

# Fractions

(2 hours)

## Lesson at a Glance

### SUMMARY

They used to be called "the Three R's": Reading, 'Riting, and 'Rithmetic. In today's jargon, we refer to these subjects as "literacy" and "numeracy." Whatever you call them, they are fundamental to a good education, stable employment, and a healthy financial future.

One of the conceptual cornerstones of numeracy, or math, is an understanding of part/whole (fractional) relationships. This lesson starts from square one, with engaging and visual ways to introduce an extended unit on fractions that you might be planning.

### GOALS

- To understand the concept of fractions (part/whole)
- To understand the value of fractions on the job and in everyday life
- To be able to identify fractions of an inch

### LEARNER OUTCOMES

Students will...

- Learn basic concepts about part/whole relationships.
- Identify the numerator and denominator in a fraction.
- Learn about equivalent fractions and reducing simple fractions to lowest terms.
- Identify marks representing various fractions of an inch on a ruler.

### MATERIALS

#### VIDEO:

*Math Behind the Arts: Fractions & Rhythm*  
Episode 29: Length: 1:28, Start Time: 5:22

*Math Play: Part/Whole*

Episode 29: Length: 0:26, Start Time: 10:44

#### PRINT:

*Another Way to Look at Fractions*  
Issue 29, pp. 6–7

*Inside an Inch*  
Issue 29, p. 3

*Math on the Job*  
Issue 29, p. 4

#### STANDARD RULER

### ACTIVITIES

- View and discuss two **TV411** video segments.
- Read three *In Print* articles related to the video.
- Review twelve vocabulary words, including mathematical terms.
- Practice measuring objects with a ruler.

“There is a world  
of space between  
one and two.”

## Step by Step

### 1. INTRODUCING THE CONTENT - VIDEO 1

#### Pre-Viewing Activities

##### Discuss

- What is a fraction?  
[A number that represents parts of a whole.]
- What are some uses of fractions in everyday life?  
[One example is in grocery shopping: \$1.20 for 1/4 lb. of potato salad, etc.]
- How do we read this number?  
[One quarter or one fourth.]
- What does one quarter or one fourth of something mean?  
[It's one of four parts that you've divided the whole into, for example, 25 cents out of a dollar, 4 ounces out of a pound.]
- How well do you think you understand fractions?

#### VOCABULARY REVIEW

(for videos 1&2)

- measure
- whole
- infinite
- to equal
- equivalent
- one eighth
- one quarter or one fourth
- one half
- fraction
- numerator
- denominator
- lowest terms

### 2. MODELING THE STRATEGY - VIDEO 1

#### View Video

*Math Behind the Arts: Fractions & Rhythm*

Episode 29: Length: 5:22

Start Time: 1:28

A drummer and dancers from the chorus line of the Broadway musical "Forty-Second Street" demonstrate why fractions are important to their art forms.



## Step by Step (cont.)

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### 3. MINING THE STRATEGY - VIDEO 1

#### Post-Viewing Activities

##### Discuss

- So, how does the video define a fraction?  
[A number that represents parts of a whole. The numerator shows the number of parts, and the denominator shows the total number of parts in the whole.]
- How do we divide time into fractions?  
[We think of a day as 24 hours, and one hour as  $\frac{1}{24}$  of the day; one minute as  $\frac{1}{60}$  of the 60 minutes in an hour.]
- How does the drummer use fractions in her music?  
[She thinks of the whole as a fixed amount of time—one measure—and the parts as the number of beats she can fit into the measure. She can drum one long beat, or several shorter ones, to fill up a single measure.]
- How do the dancers use fractions?  
[They also divide time by changing the duration of their dance steps. They think of the whole as the space (or time interval) between the count of one and two. To fill up that fixed amount of time, they can tap one whole step, or two half steps, or four quarter steps, and so on.]
- What does the dance teacher mean by saying, "There's a world of space between one and two"?  
[Dancers keep time by keeping track of counts, and between the count of one and two they can fit many fractional steps.]

## Step by Step (cont.)

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### 4. EXTENDING AND PRACTICING THE STRATEGY VIDEO 1

#### Hands-On

Ask students to count the number of people in the class. The total becomes your denominator. Ask what fraction of the class...

- ...is wearing blue?
- ...is female?
- ...is over twenty-five?
- ...understands fractions?

#### Hands-On (cont.)

Explain to students that fractions can also be expressed as decimals or percents, which also represent part/whole relationships. For example,  $\frac{1}{4}$  is the same as 25% or .25.

#### Workbook Activity

Divide the class into small groups or pairs and distribute copies of *Another Way to Look at Fractions (In Print Issue 29, pp. 6–7)*. Have each group work together to solve the word problems on p. 6. The whole class can compare answers.

### 5. INTRODUCING THE CONTENT - VIDEO 2 Pre-Viewing Activities

#### Teacher Talk

Here's a short animated segment with fractions in action.

## Step by Step (cont.)

## 6. MODELING THE STRATEGY - VIDEO 2

View Video

*Math Play: Part/Whole*  
Episode 29: Length: 0:26  
Start Time: 10:44



## 7. MINING THE STRATEGY - VIDEO 2

Post-Viewing Activities

**Discuss**

What was the short animated segment all about?  
[It visualizes different ways a whole can be divided into parts.]

8. EXTENDING AND PRACTICING THE STRATEGY  
VIDEO 2**Discuss**

- What does it mean to say that two things or quantities are "equal"?
- What does "equivalent" mean?

**Workbook Activity**

Direct students to look at the pictures of the cakes on p. 7 of *Another Way to Look at Fractions*. One pan is  $\frac{8}{12}$  full. One pan is  $\frac{2}{3}$  full. Do these pans contain an equal amount of cake? Discuss why the two fractions are equivalent.

Model the steps for reducing  $\frac{8}{12}$  to its lowest terms—that is,  $\frac{2}{3}$ .

## Fractions

## Step by Step (cont.)

**Workbook Activity (cont.)**

Ask students, in groups or pairs, to do the two exercises on p. 7 and then compare answers. Ask students with the correct answers to explain how they solved the problems.

Extend the lesson by working on problems that require students to reduce fractions to lowest terms. Remind them that answers on the GED math test are always expressed in lowest terms.

**Bonus Hands-On**

Distribute rulers and copies of *Inside an Inch* (*In Print* Issue 29, p. 3) to the class. In small groups, students can read the article and find the fraction marks on their rulers.

Ask students to measure various objects in the room—a book, a windowsill, a piece of chalk—making sure each item's length includes fractions. Or, make this a competition: see how many objects can be found that include eighths, quarters, or sixteenths of an inch in their measurements.

**9. PORTFOLIO**

Students save their activity pages in their portfolio.

**10. HOMEWORK**

Distribute copies of *Math on the Job* (*In Print* Issue 29, p. 4) for students to read and complete at home.

**11. WEB CONNECTION**

For a Web lesson on this topic, go to [www.tv411.org](http://www.tv411.org), click on **Math**, then click on **What is a Fraction?**

**RELATED VIDEO AND PRINT MATERIALS**

Check out our online index at [www.tv411.org](http://www.tv411.org) for other TV411 lessons on this topic and much more.