

# 06. Understanding Fractions

Content Area: **Math**  
Course(s):  
Time Period: **Full Year**  
Length: **4 weeks**  
Status: **Published**

## General Overview, Course Description or Course Philosophy

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In this unit, students will continue to develop an understanding of fractions as numbers. Students will represent fractions as distances on a number line.

## OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

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### Essential Questions:

- Why do we need fractions?

### Enduring Understandings:

- Other numbers exist in addition to whole numbers.
- The number one can be broken down into fractional parts that are also numbers.

## CONTENT AREA STANDARDS

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MA.3.G.A.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.
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.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram.
MA.3.NF.A.3	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
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 $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ 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.
MA.3.OA.A.2	Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.

## **RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)**

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CS.K-12.3	Recognizing and Defining Computational Problems
CS.K-12.5	Creating Computational Artifacts
CS.K-12.6	Testing and Refining Computational Artifacts
LA.K-12.NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
LA.K-12.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
LA.K-12.NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
TECH.9.4.5.CT	Critical Thinking and Problem-solving
TECH.9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
TECH.9.4.5.IML.2	Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).

## **STUDENT LEARNING TARGETS**

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- Compare two fractions with the same numerator or the same denominator by reasoning about their size.
- Justify the conclusions of fraction comparisons and record the results.
- Explain why the fractions are equivalent.
- Express the area of each part as a unit fraction of the whole.
- Express whole numbers as fractions.
- Interpret whole-number quotients of whole numbers.
- Partition shapes into parts with equal areas.

- Recognize and generate simple equivalent fractions.
- Represent a fraction  $1/b$  on a number line diagram.
- Represent a fraction  $a/b$  on a number line diagram.
- 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  $1/b$ .
- Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
- Recognize fractions that are equivalent to whole numbers.
- Recognize that comparisons of two fractions are valid only when the two fractions refer to the same whole.

## **Declarative Knowledge**

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Students will understand that:

- Express the area of each part as a unit fraction of the whole
- Express whole numbers as fractions
- Interpret whole number quotients of whole numbers
- Recognize and generate simple equivalent fractions
- Represent a fraction  $1/b$  on a number line diagram
- Represent a fraction  $a/b$  on a number line diagram
- 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  $1/b$
- Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line
- Recognize fractions that are equivalent to whole numbers
- Recognize that comparisons of two fractions are valid only when the two fractions refer to the same whole

## **Procedural Knowledge**

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Students will be able to:

- Compare two fractions with the same numerator or same denominator by reasoning about their size
- Justify the conclusions of fraction comparisons and record the results
- Explain why fractions are equivalent
- Partition shapes into parts with equal areas

## **EVIDENCE OF LEARNING**

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Refer to the 'Formative Assessments, Summative, and Benchmark Assessments' sections.

### **Formative Assessments**

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- Journal Pages
- Math Boxes
- Math Talks
- Open Response Activities
- Student Friendly Proficiency Scales
- Exit/Entrance Tickets
- Performance Tasks
- Teacher Observations

### **Summative Assessments**

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- End of Unit Assessment
- Projects

### **Benchmark Assessments**

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- IXL Screener / Diagnostic Snapshot BOY
- Interim Assessment 1
- IXL Diagnostic Snapshot MOY
- Interim Assessment 2
- IXL Diagnostic Snapshot EOY

## **RESOURCES (Instructional, Supplemental, Intervention Materials)**

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- Everyday Math 2016
- Illustrative Mathematics

EM Lessons:

- 7.2 (c)
- 7.4

- 7.5
- 7.6
- 7.7
- 7.8
- 7.9
- 7.10
- 7.11
- 7.12

## **INTERDISCIPLINARY CONNECTIONS**

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Social Studies:

Timelines in history

Career Readiness

Utilize critical thinking to make sense of problems and persevere in solving them

## **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

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- Repeat directions
- Provide scaffolds
- Use graphic organizers
- Use wait time
- Provide manipulatives, grid paper
- Provide additional time

See link to Accommodations & Modifications document in course folder.