

3 Math Unit 10: Fractions - Concepts & Equivalence

Content Area: **Mathematics**
Course(s):
Time Period: **April**
Length: **3 weeks**
Status: **Published**

Unit Overview

Grade 3 students start with unit fractions (fractions with numerator 1), which are formed by partitioning a whole into equal parts and taking one part, e.g., if a whole is partitioned into 4 equal parts then each part is $\frac{1}{4}$ of the whole, and 4 copies of that part make the whole. Next, students build fractions from unit fractions, seeing the numerator 3 of as saying that is the quantity you get by putting 3 of the $\frac{1}{4}$'s together. They read any fraction this way, and in particular there is no need to introduce "proper fractions" and "improper fractions" initially; $\frac{5}{4}$ is the quantity you get by combining 5 parts together when the whole is divided into 4 equal parts.

As students experiment on number line diagrams they discover that many fractions label the same point on the number line, and are therefore equal; that is, they are equivalent fractions. Previously, in Grade 2, students compared lengths using a standard measurement unit. In Grade 3, they build on this idea to compare fractions with the same denominator. They see that for fractions that have the same denominator, the underlying unit fractions are the same size, so the fraction with the greater numerator is greater because it is made of more unit fractions.

What are different interpretations of a fraction?

What are different ways to compare fractions?

Students will be able to...

- divide regions into equal parts and name those parts and represent them on a number line.
- find equivalent fractions and compare fractions

Standards

MA.3.MD.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
MA.3.NF.A.1	Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.
MA.3.NF.A.2a	Represent a fraction $\frac{1}{b}$ 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 $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.
MA.3.NF.A.2b	Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0.

	Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
MA.3.NF.A.3a	Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
MA.3.NF.A.3b	Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
MA.3.NF.A.3c	Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
MA.3.NF.A.3d	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Materials

- [EnVision Math](#)
- 12.1 Divide Regions Into Equal Parts
- 12.2 Fractions and Regions
- 12.3 Understand the Whole
- 12.4 Number Line: Fractions Less Than 1
- 12.5 Number Line: Fractions Greater Than 1
- 12.6 Line Plots and Length
- 12.7 More Line Plots and Length
- 12.8 Make Sense and Persevere
- 13.1 Equivalent Fractions: Use Models
- 13.2 Equivalent Fractions: Use the Number Line
- 13.3 Use Models to Compare Fractions: Same Denominator
- 13.4 Use Models to Compare Fractions: Same Numerator
- 13.5 Compare Fractions: Use Benchmarks
- 13-6 Compare Fractions: Use the Number Line
- 13-7 Whole Numbers and Fractions
- 13-8 Construct Arguments
- [ST Math](#)
- [Happy Numbers](#)
- [3 Act Lessons](#)
- [Building Fact Fluency Kit](#)
- [Brainingcamp Manipulatives](#)
- [Nearpod Lessons](#)
- [Brainpop Resources](#)
- [Math Diagnosis and Intervention System](#)
- [Online Resources](#)

Technology

- 8.1.5.A.1,2,4 (solve problems, word processing, databases, spreadsheets)
- 8.1.5.F.1 (digital tools to support scientific finding)
- 8.2.5.C.1,2,3 (solve problems, troubleshoot repair tools)

Assessment

Formative Assessment

- Teacher Observation
- Daily Quick Check
- Quizzes
- Exit Tickets

Summative Assessment

- Topic Tests
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

- Follow IEP Plan which may contain some of the following examples...
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Limit number of questions
- Scribe
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework

- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

504

- In class/pull out support with special ed teacher Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks Graphic organizers
- Vocabulary support Mnemonic devices
- Songs/videos to reinforce concepts Limit number of questions
- Scribe Manipulatives Calculators Reteach pages Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System Another look homework video
- Practice buddy

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Math Diagnosis & Intervention System

At-risk of Failure

- Additional time during intervention time
- Questions read aloud
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

Gifted & Talented

- Independent projects

- Enrichment pages
- Online games
- Leveled Homework
- Extension Activities
- Today's Challenge

Interdisciplinary Connections

Topic 1 Math and Science Project - Using different presentations tools, students will collect different types of paper. Talk about the uses of paper. Tell how strong each type of paper is. Tell how the paper feels. Tell if the paper can soak up water.

ELA:

NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.

Science:

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

21st Century Life Literacies & Key Skills

Critical Thinking and Problem Solving:

Problem-solving activities starting with the lesson "Solve and Share" and ending with higher order thinking questions that utilize the mathematical practices

Communication and Collaboration:

Throughout the lesson, students are provided with opportunities to discuss their ideas as they investigate mathematical concepts.

Creativity:

Students have opportunities to express their creativity by solving problems their own way, participating in performance tasks, and group projects.

Technology:

Use of iPads, instructional apps, lab materials embedded in lessons. Programs such as BrainPop, Math Reflex, Google Slides are used to support instruction.

Career Ready Practices

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.