SCHOLASTIC

Do The Math™ Now!

Teacher Guide

Fraction Fundamentals

Created By

Marilyn Burns

UNIT 6

UNIT 7

UNIT 8

UNIT 9

UNIT 10

Additional Resources

About the Program

SCHOLASTIC

Do The Math Now!

Introduction to *Do The Math Now!*

Program Overview From Marilyn Burns iv
Proven Instructional Strategies vi
Program Materials x
Program Structure xii

The Lessons

UNIT 6

Develop Understanding of Fractions 1–63

LESSONS 1–5
Understanding Fractions as Equal Parts of a Whole 1

LESSONS 6–10
Using Equal Parts to Compare Fractions 23

LESSONS 11–15
Combining Fractions and Representing Fractions Greater Than 1 43

Measure Student Understanding With the End-of-Unit Assessment 63

UNIT 7

Reason With Fractions 65–127

LESSONS 1–5
Solving Fraction Sharing Problems 65

LESSONS 6–10
Extending Fraction Concepts to Different Denominators 85

LESSONS 11–15
Introducing Strategies for Comparing Fractions 105

Measure Student Understanding With the End-of-Unit Assessment 127

UNIT 8

Extend Fraction Concepts and Comparing Strategies 129–193

LESSONS 1–5
Understanding Fractions as Parts of Sets 129

LESSONS 6–10
Identifying Fractions Equivalent to $\frac{1}{2}$ 149

LESSONS 11–15
Using $\frac{1}{2}$ as a Benchmark to Compare Fractions 171

Measure Student Understanding With the End-of-Unit Assessment 193

UNIT 9

Build on Equivalence to Estimate, Compare, Add, and Subtract 195–261

LESSONS 1–5
Using Equivalence to Compare and Order Fractions 195

LESSONS 6–10
Using 1 as a Benchmark to Estimate, Add, and Subtract Fractions 217

LESSONS 11–15
Using Equivalence to Estimate, Add, and Subtract Fractions 239

Measure Student Understanding With the End-of-Unit Assessment 261

UNIT 10

Develop Fraction Number Sense 263–327

LESSONS 1–5
Adding and Subtracting Fractions Mentally 263

LESSONS 6–10
Using Sequences of Equivalent Fractions to Add and Subtract 283

LESSONS 11–15
Practicing Adding and Subtracting Fractions and Mixed Numbers 305

Measure Student Understanding With the End-of-Unit Assessment 327

Additional Resources

Objectives Tracker **329**
Beginning-of-Unit and End-of-Unit Assessments **331**
Assessment Answer Keys **351**
Do The Math Community News **356**
Teacher Glossary **361**
Index **366**

Program Overview From Marilyn Burns

SCHOLASTIC

Do The Math® Now!

Thanks to the *Do The Math* Team

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Englewood Public School District, NJ

Dear Colleague,

Serena and Gabe are examples of struggling math students I've met during my almost 50 years of teaching.

I showed Serena, a sixth grader, a division problem with four choices for the answer.

$425 \div 4$			
50	100	200	400

Marilyn: Which of these numbers do you think is closest to the answer? *(I point to the four choices.)*

Serena: *(Thinks for a moment and then asks.)* Can I use paper and pencil?

Marilyn: Try and figure it out in your head.

Serena: *(Thinks again and then muses.)* I know the number has to be smaller than 400 because division makes things smaller. *(Then she lowers her head and begins to "write" with her finger on the desk, setting up the problem as long division to work out the answer.)*

Sadly, there are far too many students like Serena in our math classes, who have learned computational procedures but have not developed the ability to reason numerically in other ways.

I gave Gabe, a seventh grader identified by his teacher as a struggling math student, a fraction addition problem.

$$\frac{1}{2} + \frac{2}{5}$$

Marilyn: You don't have to figure out the exact answer to this problem. I'm interested in whether you think the answer is greater than 1 or less than 1.

Gabe: *(Looks at the problem carefully and then responds.)* It's less than 1.

Marilyn: How do you know?

Gabe: I added across the tops and across the bottoms and got three-sevenths, and I know that three-sevenths is less than one.

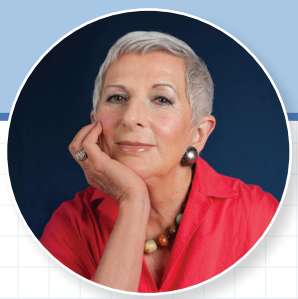
Gabe made one of the most common fraction errors, following a faulty procedure instead of thinking about the numbers at hand. As stated in the *Common Core State Standards for Mathematics,* "Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to . . . deviate from a known procedure to find a shortcut." This lack of understanding prevents Serena, Gabe, and other students like them from developing needed reasoning skills.

I was a middle school math teacher for the first eight years of my teaching career. In all my classes, there were always some students who were woefully ill prepared. They usually had some skill with paper-and-pencil computation, but had learned these procedures by rote and would quickly become lost when presented with a situation that differed even slightly from exactly what they were used to seeing. Math rarely made sense to them. In fact, they didn't even expect math to make sense. Their goal was to "do the page," not to "do the math." They were rarely asked to explain their reasoning, and when they were, they were unable to do so.

We created *Do The Math Now!* to meet the needs of the thousands of middle and high school students who, like Serena and Gabe, need to develop essential math understanding and skills. We decided that the best support we could provide these students would be to focus on multiplication, division, and fractions—topics that are critical foundations for the students' continued math success with algebra.

So here it is, a yearlong course for middle and high school students who need math support in addition to their regular math classes. *Do The Math Now!* is filled with the same kinds of scaffolded and paced lessons, games, and activities that have been the mainstay of the success of *Do The Math*.

I'm pleased to present this support for finally building a foundation of essential math understanding and skills that all students need and deserve.



Marilyn Burns is one of today's most highly respected and trusted mathematics educators. She is the founder of Math Solutions, an organization dedicated to the improvement of math instruction in our nation's schools. Over the course of almost 50 years, Marilyn has worked with students and teachers in classrooms across the country.

Marilyn's experiences have given her a unique insight into how to help students overcome the stumbling blocks that prevent them from being successful with mathematics. In collaboration with Scholastic, Marilyn and a team of Math Solutions master classroom teachers developed *Do The Math*, an intervention program that provides teachers with the tools and support they need to help students turn these stumbling blocks into building blocks of mathematical success.

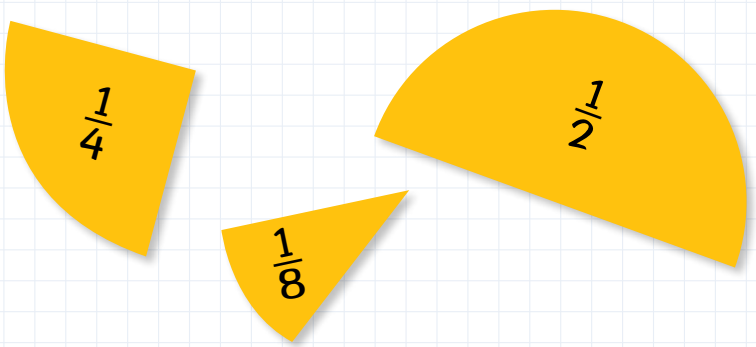
UNIT
7
Lessons 1–15

Reason With Fractions

Lessons now shift to a different model—circles—and students explore the same introductory set of fractions. They then expand their fractions kits to include thirds, sixths, and twelfths. They also learn two strategies in the *Comparing Fractions Toolkit*, a collection of six strategies that students learn to use alone and in combination to compare fractions.

Students will...

- Use standard notation to name parts of a whole as fractions.
- Solve sharing problems with answers that are fractions and mixed numbers.
- Identify and generate equivalent fractions.
- Compare fractions with common numerators.
- Add fractions using visual models.
- Communicate ideas with key math vocabulary: *common numerator*, *denominator*, *equation*, *equivalent*, *fraction*, *improper fraction*, *is greater than*, *is less than*, *mixed number*, *numerator*, *one-eighth*, *one-fourth*, *one-half*, *one-sixteenth*, *one-sixth*, *one-third*, *one-twelfth*, *unit fraction,* and *whole.*



CONTENTS

LESSONS 1–5

Solving fraction sharing problems 65–84

Solving problems using fractions of circles 68

Solving sharing problems with halves and fourths 72

Solving sharing problems with eighths 74

Comparing fractions and mixed numbers 78

Assessing student understanding 82

LESSONS 6–10

Extending fraction concepts to different denominators 85–104

Making thirds, sixths, and twelfths 88

Playing *Cover Up* with thirds, sixths, and twelfths 92

Identifying equivalent fractions among thirds, sixths, and twelfths 94

Using fraction strips to combine fractions with unlike denominators 98

Assessing student understanding 102

LESSONS 11–15

Introducing strategies for comparing fractions 105–126

Comparing unit fractions and fractions with common numerators 108

Playing *Roll Two*, a fraction game 112

Using fraction strips to name sums 116

Playing fraction games for practice 120

Assessing student understanding 124

Measuring Student Understanding With the End-of-Unit Assessment 127

FROM MARILYN BURNS

UNIT 7

Lessons 11–15

Introducing Strategies for Comparing Fractions

Dear Colleague,

These lessons begin by introducing students to two strategies for comparing fractions—*comparing unit fractions* and *comparing fractions with common numerators*. These are part of the *Comparing Fractions Toolkit,* a collection of six strategies that can be used alone or in combination to determine which of two fractions is greater or less. In contrast to teaching only the "converting to common denominators" strategy for comparing fractions, building the toolkit keeps the instructional focus on the meanings of the fractions being compared rather than on applying one particular rule.

The two strategies for comparing fractions introduced in these lessons are *comparing unit fractions* and *comparing fractions with common numerators*. Students practice the strategies at the beginning of lessons.

Strategy 1 compare unit fractions

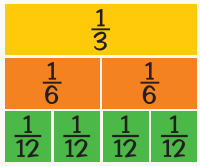
$$\frac{1}{2} > \frac{1}{8}$$

Strategy 2 compare fraction with common numerators

$$\frac{3}{12} < \frac{3}{4}$$

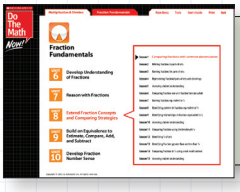
These lessons also provide experience with renaming fractions as equivalent fractions, which is essential for comparing, adding, and subtracting. Here students focus on fractions with denominators of 2, 3, 4, 6, 8, 12, and 16—all fractions students can model with their fraction kits.

Students use their fraction kits to play two games that they have played before—*Uncover* and *Roll Five*. They now use their expanded set of fractions which includes thirds, sixths, and twelfths. As with the other lessons, the instruction is carefully scaffolded to build students' confidence and ensure their success.



PLANNER

	LESSON 11	LESSON 12	
Lesson Summary	**Students compare unit fractions and fractions with common numerators.**	**Students learn and play the game *Roll Two* which gives them experience combining two fractions.**	
Objectives	• Introduce key math vocabulary: *common numerator* and *unit fraction.* • Use standard notation to name parts of a whole as fractions. • Compare fractions with common numerators. • Communicate ideas with key math vocabulary: *common numerator, denominator, numerator,* and *unit fraction.*	• Compare fractions with common numerators. • Use standard notation to name parts of a whole as fractions. • Identify equivalent fractions. • Communicate ideas with key math vocabulary: *common numerator, equivalent,* and *unit fraction.*	
Materials T = Teacher Bag S = Student Bag C = Chart	• ***WorkSpace*** pages 49, 147, and 153–158 • **magnetic fraction strips** T S • ***Math Vocabulary*** **chart** • ***Comparing Fractions Toolkit*** **chart** C	• ***WorkSpace*** page 50 • **magnetic fraction strips** T S • **fraction cubes** T S • **blank paper**	
Built-in Differentiation	Explicit instruction of key math **vocabulary** such as *numerator* and *denominator* supports mathematical communication.	The fraction **game** *Roll Two* reinforces students' understanding of equivalent fractions.	



Interactive Whiteboard Tools
contains all hands-on manipulatives and *WorkSpace* pages for Unit 7, Lessons 11–15.

	LESSON 13	LESSON 14	LESSON 15 Assess
	Students play *Roll Five* in which they find sums of fractions by replacing them with unit fractions.	**Students continue to practice comparing fractions and identify equivalent fractions.**	**Students demonstrate understanding of the objectives of Lessons 11–14 by completing *WorkSpace* pages independently.**
	• Compare fractions with common numerators. • Identify equivalent fractions. • Communicate ideas with key math vocabulary: *common numerator, denominator, improper fraction, mixed number, numerator,* and *unit fraction.*	• Compare fractions with common numerators. • Use standard notation to name parts of a whole as fractions. • Identify equivalent fractions. • Communicate ideas with key math vocabulary: *common numerator, equivalent,* and *unit fraction.*	• Compare fractions with common numerators. • Identify equivalent fractions. • Communicate ideas with key math vocabulary: *common numerator, equivalent,* and *unit fraction.*
	• ***WorkSpace*** pages 51, 52, and 153–157 • **magnetic fraction strips** T S • **fraction cubes** T S • ***Math Vocabulary*** **chart**	• ***WorkSpace*** page 53 • **magnetic fraction strips** T S • **fraction cubes** T S • **Unit 7: *Do The Math Community News***	**Unit 7: End-of-Unit Assessment** • ***WorkSpace*** pages 54 and 55 • **magnetic fraction strips** T S • **fraction cubes** T S • **Additional Practice**
	Students gain **hands-on** experience with improper fractions and practice key **math vocabulary** with the game *Roll Five*.	**Working in pairs** to play a fraction game allows students the opportunity to practice mathematical **language** and to strengthen their understanding of the strategies they have learned.	Assessing with **visual models** and **symbolic representations** they have been using in Lessons 11–14 allows students to show their understanding without having to approach the material in an unfamiliar format.

***TeacherSpace*™ CD-ROM**
contains Unit Assessments, Additional Practice pages, and other reproducibles to support teaching these lessons.

UNIT 7

Lessons 11–15

Introducing Strategies for Comparing Fractions

LESSON 11 Comparing unit fractions and fractions with common numerators

Lesson Summary

Students compare unit fractions and fractions with common numerators.

Objectives

- Introduce key math vocabulary: *common numerator* and *unit fraction*.
- Use standard notation to name parts of a whole as fractions.
- Compare fractions with common numerators.
- Communicate ideas with key math vocabulary: *common numerator, denominator, numerator,* and *unit fraction*.

Materials

- ***WorkSpace*** pages 49, 147, and 153–158
- **magnetic fraction strips** T S
- ***Math Vocabulary*** **chart**
- ***Comparing Fractions Toolkit*** **chart** C

T = Teacher Bag
S = Student Bag
C = Chart

Interactive Whiteboard Tools

WorkSpace pages and manipulatives for Lesson 11 are provided on the *Interactive Whiteboard Tools* CD-ROM.

Language Development

Key Math Vocabulary

ENGLISH	SPANISH
common numerator	*numerador común*
denominator	*denominador*
numerator	*numerador*
unit fraction	*fracción unitaria*

Academic Vocabulary

ENGLISH	SPANISH
greater than	mayor que
less than	menor que

WHOLE GROUP

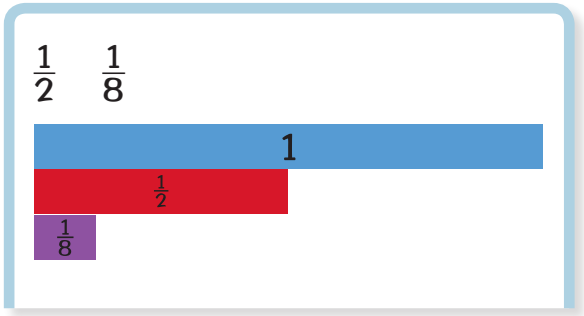
STEP 1 Introduce comparing two unit fractions.

1 Introduce the lesson.

Today you will learn two strategies that will help you compare two fractions to tell which is greater and which is less. Also, we'll learn some fraction vocabulary so that we can all use the same words to talk about fractions.

2 Present two unit fractions to compare.

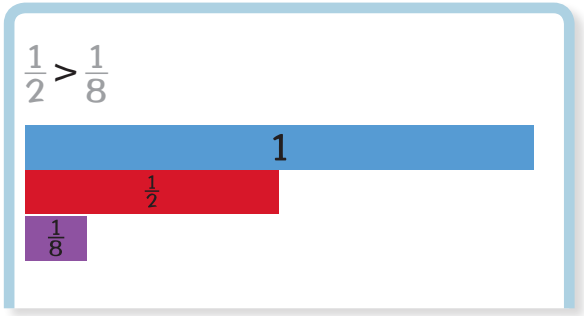
Write $\frac{1}{2}$ and $\frac{1}{8}$ on the board. Have students read each fraction aloud. Display the magnetic fraction strips as shown.



Let's say aloud which fraction is greater. ($\frac{1}{2}$)

Let's say aloud which fraction is less. ($\frac{1}{8}$)

Write > between the fractions.



Point to the board as you say:

One-half is greater than one-eighth.

SUPPORTING INSTRUCTION

Review the symbols for *greater than* (>) and *less than* (<). Write the examples 6 > 2 and 4 < 7 on the board. Then have students read them aloud: *6 is greater than 2, 4 is less than 7.*

WHOLE GROUP

STEP 2 Explain how to compare unit fractions.

❶ Explain why $\frac{1}{2}$ is greater than $\frac{1}{8}$.

It is easy to see that $\frac{1}{2}$ is greater than $\frac{1}{8}$ with the fraction pieces. But now let's think about how to explain why $\frac{1}{2}$ is greater than $\frac{1}{8}$.

In $\frac{1}{2}$, the 2 tells us that the whole is cut into 2 equal parts. In $\frac{1}{8}$, the 8 tells us that the whole is cut into 8 equal parts.

If a whole is cut into only 2 equal parts, those parts are bigger than if the same whole was cut into 8 equal parts.

The 1 tells us that we are talking about one piece of those parts. So one $\frac{1}{2}$ piece must be bigger than one $\frac{1}{8}$ piece.

❷ Present two more unit fractions to compare.

Write $\frac{1}{4}$ and $\frac{1}{6}$ on the board.

$\frac{1}{4}$ $\frac{1}{6}$

First think about which fraction is greater. Then use your fraction pieces to check.

Give students time to do this. Check that they are displaying their fraction pieces correctly.

Let's say aloud which fraction is greater. ($\frac{1}{4}$)
Let's say aloud which fraction is less. ($\frac{1}{6}$)

Now think, pair, share to explain why $\frac{1}{4}$ is greater than $\frac{1}{6}$.

Choose a student to explain. (Fourths are bigger than sixths, so one $\frac{1}{4}$ piece is greater than one $\frac{1}{6}$ piece).

Write $>$ on the board.

$\frac{1}{4} > \frac{1}{6}$

WHOLE GROUP

STEP 3 Introduce math vocabulary.

❶ Review *numerator* and explain *common numerator*.

Write $\frac{1}{2}$ and $\frac{1}{8}$ on the *Math Vocabulary* chart.

Both of these fractions have the same numerator, 1. As you know, the* numerator *is the name for the number above the fraction bar in a fraction. It tells how many equal parts are being described.

Write *numerator* on the chart and draw a line from it to the 1 in $\frac{1}{2}$. Have students read *numerator* aloud with you.

Fractions with the same numerator are said to have a* common numerator. *The common numerator for these fractions is 1.

Write *common numerator* on the chart and draw lines from it to the 1s in $\frac{1}{2}$ and $\frac{1}{8}$. Have students read *common numerator* aloud with you.

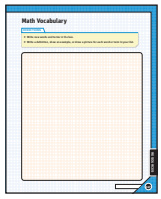
Math Vocabulary

- common numerator
- numerator

$\frac{1}{2}$ $\frac{1}{8}$

❷ Students write the vocabulary and read the definitions.

Have students copy what is on the chart onto their *Math Vocabulary* chart beginning on page 147. Then have them read the definitions in the glossary beginning on page 153.



CONTINUE

LESSON 11 Comparing unit fractions and fractions with common numerators

WHOLE GROUP

STEP 4 Introduce more math vocabulary.

❶ Review *denominator* and explain *unit fraction*.

The numerators for $\frac{1}{2}$ and $\frac{1}{8}$ are the same, but the denominators are different. As you know, the* denominator *is the number below the fraction bar in a fraction. What are the two denominators on the chart?
(2 and 8)

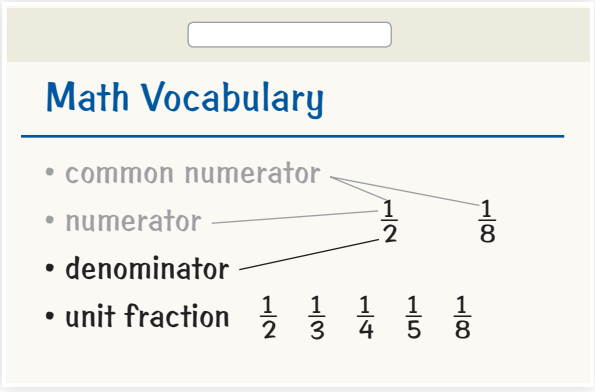
Write *denominator* on the chart and draw a line from it to the 2 in $\frac{1}{2}$. Have students read *denominator* aloud with you.

Next, write $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{8}$ on the chart, saying each fraction aloud as you write it.

When a fraction has 1 as the numerator, it is called a* unit fraction. *The whole can be divided into any number of equal parts. The fraction for one of those parts is a unit fraction. All of the fractions on the chart are unit fractions.

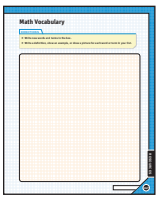
Write *unit fraction* next to the examples as shown.

Have students read *unit fraction* aloud with you.



❷ Students write the vocabulary and read the definitions.

Have students copy what is on the chart onto *WorkSpace* page 147. Then have them read the definitions in the glossary beginning on page 153.

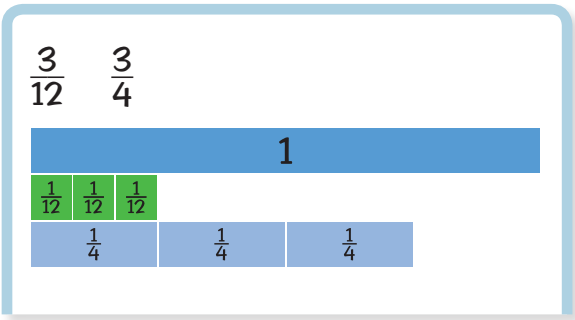


WHOLE GROUP

STEP 5 Introduce comparing fractions with common numerators.

❶ Present two fractions with the same numerator.

On the board replace $\frac{1}{2}$ and $\frac{1}{8}$ with $\frac{3}{12}$ and $\frac{3}{4}$. Display the magnetic fraction strips. Point out that to show a fraction like $\frac{3}{12}$, you make a train with three $\frac{1}{12}$ pieces. Have students read each fraction aloud.



Let's say aloud which fraction is greater. ($\frac{3}{4}$)
Let's say aloud which fraction is less. ($\frac{3}{12}$)

❷ Explain why $\frac{3}{4}$ is greater than $\frac{3}{12}$.

In the fraction $\frac{3}{12}$, what does the 12 mean? (The whole is cut into 12 equal pieces.) ***What does the 3 mean?*** (There are 3 pieces.) ***In the fraction $\frac{3}{4}$, what does the 4 mean?*** (The whole is cut into 4 equal pieces.) ***What does the 3 mean?*** (There are 3 pieces.) ***Explain why $\frac{3}{12}$ is less than $\frac{3}{4}$.***

Have students think, pair, share. (Twelfths are smaller than fourths and there are 3 pieces of each, so $\frac{3}{12}$ is less than $\frac{3}{4}$.)

LANGUAGE DEVELOPMENT

Students typically refer to fractions as "bigger" or "larger" rather than "greater." This makes sense when comparing the physical fraction kit pieces. However, when comparing numerical fractions, as with all numbers, use "greater than" consistently to help students become familiar with that terminology. Similarly, use "less than" instead of "smaller than."

WHOLE GROUP

STEP 6 Introduce the *Comparing Fractions Toolkit.*

1 Explain the *compare unit fractions* strategy.

When we compared $\frac{1}{2}$ and $\frac{1}{8}$, we looked at the denominators to tell which piece was bigger. Then, because there was just one piece of each, we knew that $\frac{1}{2}$ is greater than $\frac{1}{8}$.

When we compare unit fractions this way, we will call it the **compare unit fractions** *strategy.*

Display Strategy 1 on the *Comparing Fractions Toolkit* chart.

Comparing Fractions Toolkit

Strategy 1: compare unit fractions

$\frac{1}{2} > \frac{1}{8}$

2 Explain the *compare fractions with common numerators* strategy.

When we compared $\frac{3}{4}$ and $\frac{3}{12}$ we also looked at the denominators to tell which fraction is less, twelfths or fourths. Since the numerators are the same we knew that $\frac{3}{12}$ is less than $\frac{3}{4}$.

When we compare fractions with a common numerator this way, we will call it the **compare fractions with common numerators** *strategy.*

Display Strategy 2 on the chart.

Comparing Fractions Toolkit

Strategy 1: compare unit fractions

$\frac{1}{2} > \frac{1}{8}$

Strategy 2: compare fractions with common numerators

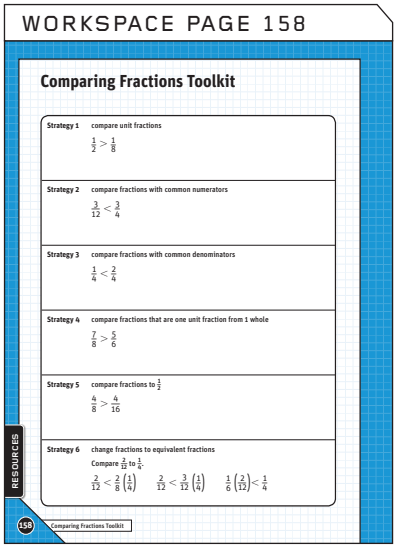
$\frac{3}{12} < \frac{3}{4}$

INDIVIDUALS

STEP 7 Students use the strategies.

1 Students compare fractions.

Have students read the two strategies and examples on *WorkSpace* page 158.


WORKSPACE PAGE 158

Comparing Fractions Toolkit

Strategy 1 compare unit fractions $\frac{1}{2} > \frac{1}{8}$

Strategy 2 compare fractions with common numerators $\frac{3}{12} < \frac{3}{4}$

Strategy 3 compare fractions with common denominators $\frac{1}{4} < \frac{2}{4}$

Strategy 4 compare fractions that are one unit fraction from 1 whole $\frac{7}{8} > \frac{5}{6}$

Strategy 5 compare fractions to $\frac{1}{2}$ $\frac{4}{8} > \frac{6}{16}$

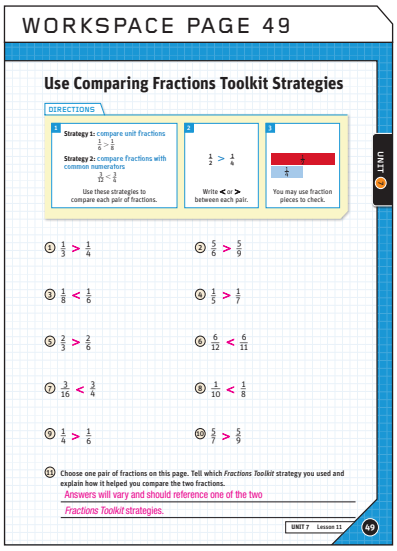
Strategy 6 change fractions to equivalent fractions

Compare $\frac{2}{12}$ to $\frac{1}{4}$. $\frac{2}{12} < \frac{2}{8}\left(\frac{1}{4}\right)$ $\frac{2}{12} < \frac{3}{12}\left(\frac{1}{4}\right)$ $\frac{1}{6}\left(\frac{2}{12}\right) < \frac{1}{4}$

RESOURCES

158 Comparing Fractions Toolkit

2 Have students complete *WorkSpace* page 49.


WORKSPACE PAGE 49

Use Comparing Fractions Toolkit Strategies

DIRECTIONS

Strategy 1: compare unit fractions $\frac{1}{6} > \frac{1}{8}$

Strategy 2: compare fractions with common numerators $\frac{1}{12} < \frac{1}{4}$

Use these strategies to compare each pair of fractions.

$\frac{1}{2} > \frac{1}{4}$

Write < or > between each pair.

You may use fraction pieces to check.

UNIT 7

① $\frac{1}{3} > \frac{1}{4}$ ② $\frac{5}{6} > \frac{5}{9}$

③ $\frac{1}{8} < \frac{1}{6}$ ④ $\frac{1}{5} > \frac{1}{7}$

⑤ $\frac{2}{3} > \frac{2}{6}$ ⑥ $\frac{6}{12} < \frac{6}{11}$

⑦ $\frac{3}{16} < \frac{3}{4}$ ⑧ $\frac{1}{10} < \frac{1}{8}$

⑨ $\frac{1}{4} > \frac{1}{6}$ ⑩ $\frac{5}{7} > \frac{5}{9}$

⑪ Choose one pair of fractions on this page. Tell which *Fractions Toolkit* strategy you used and explain how it helped you compare the two fractions.

Answers will vary and should reference one of the two *Fractions Toolkit* strategies.

UNIT 7 Lesson 11 49

STOP

LESSON 15 Assessing student understanding

Lesson Summary

Students demonstrate understanding of the objectives of Lessons 11–14 by completing *WorkSpace* pages independently.

Assess

Administer the Unit 7: End-of-Unit Assessment after completing the lesson.

Objectives

- Compare fractions with common numerators.
- Identify equivalent fractions.
- Communicate ideas with key math vocabulary: *common numerator, equivalent,* and *unit fraction.*

Materials

- ***WorkSpace*** pages 54 and 55
- **magnetic fraction strips** T S
- **fraction cubes** T S
- **Additional Practice**

T = Teacher Bag
S = Student Bag

Interactive Whiteboard Tools

WorkSpace pages and manipulatives for Lesson 15 are provided on the *Interactive Whiteboard Tools* CD-ROM.

Preparation

Unit 7: End-of-Unit Assessment

Make 1 copy of the assessment for each student from pages 338–339 or the *TeacherSpace* CD-ROM.

Language Development

Key Math Vocabulary

ENGLISH	SPANISH
common numerator	*numerador común*
equivalent	*equivalente*
unit fraction	*fracción unitaria*

Academic Vocabulary

ENGLISH	SPANISH
compare	*comparar*
pair	*par*
strategy	*estrategia*

WHOLE GROUP

STEP 1 Students practice toolkit strategies.

1 Introduce the lesson.

Today you will practice comparing fractions with the strategies you learned. Then you will complete an assignment that will help me know what you've learned about fractions and how I can help you learn more.

2 Present two pairs of fractions to compare.

Write $\frac{7}{12}$ and $\frac{7}{6}$, and $\frac{1}{10}$ and $\frac{1}{16}$ on the board. Then follow the process for comparing fractions established in the previous lessons. ($\frac{7}{12} < \frac{7}{6}$; $\frac{1}{10} > \frac{1}{16}$)

$$\frac{7}{12} \quad \frac{7}{6}$$

$$\frac{1}{10} \quad \frac{1}{16}$$

SUPPORTING INSTRUCTION

It's reasonable to expect students to compare fractions that are not included in their fraction pieces. However, students' understanding of improper fractions and mixed numbers may not be solid at this point. Therefore, when improper fractions or mixed numbers are presented, it makes good teaching sense to use fractions that you can model with the fraction pieces.

In this lesson, students encounter another fraction, $\frac{1}{10}$. For students who are unsure about $\frac{1}{10}$, cut another whole strip from construction paper into ten equal one-and-a-half-inch pieces to model tenths.

INDIVIDUALS

STEP 2 Students complete an assessment.

❶ Explain the directions for the assessment.

Have students turn to *WorkSpace* page 54. Explain that they are to compare each pair of fractions using their *Comparing Fractions Toolkit* strategies.

Then have them look at page 55 of their *WorkSpace*. Explain that they will fill in the missing number in each equation. Go through the following example with them, and model with the magnetic fraction strips to show that $\frac{2}{4} = \frac{4}{8}$.

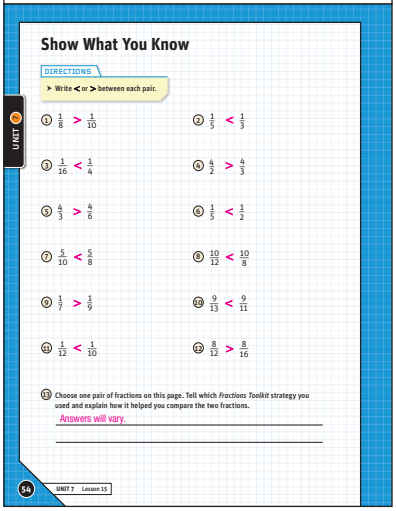
$$\frac{2}{4} = \frac{4}{8}$$

$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

Tell students that they may use their fraction pieces to complete the assessment pages.

❷ Students complete pages 54 and 55 independently.

WORKSPACE PAGE 54



Show What You Know

DIRECTIONS

➤ Write < or > between each pair.

① $\frac{1}{8} > \frac{1}{10}$ ② $\frac{1}{5} < \frac{1}{3}$

③ $\frac{1}{16} < \frac{1}{4}$ ④ $\frac{4}{2} > \frac{4}{3}$

⑤ $\frac{4}{3} > \frac{4}{6}$ ⑥ $\frac{1}{5} < \frac{1}{2}$

⑦ $\frac{5}{10} < \frac{5}{8}$ ⑧ $\frac{10}{12} < \frac{10}{8}$

⑨ $\frac{1}{7} > \frac{1}{9}$ ⑩ $\frac{9}{13} < \frac{9}{11}$

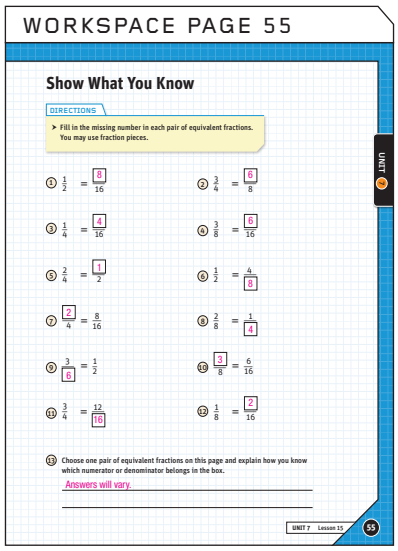
⑪ $\frac{1}{12} < \frac{1}{10}$ ⑫ $\frac{8}{12} > \frac{8}{16}$

⑬ Choose one pair of fractions on this page. Tell which *Fractions Toolkit* strategy you used and explain how it helped you compare the two fractions.

Answers will vary.

54 UNIT 7 Lesson 15

WORKSPACE PAGE 55



Show What You Know

DIRECTIONS

➤ Fill in the missing number in each pair of equivalent fractions. You may use fraction pieces.

① $\frac{1}{2} = \frac{8}{16}$ ② $\frac{3}{4} = \frac{6}{8}$

③ $\frac{1}{4} = \frac{4}{16}$ ④ $\frac{3}{8} = \frac{6}{16}$

⑤ $\frac{2}{4} = \frac{1}{2}$ ⑥ $\frac{1}{2} = \frac{4}{8}$

⑦ $\frac{2}{4} = \frac{8}{16}$ ⑧ $\frac{2}{8} = \frac{1}{4}$

⑨ $\frac{3}{6} = \frac{1}{2}$ ⑩ $\frac{3}{8} = \frac{6}{16}$

⑪ $\frac{3}{4} = \frac{12}{16}$ ⑫ $\frac{1}{8} = \frac{2}{16}$

⑬ Choose one pair of equivalent fractions on this page and explain how you know which numerator or denominator belongs in the box.

Answers will vary.

UNIT 7 Lesson 15 55

❸ Students play *Uncover 1* or *Uncover 2*.

If students finish the assessment and if time allows, they can play either *Uncover 1* or *Uncover 2*, using either a red or a blue fraction cube.

Remind students that the directions for *Uncover 1* can be found on *WorkSpace* page 42, and the directions for *Uncover 2* can be found on *WorkSpace* page 43.

AFTER THE LESSON

CheckPoint

Monitor Progress and Differentiate Instruction

Use the *Annotated WorkSpace* to assess pages 54 and 55. Although these lessons are carefully paced and scaffolded, there may be instances when students need additional support or challenges.

For Students Who Need More Support

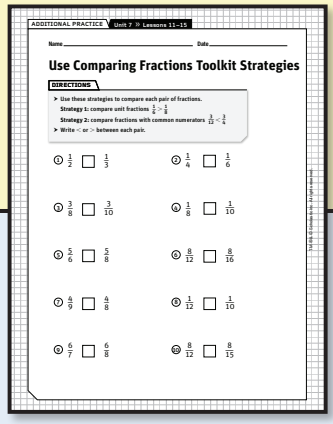
- If the student is not fluent with fractions equivalent to 1 whole, have him or her make a list of these fractions using fraction strips and record them on paper: $\frac{1}{1}$, $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, $\frac{6}{6}$, $\frac{8}{8}$, $\frac{12}{12}$, and $\frac{16}{16}$. To help the student apply that understanding to improper fractions and then mixed numbers, provide a list of fractions that are one unit fraction greater than 1 to convert to mixed numbers: $\frac{3}{2}$, $\frac{4}{3}$, $\frac{7}{6}$, $\frac{9}{8}$, $\frac{13}{12}$, and $\frac{17}{16}$. Have the student create those fractions with fraction strips and then convert them to mixed numbers with the same method used when playing *Roll Five*.
- If students have trouble with *Roll Five,* modify the activity and have students play *Roll Two* or *Roll Three*. As students gain confidence, have them play *Roll Four* and finally *Roll Five*. Starting with *Roll Two* will give them practice with fraction sums that are less than or equal to one whole.
- Play *Roll Four* or *Roll Five* with the student to give him or her practice with mixed numbers under your guidance. Have the student use the whole fraction strip to help write the mixed number. For example, if the sum is $\frac{13}{8}$, the student should use the fraction strips to model that $\frac{13}{8}$ is equivalent to 1 whole and 5 one-eighth pieces. Explain that another way to do this when you don't have the fraction strips is to break apart the fraction into one whole plus the remaining fraction.

For Students Ready for a Challenge

- Have students use small pieces of masking tape to label a fraction cube with the fractions $\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{5}$, $\frac{1}{10}$, and $\frac{1}{10}$, and have them play *Roll Five* with this new fraction cube. Also, have students make fraction strips for fifths and tenths with your guidance, using two fifteen-inch strips of colors not used for the fraction kits, such as black and pink.
- Have students place a small piece of masking tape over one of the twelfths on the blue fraction cube and label it $\frac{1}{8}$. Then have them play *Roll Five* with the new fraction cube. Students will find that if they get eighths and sixths or eighths and thirds, they will need to use twenty-fourth strips. They can make twenty-fourth strips by taking their green twelfth strips and cutting them in half. If partners work together they only need to make one set of twenty-fourths; this will preserve the twelfths from the partner's fraction kit.

ADDITIONAL PRACTICE

All students could benefit from additional practice. For your convenience, the reproducible of the Additional Practice for Lessons 11–15 is available on the *TeacherSpace*™ CD-ROM. This Additional Practice gives students more opportunities to compare unit fractions and fractions with common numerators.


ADDITIONAL PRACTICE Unit 7 ≫ Lessons 11–15

Name _____ Date _____

Use Comparing Fractions Toolkit Strategies

DIRECTIONS

➤ Use these strategies to compare each pair of fractions.
Strategy 1: compare unit fractions $\frac{1}{3} > \frac{1}{8}$
Strategy 2: compare fractions with common numerators $\frac{3}{5} < \frac{3}{4}$
➤ Write < or > between each pair.

1. $\frac{1}{2} \square \frac{1}{3}$
2. $\frac{1}{4} \square \frac{1}{6}$
3. $\frac{3}{8} \square \frac{3}{10}$
4. $\frac{1}{8} \square \frac{1}{10}$
5. $\frac{5}{6} \square \frac{5}{8}$
6. $\frac{8}{12} \square \frac{8}{16}$
7. $\frac{4}{9} \square \frac{4}{8}$
8. $\frac{1}{12} \square \frac{1}{10}$
9. $\frac{5}{7} \square \frac{6}{8}$
10. $\frac{8}{12} \square \frac{8}{15}$

End-of-Unit Assessment

Measure Student Understanding

After completing Lesson 15 and differentiating instruction, administer the Unit 7 End-of-Unit Assessment found on pages 337 and 338 or on the *TeacherSpace*™ CD-ROM.

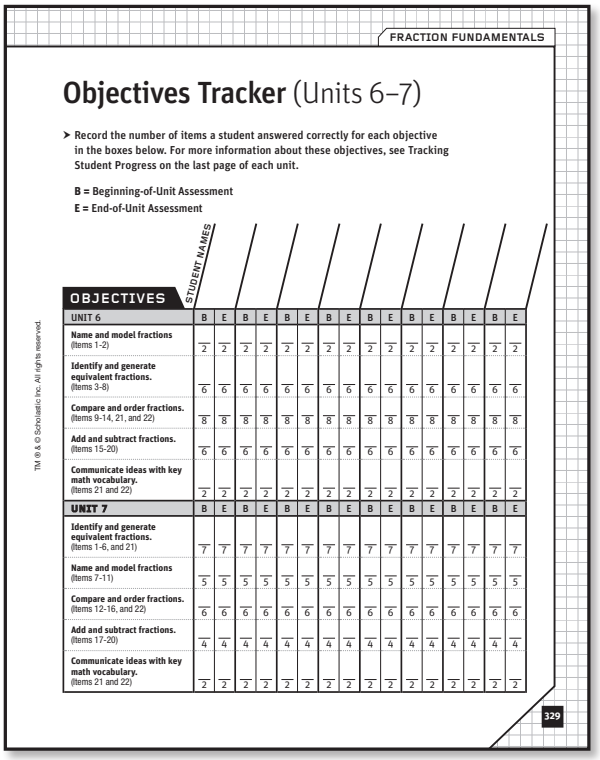
For Tracking Student Progress

Use the End-of-Unit Assessment Answer Key on page 352 to determine the number of items students answered correctly for each of the following unit objectives. Record their results on the Objectives Tracker found on page 329.

Unit objectives are listed in bold. Lesson objectives are listed below with the corresponding assessment items in parentheses.

- **Name and model fractions.**
  Use standard notation to name parts of a whole as fractions. (Items 1–3)
  Use standard notation to represent fractions greater than 1 as either a mixed number or an improper fraction. (Items 4–6)
- **Identify and generate equivalent fractions.** (Items 7–11 and 21)
- **Compare and order fractions.**
  Compare fractions with common numerators. (Items 12–16 and 22)
- **Add and subtract fractions.**
  Add fractions using visual models. (Items 17–20)
- **Communicate ideas with key math vocabulary:**
  common numerator, equal parts equivalent, fraction, is greater than, is less than whole. (Items 21 and 22)

Measure student progress and understanding by comparing student results on the Beginning- and End-of-Unit Assessments.



FRACTION FUNDAMENTALS

Objectives Tracker (Units 6–7)

➤ Record the number of items a student answered correctly for each objective in the boxes below. For more information about these objectives, see Tracking Student Progress on the last page of each unit.

B = Beginning-of-Unit Assessment
E = End-of-Unit Assessment

OBJECTIVES	STUDENT NAMES															
UNIT 6	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E
Name and model fractions (Items 1-2)	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2
Identify and generate equivalent fractions. (Items 3-8)	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6
Compare and order fractions. (Items 9-14, 21, and 22)	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8	/8
Add and subtract fractions. (Items 15-20)	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6
Communicate ideas with key math vocabulary. (Items 21 and 22)	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2
UNIT 7	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E
Identify and generate equivalent fractions. (Items 1-6, and 21)	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7	/7
Name and model fractions (Items 7-11)	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5	/5
Compare and order fractions. (Items 12-16, and 22)	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6	/6
Add and subtract fractions. (Items 17-20)	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4	/4
Communicate ideas with key math vocabulary. (Items 21 and 22)	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2	/2

329

For Further Differentiation

If you find a student is still having difficulty with one or more of the objectives, revisit the For Students Who Need More Support suggestions found on the Lesson 5, 10, and 15 **CheckPoint** pages. This student should receive individualized support to master these objectives during the next unit.

SCHOLASTIC

Do The Math® Now!

WorkSpace

Created By
Marilyn Burns

Fraction Fundamentals

Use Comparing Fractions Toolkit Strategies

DIRECTIONS

1

Strategy 1: compare unit fractions

$\frac{1}{6} > \frac{1}{8}$

Strategy 2: compare fractions with common numerators

$\frac{3}{12} < \frac{3}{4}$

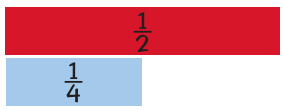
Use these strategies to compare each pair of fractions.

2

$\frac{1}{2} > \frac{1}{4}$

Write < or > between each pair.

3



You may use fraction pieces to check.

1. $\frac{1}{3}$ $\frac{1}{4}$
2. $\frac{5}{6}$ $\frac{5}{9}$
3. $\frac{1}{8}$ $\frac{1}{6}$
4. $\frac{1}{5}$ $\frac{1}{7}$
5. $\frac{2}{3}$ $\frac{2}{6}$
6. $\frac{6}{12}$ $\frac{6}{11}$
7. $\frac{3}{16}$ $\frac{3}{4}$
8. $\frac{1}{10}$ $\frac{1}{8}$
9. $\frac{1}{4}$ $\frac{1}{6}$
10. $\frac{5}{7}$ $\frac{5}{9}$

11. **Choose one pair of fractions on this page. Tell which *Fractions Toolkit* strategy you used and explain how it helped you compare the two fractions.**

Show What You Know

DIRECTIONS

➤ Write < or > between each pair.

1. $\frac{1}{8}$ $\frac{1}{10}$

2. $\frac{1}{5}$ $\frac{1}{3}$

3. $\frac{1}{16}$ $\frac{1}{4}$

4. $\frac{4}{2}$ $\frac{4}{3}$

5. $\frac{4}{3}$ $\frac{4}{6}$

6. $\frac{1}{5}$ $\frac{1}{2}$

7. $\frac{5}{10}$ $\frac{5}{8}$

8. $\frac{10}{12}$ $\frac{10}{8}$

9. $\frac{1}{7}$ $\frac{1}{9}$

10. $\frac{9}{13}$ $\frac{9}{11}$

11. $\frac{1}{12}$ $\frac{1}{10}$

12. $\frac{8}{12}$ $\frac{8}{16}$

13. Choose one pair of fractions on this page. Tell which *Fractions Toolkit* strategy you used and explain how it helped you compare the two fractions.

Show What You Know

DIRECTIONS

➤ Fill in the missing number in each pair of equivalent fractions. You may use fraction pieces.

1. $\frac{1}{2} = \frac{\square}{16}$

2. $\frac{3}{4} = \frac{\square}{8}$

3. $\frac{1}{4} = \frac{\square}{16}$

4. $\frac{3}{8} = \frac{\square}{16}$

5. $\frac{2}{4} = \frac{\square}{2}$

6. $\frac{1}{2} = \frac{4}{\square}$

7. $\frac{\square}{4} = \frac{8}{16}$

8. $\frac{2}{8} = \frac{1}{\square}$

9. $\frac{3}{\square} = \frac{1}{2}$

10. $\frac{\square}{8} = \frac{6}{16}$

11. $\frac{3}{4} = \frac{12}{\square}$

12. $\frac{1}{8} = \frac{\square}{16}$

13. Choose one pair of equivalent fractions on this page and explain how you know which numerator or denominator belongs in the box.