. Overall, students will be able to create a conversation beyond the classroom to describe how they are feeling (Weissburg,2015).

Content Research

According to Latta and Buck (2008), "Preoccupation with the disconnected is a persistent theme that continues to pervade educational discourses and practices." More specifically, the disconnection is the student experiences that significantly impact students' achievement, behavior, and school climate and/or classroom community. Over the past two years, students have experienced challenges with unpacking their emotions, regaining their socialization skills, and learning how to be a student in the classroom with others due to the COVID-19 pandemic. Embodied teaching and learning will be embedded for students to encounter themselves and their relations to others through greater inquiry. This process requires being in the moment or collecting real-time data that allows educators to gain a sense of trust from students.

Students who “Fall into trust” will analyze the mind and body to understand where thinking happens, what it feels like to figure something out, how to know if something is true and/or real, and what it means to learn. Therefore, students will develop a sense of consciousness or vulnerability to make connections through dialogue. As educators it is crucial to “Draw to Learn”, which means being able to relate through similar personal experiences based on various observations (Parker, 2008). To be tentative and committed are qualities that will support bridging the gap in student awareness. Overall, embodied teaching and learning will support identifying the connective components to further building student relationships and implementing lessons in the classroom.

The learning experiences created for students will be carried out through action-based learning (ABL) which promotes engagement during the learning process (Culp, Oberlton, & Porter, 2020). This will provide an opportunity for students to become active participants while educators serve as facilitators. As students develop inquiry, they will begin to acquire knowledge through critical thinking and higher order questioning. More specifically, they will be sharing their knowledge, convincing others through their reasoning, or receiving corrective feedback from peers and/or educators. This is an approach to develop active learning and design individualized learning that meets the needs of all students.

Students will not only demonstrate action based learning (ABL) from listening and speaking, but through physical movement. This will support students analyzing the responses produced from their mind and body throughout their learning experience. According to Parker (2018), research indicates physical movement will increase and/or improve student cognition within the classroom. As a result, students will continue to maintain attention spans, demonstrate their creativity, and acquire more knowledge.

As students continue to engage, they will begin to develop awareness that will formulate into a conversation beyond the classroom. Educators will utilize resources for resilience, a trauma based framework developed by the *1994 Adverse Childhood Experiences Study*. This is designed to support students in the numerous challenges they are encountering daily (Resources for Resilience, 2021). More specifically, provide strategies as a call to action to prevent future adversity and maintain a healthy well-being.

Research indicates “10 types of childhood trauma affected individuals’ long-term health. These categories included: physical, emotional, and sexual abuse; physical and emotional neglect; living with a family member who was addicted to alcohol or other substances, who was depressed, or who experienced other forms of mental illness; experiencing parental divorce or separation; having a family member incarcerated; and witnessing your mother being abused.” (Resources for Resilience, 2021)

In effort to support the number of individuals experiencing challenges socially and emotionally, educators will progress monitor the mind and body responses from students within the classroom. Students may display automatic survival responses, which are freezing, collapsing, submitting, fighting, flighting, and/or connecting. This will allow the educator to analyze how students' responses can be categorized in various components of the combined resilient zone. The academic content will be integrated with the CASEL framework.

CASEL is a framework of five social and emotional learning (SEL) competencies to foster knowledge, build skills, and develop positive attitudes. This will establish an equitable learning environment to support the development of academics and social emotional (CASEL, 2021). The framework has a direct impact on daily instruction and classroom climate by allowing students to become in tune with how they are building relationships and developing awareness of their emotions. Overall, students will be able to create a conducive and collaborative learning environment.

Teaching Strategies

As students engage in the curriculum unit, the performance based tasks will contain core teaching strategies from *Advancement Via Individual Determination (AVID)*. The core strategies central focus is W.I.C.O.R. - Writing, Inquiry, Collaboration, Organization, and Reading. The purpose is to close the opportunity gap by providing student agency, rigorous academic preparedness, and opportunity knowledge to ensure college and career readiness. Therefore, the students will be completing one-pagers, three-column notes, and Socratic seminars (Drumright, Pengra, & Porter, 2016). In further detail, these core strategies promote focused-note taking and peer dialogue. Overall, this will support students creating self-awareness of their emotions through mathematical tasks.

As students read word problems, they will utilize a strategy titled *3-Read Protocol or Q.I.S. (Question, Information, and Solve)*. This strategy will allow students to read complex word problems three times with different guided questions and/or goals each time. The students will be reading to understand the context, understand the mathematical concepts, and elicit inquiry questions based on the word problem (San Francisco DMD, 2021). To execute the teacher will start by reading aloud orally with visuals and students will read as an entire class or with a partner during the second and third round. This strategy will be extremely beneficial for all learners to grasp a deeper understanding of the problem stem to allow open discussion amongst students. Overall, students will have the opportunity to stimulate their minds through critical thinking and acquire more knowledge through dialogue.

As students solve, they will engage in various *conceptual and procedural strategies* to understand fraction equivalence and ordering. Students will use length models, area models, fraction tiles, and anchor charts to support their reasoning (Hull, 2019). The strategies will provide a hands-on opportunity for students to make connections through the pedagogy. Students will use their understanding of fractions as numbers to extend their knowledge with the various fraction sets, such as fifths and tenths, etc. Overall, students will develop an understanding of how fractions can have different numerators and denominators, but still create the same value.

Instructional Implementation

LESSON 1: Recognize Equivalent Fractions		
STANDARD: <ul style="list-style-type: none"> 4.NF.1 	LEARNING TARGET(S): <ul style="list-style-type: none"> I can use area models to recognize and create equivalent fractions. I can develop self-awareness of emotions when solving word problems or analyzing errors. 	MATERIALS: <ul style="list-style-type: none"> Gallery Walk Three-Column Notes Vocabulary Accountable Talk Posters Digital Mood Meter
TASK: (APPROXIMATE TIME: 30 minutes) <ul style="list-style-type: none"> Students will engage in a gallery walk of real-life pictures to <u>identify</u> various fraction sets, such as 2,3,4,5,6,8,10,12, and 100. As students view the pictures they will begin to make connections of recognizing the number of equal parts and understanding fractions as numbers. In further detail, picture the recipe that calls for $\frac{1}{2}$ cup of sugar on the first slide. During instruction, model how the fraction notation is part of a whole by explaining numerator and denominator. Students will <u>write</u> the four vocabulary terms (Fraction, <i>Numerator</i>, <i>Denominator</i>, and <i>Partition</i>) using three-column notes in their math journal. Students will <u>discuss</u> with an elbow partner or group member using accountable talk to recognize the fractions represented in slides 3-5. As students prepare to collaborate, reiterate discussion norms for what it should sound and look like. Furthermore, actively monitor the room to support and/or facilitate the discussion. When completed, call on two to three students to share their thoughts. Students will <u>demonstrate</u> their knowledge by identifying the fraction represented in a picture of a window independently. Students will notice the window is partitioned into fourths. Therefore, students will begin to make connections of part to whole. 		

Extend students' thinking by asking if the represented fraction can be partitioned into more equal parts.

- Students will synthesize how fraction sets can be partitioned into other fractions that have the same value by understanding the numerator and denominator are different.
- Prior to students exiting, allow time to complete the [digital mood meter](#) to capture their feelings after the beginning of the unit. **Please watch the [video explanation](#) in the second appendix of resources for teachers for more information. **

LESSON 2: Locate Equivalent Fractions

STANDARD:

- 4. NF.1

LEARNING TARGET(S):

- I can use number lines to locate and identify equivalent fractions.
- I can make connections between area models and number lines for finding equivalent fractions.

MATERIALS:

- Activity Sheet
 - [Teacher](#)
 - [Student](#)
- [Three-Column Notes Vocabulary](#)

TASK: (APPROXIMATE TIME: 30 minutes)

- Students will create a **human number line** using their bodies to represent fractional parts, such as..... **Ponder on the number of students on your classroom roster to ensure you will be able to demonstrate the fractions listed on the worksheet **
- Students will identify various fractions represented on the human number line. Begin by modeling the initial fraction represented to ensure students understand the expectation of the assignment. In addition, allow time for the remaining questions to be answered as a whole group.
- Students will determine equivalent fractions for the fractions previously identified on their worksheet independently. When completed, call on two to three students to share their thoughts.
- Students will write the two vocabulary terms (Equivalent Fraction and Number Line) using [three-column notes](#) in their math journal. **Inform students to continue adding to the vocabulary list created from the previous lesson. **
- Students will explain the pattern noticed when creating and locating equivalent fractions.

LESSON 3: Connect Visual Models and Multiplication

STANDARD(S):

- 4. NF. 1
- 4.NF. 2

LEARNING TARGET(S):

- I can represent fractions using area models and number lines.
- I can use models and benchmarks to compare fractions.

MATERIALS:

- [Fraction Tiles](#)
- [Activity Sheet](#)

TASK: (APPROXIMATE TIME: 30 minutes)

- Students will recall the pattern (“Times Two”) when locating and recognizing fractions in an area model or number line in a **Socratic seminar**- arrange students in a large circle while seated. During this time, call on two to three students to share their thinking based on what they’ve learned from the previous lessons. Due to students making conceptual connections, this will be a great segue for the procedural strategy that will be introduced later throughout the lesson.
- Students will represent equivalent fractions on an area model using fraction tiles (physical or [digital](#)). During this time, model the fraction $\frac{3}{4}$ from the [activity sheet](#) using an area model and a number line. As students analyze both models, they will notice there are three out of four equal parts.
- Students will determine an equivalent fraction for $\frac{3}{4}$ using their fraction tiles and times two patterns as a group. **Students will multiply the numerator and denominator by two, which should result in $\frac{6}{8}$.**
- Students will identify equivalent fractions using fraction tiles for questions 2-6 on the [activity sheet](#) independently or with a partner. When completed, call on two to three students to share their thoughts.
- Students will create two equivalent fractions using the times two pattern.

LESSON 4: Use Models to Reason About Division		
STANDARD: <ul style="list-style-type: none"> 4. NF. 1 	LEARNING TARGET(S): <ul style="list-style-type: none"> I can use models to reason about using division to find equivalent fractions. I can develop self-awareness of emotions when solving word problems or analyzing errors. 	MATERIALS: <ul style="list-style-type: none"> Frayer Model Digital Mood Meter
TASK: (APPROXIMATE TIME: 30 minutes) <ul style="list-style-type: none"> Students will <u>create</u> a frayer model to demonstrate their understanding of equivalent fractions. Prior to starting, explain how the frayer model will serve as graphic organizer for students to organize their thinking around one of the previously taught concepts and/or vocabulary words “Equivalent Fraction”. Discuss the four sections displayed in the model-recall the definition, identify characteristics, list examples and non-examples. To create a concrete understanding, research different frayer models to display to the students as examples. Students will <u>define</u> and <u>identify</u> characteristics of an equivalent fraction in the appropriate section as a group. Students will <u>construct</u> three pairs of equivalent and non-equivalent fractions in the example and non-example section independently. Students will <u>engage</u> in “Go-Go-Mo”- Give One, Get One, and Move on to share their thinking. Allow time for students to write down examples shared from their peers throughout the discussion. Students will <u>justify</u> their thinking by understanding the difference between an 		

example and non-example based on the characteristics. During this time call on two to three students to share out.

- Students will write in the characteristics section how equivalent fractions have the same value but different numerator and denominators. Also, students will notice the “Times two” pattern when solving from a procedural perspective.
- Prior to students exiting, allow time to complete the [digital mood meter](#) to capture their feelings after the midpoint of the unit. **Please watch the [video explanation](#) in the second appendix of resources for teachers for more information.**

LESSON 5: Use Benchmark Numbers to Compare Equivalent Fractions/Use Models and Number Lines to Compare Equivalent Fractions

STANDARD(S):	LEARNING TARGET(S):	MATERIALS:
<ul style="list-style-type: none"> • 4. NF. 1 • 4.NF. 2 	<ul style="list-style-type: none"> • I can represent fractions using area models and number lines. • I can use models and benchmarks to compare fractions. 	<ul style="list-style-type: none"> • Three-Column Notes • Activity Sheet

TASK: (APPROXIMATE TIME: 30 minutes)

- Students will write the three vocabulary terms (Greater Than, Less Than, and Equal To) using [three-column notes](#) in their math journal. **Inform students to continue adding to the vocabulary list created from the previous lessons.**
- Students will discuss their fraction rules. If the denominator is the same, the fraction with the larger numerator is greater. Whereas, if the numerator is the same, the fraction with the larger denominator is greater. Allow time for students to write the rules in their math journal. Model the first question of the [activity sheet](#) for students to apply the fraction rules discussed.
- Students will identify the connection of the two fraction sets in question two of the [activity sheet](#) by determining if the numerator or denominator is the same. Complete this question as a group.
- Students will synthesize the steps used to compare fractions based on the various fractions.

- Students will solve questions 3-6 of the [activity sheet](#) independently or with a partner to compare the fractions with the various numerators and denominators.
- As students finish, ask what they notice and wonder as they solve the problems.

TOPIC REVIEW: DAY 1

STANDARD(S):

- 4. NF. 1
- 4.NF. 2

LEARNING TARGET(S):

- I can use strategies to compare fractions.
- I can construct an argument to compare fractions.

MATERIALS:

- [One-Pager](#)
- [Fraction Tiles](#)
- [Anchor Charts](#)
- [Four Corners Posters](#)

TASK: (APPROXIMATE TIME: 30 minutes)

- Students will solve six questions on recognizing and comparing equivalent fractions **one-pager** independently. Prior to students starting, model one question to ensure they understand the expectation. Also, reiterate students will show their work and can use [fraction tiles](#), frayer model graphic organizer, or [anchor charts](#) as they solve.
- Students will select one of the appropriate [four corners](#) based on the letter chosen on the multiple-choice questions.
- Students will defend their answer by providing reasoning based on the work shown to their specific group.
- Students will convince others to join their specific group based on their reasoning.
- Students will write one skill they learned and one area and/or challenge they can improve.

TOPIC REVIEW: DAY 2		
STANDARD(S): <ul style="list-style-type: none"> • 4. NF. 1 • 4.NF. 2 	LEARNING TARGET(S): <ul style="list-style-type: none"> • I can use strategies to compare fractions. • I can construct an argument to compare fractions. 	MATERIALS: <ul style="list-style-type: none"> • Scoot Math Problems • Activity Sheet • Fraction Tiles • Anchor Charts
TASK: (APPROXIMATE TIME: 30 minutes) <ul style="list-style-type: none"> • Students will <u>solve</u> six questions on recognizing and comparing equivalent fractions by engaging in scoot (carousel). Prior to students starting, model one question to ensure they understand the expectation (Directions can be found in the next bullet). Also, reiterate students will show their work, however, they can use fraction tiles, frayer model graphic organizer, or anchor charts as they solve. • Students will <u>read</u> the question that is posted directly in front of them. As students begin to solve, they will locate the question number posted on the wall and match it with the appropriate box on their activity sheet. Once students have shown their work for the problem they will scoot counter-clockwise to the next question and follow the same process. Students will work until the timer has stopped. • Students will <u>analyze</u> their work to see how many problems are unfinished. Once 		

students have checked over their work, they will report back to the question they last visited or the question they were approaching. During this time students will read the problem thoroughly to create an equation that will be ready to solve.

- Students will write the equation on their activity sheet and complete it for homework as a study question.

TOPIC ASSESSMENT

STANDARD(S):

- 4. NF. 1
- 4.NF. 2

LEARNING TARGET(S):

- I can use strategies to compare fractions.
- I can construct an argument to compare fractions.
- I can develop self-awareness of emotions when solving word problems or analyzing errors.

MATERIALS:

- [Google Form Topic Assessment](#)
- [Activity Sheet](#)
- [Math Learning Center White Board](#)
- [Digital Mood Meter](#)
- [Feedback Form](#)
(Teacher Use Only)

TASK: (APPROXIMATE TIME: 60 minutes)

- Students will assess their knowledge on recognizing and comparing equivalent fractions on their [Google form topic assessment \(10 questions\)](#). Prior to students starting, reiterate testing norms by emphasizing they will show their work on the [activity sheet](#) or [math learning center white board](#) (Only used if students are virtual).
- Students will select the appropriate answer based on the letter chosen on the multiple-choice questions.
- Students will defend their answer by providing reasoning based on the work shown.
- Students will analyze their work to ensure they feel confident about their work.
- Students will submit their assessment as soon as they notify the instructor.
- Prior to students exiting, allow time to complete the [digital mood meter](#) to capture their feelings after the end of the unit. **Please watch the [video explanation](#) in the second appendix of resources for teachers for more information. **
- After implementing the unit, please complete the [feedback form](#) using the 3-2-1 strategy.

Appendix 1: North Carolina Standard Course of Study

- This document provides the standards being assessed in the implementation of the curriculum unit.

Extend Understanding of Fractions

<i>Standard</i>	<i>Description</i>
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.
NC.4.NF.2	<p>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:</p> <ul style="list-style-type: none">■ 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.

Fourth Grade Quick Reference Guide for the NC Standard Course of Study. *North Carolina Department of Public Instruction. (2018)*. Retrieved from <https://www.dpi.nc.gov/media/7139/open>

This document serves as a resource to provide resources for implementations of standards within the specific grade level.

Appendix 2: Resources for Teachers (Content Knowledge)

- This document provides resources for teachers on content knowledge of the standards and social and emotional learning competency implemented in the curriculum unit.

<i>Resource</i>	<i>Link(s)</i>
Standards Unpacking Document (s)	<ul style="list-style-type: none">• NF.1 and NF.2
Vertical Coherence	<ul style="list-style-type: none">• Map
Scope & Sequence	<ul style="list-style-type: none">• Overview
CASEL Social and Emotional Learning Framework	<ul style="list-style-type: none">• English Version• Spanish Version
CASEL: Self-Awareness	<ul style="list-style-type: none">• Competency Description• PBS Video
Digital Mood Meter	<ul style="list-style-type: none">• Video Explanation

2017 Unpacked Content 4th Grade Math Standards. *Instructional Math Resource: North Carolina Department of Public Instruction*. (2020) Retrieved from <https://www.dpi.nc.gov/documents/files/2017-unpacked-content-4th-grade-math-standards>.

This resource provides clarification of the standards implemented in the curriculum unit.

Social Awareness: Social and Emotional Learning. *PBS Learning Media*. (2021). Retrieved from <https://wtvi.pblearningmedia.org/resource/self-awareness-social-emotional-learning/social-emotional-learning-video/>

This resource provides a video explaining how to support students in developing self-awareness, the foundation of social-emotional learning, by teaching the vocabulary of emotions, and modeling behavior that supports self-awareness.

What is the CASEL Framework? Social and Emotional Learning Interactive CASEL Wheel. (2021). Retrieved from <https://casel.org/fundamentals-of-sel/what-is-the-casel-framework/>.

This resource provides both the English and Spanish version of the five competencies of

the CASEL framework.

Appendix 3: Resources for Teachers (Implementation Strategies)

- This document provides resources for teachers on implementation strategies to support organization, explanation of lesson activities, and understanding of content-specific strategies to ensure successful implementation of the curriculum unit.

Word Problem Analysis (Organization Strategies)	
<i>Strategy</i>	<i>Resource Link(s)</i>
<ul style="list-style-type: none">• 3-Read Protocol	<ul style="list-style-type: none">• 3-Read Protocol (Scholarly Article)
<ul style="list-style-type: none">• Q.I.S. (Question, Information, and Solve)	<ul style="list-style-type: none">• Video Explanation

AVID (Lesson Activities)	
<i>Strategy</i>	<i>Resource Link(s)</i>
<ul style="list-style-type: none">• One-Pager	<ul style="list-style-type: none">• Student Handout 1.4, P.30-32• Samples
<ul style="list-style-type: none">• Three-Column Notes	<ul style="list-style-type: none">• Student Handout 1.1K, P.16
<ul style="list-style-type: none">• Socratic Seminar	<ul style="list-style-type: none">• Student Handout 2.14, P.134-143

Conceptual and Procedural Understanding (Content-Specific Strategies)	
<i>Strategy</i>	<i>Resource Link(s)</i>
<ul style="list-style-type: none">• Area Model	<ul style="list-style-type: none">• Fraction Models That Promote Understanding for Elementary Students, P.10 (Scholarly Article)• Developing Fraction Concepts: Area Models, P.343 (Scholarly Article)• Teaching Strategies: Area Model
<ul style="list-style-type: none">• Length Models	<ul style="list-style-type: none">• Developing Fraction Concepts: Length

Developing Fractions. *McGraw Hill Education: Chapter 15*. pp. 342-345. (n.d.) Retrieved from <https://www.pearsonhighered.com/content/dam/region-na/us/higher-ed/en/products-services/course-products/vandewalle-9e-info/pdf/0133768937.pdf>

This resource provides an overview of various fractions to improve and enhance learning.

Drumright, M., Pengra, K., & Potts, T. AVID Elementary Foundations: A School wide Implementation Resource. *AVID Press*. pp.14-17,30-33, and 134-143. (2016). Retrieved from https://books.google.com/books/about/AVID_Elementary_Foundations.html?id=iyBGnQAACAAJ

This resource provides an explanation of the purpose of one-pagers, various templates of three column notes, and overview of Socratic seminars.

Hull, L. Fraction Models That Promote Understanding for Elementary Students. *University of Central Florida: STARS*. (2019). Retrieved from <https://stars.library.ucf.edu/cgi/viewcontent.cgi?article=1335&context=etd>

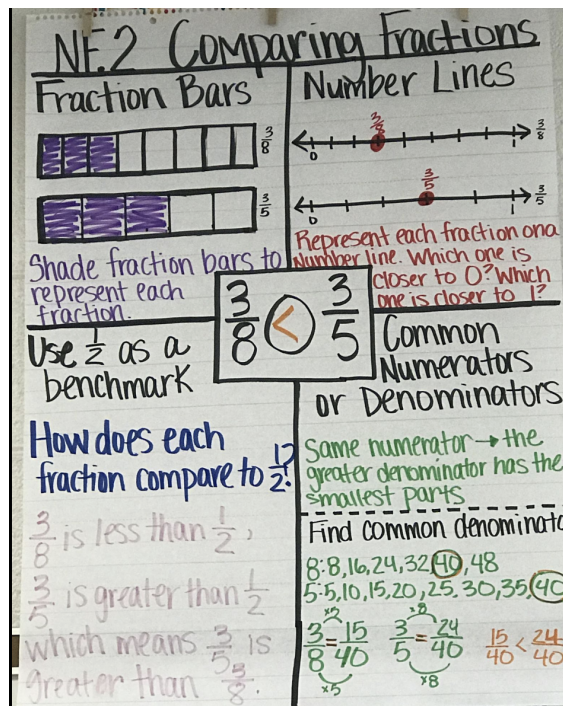
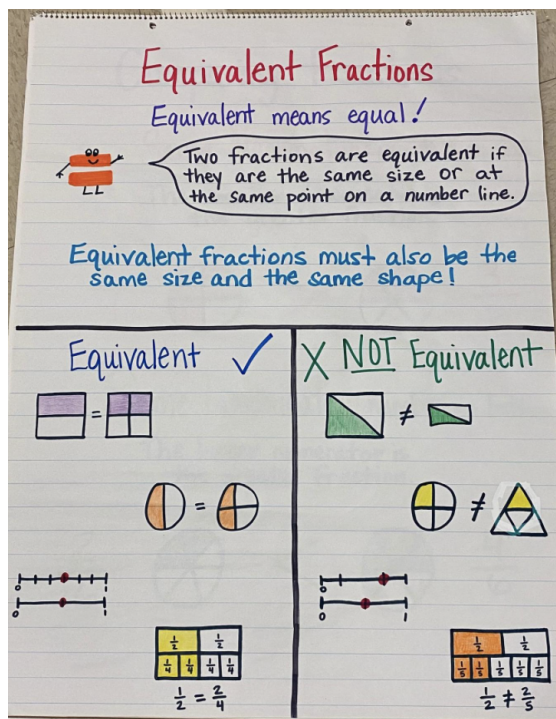
This resource provides an overview of various fractions to improve and enhance student learning.

The 3-Read Protocol. *San Francisco Unified School District Mathematics Department*. (2021). Retrieved from <http://www.sfusdmath.org/3-read-protocol.html>

This resource provides an explanation of how 3-Read Protocol is a close read of a complex math word problem or task.

Appendix 4: Resources for Students (Anchor Charts)

- This document provides anchor charts to support students in their conceptual and procedural understanding of recognizing and comparing equivalent fractions in the curriculum unit.



NF.1 & NF.2 Anchor Charts. Elementary Math Teaching & Learning: Fourth Grade. (2021). Retrieved from

<https://www.cms.k12.nc.us/cmsdepartments/ci/elementarycurriculum/Pages/default.aspx>

This resource provides an overview of the curriculum and instructional strategies to implement with content-specific standards.

Bibliography

- Culp, B. Oblerton, M., & Porter, K. Developing Kinesthetic Classrooms to Promote Active Learning. *Journal of Physical Education, Recreation & Dance*, 91:6, 10-15. (2020). Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/07303084.2020.1768178?journalCode=ujrd20>
- Drumright, M., Pengra, K., & Potts, T. AVID Elementary Foundations: A School wide Implementation Resource. *AVID Press*. pp.14-17, 30-33, and 134-143. (2016). Retrieved from https://books.google.com/books/about/AVID_Elementary_Foundations.html?id=iyBGnQAACAAJ
- Egalite, A. How Family Background Influences Student Achievement. *Education Next*. 21:4. (2021). Retrieved from <https://www.educationnext.org/how-family-background-influences-student-achievement/>
- NC DPI. Third Grade Quick Reference Guide for the NC Standard Course of Study. *North Carolina Department of Public Instruction*. (2018). Retrieved from <https://www.dpi.nc.gov/media/7138/open>
- NC DPI. Fifth Grade Quick Reference Guide for the NC Standard Course of Study. *North Carolina Department of Public Instruction*. (2018). Retrieved from <https://www.dpi.nc.gov/media/7140/open>
- NC DPI. Fourth Grade Quick Reference Guide for the NC Standard Course of Study. *North Carolina Department of Public Instruction*. (2018). Retrieved from <https://www.dpi.nc.gov/media/7139/open>
- Humphrey, N. Social and Emotional Learning: A Critical Appraisal. *Journal of Research in Special Educational Needs*. (2013). Retrieved from <https://sk.sagepub.com/books/social-and-emotional-learning>
- Latta, M. & Buck, G. Enfleshing Embodiment: 'Falling Into Trust With the Bodies Role in Teaching and Learning. *Educational Philosophy and Theory*, 40:2, 315-329. (2008). Retrieved from <https://www.tandfonline.com/doi/abs/10.1111/j.1469-5812.2007.00333.x>
- Marques-Pinto, A., Lusía Lima, M. The Effects of Social and Emotional Learning Program on Elementary School Children: The Roles of Pupil's Characteristics. *Wiley*

- Periodicals*. (2012). Retrieved from <https://onlinelibrary.wiley.com/doi/abs/10.1002/pits.21667>
- Parker, S. Get Up! Five Ways to Energize to a Classroom with Physically Active Learning. *College Teaching*, 66:1, 1-2. (2017). Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/87567555.2016.1232694>
- Resources for Resilience Participant Training Packet. *Resources for Resilience*. (2020). Retrieved from <https://resourcesforresilience.com/>
- San Francisco Unified School District Mathematics Department. The 3-Read Protocol. *San Francisco Unified School District Mathematics Department*. (2021). Retrieved from <http://www.sfusdmath.org/3-read-protocol.html>
- School Digger. Newell Elementary Public K-5. *School Digger*. (2021). Retrieved from [https://www.schooldigger.com/go/NC/schools/0297001247/school.aspx#:~:text=Compare%20Details%20Racial%20makeup%20is,\(See%20more...\)](https://www.schooldigger.com/go/NC/schools/0297001247/school.aspx#:~:text=Compare%20Details%20Racial%20makeup%20is,(See%20more...))
- Weissberg, R.P., Durlak, J.A., Domitrovich, C.E., et al. Social and Emotional Learning: Past, Present, and Future. *Guildford Press*. (2015). Retrieved from <https://psycnet.apa.org/record/2015-24776-001>
- What is the CASEL Framework? Social and Emotional Learning Interactive CASEL Wheel. (2021). Retrieved from <https://casel.org/fundamentals-of-sel/what-is-the-casel-framework/>
- Zins, J. Building Academic Success on Social and Emotional Learning: What Does The Research Say? *Teachers College Press*. (2004). Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/10573560600992837?journalCode=urwl20>