

# Decimal Fractions

## Purpose

Students will solve problems by choosing strategies, explaining their reasoning, making calculations, and checking results.

## Materials

*For the teacher:* chalkboard or overhead projector

*For each student:* paper, pencil

## Activity

### A. Introducing the Problem

1. Tell students that they are going to convert decimals to fractions and then make those fractions as simple as possible. Then they will look for patterns in their answers.
2. Remind students that the decimal 0.07 means  $\frac{7}{100}$  and that 0.53 means  $\frac{53}{100}$ .
3. Write the decimals 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, and 0.10.
4. Have the students help you convert them to fractions (all into hundredths to start with).
5. Ask the students if any of these fractions can be changed into simpler equivalent fractions. (First, they will probably suggest  $\frac{10}{100} = \frac{1}{10}$  and  $\frac{5}{100} = \frac{1}{20}$ , but they should also find  $\frac{2}{100} = \frac{1}{50}$ ,  $\frac{4}{100} = \frac{1}{25}$ ,  $\frac{6}{100} = \frac{3}{50}$ , and  $\frac{8}{100} = \frac{2}{25}$ .)

### B. Solving the Problem

1. Place students in groups of three or four and ask each group to work with some part of the 100 conversions (e.g., 0.11-0.20 or 0.21-0.30, etc.).
2. Have student groups convert their decimals to fractions and simplify them if they can. Ask all members of a group to check the process for accuracy.
3. As groups produce answers, record them on the chalkboard.
4. Ask students to look for patterns in the answers once they can see all the fractions (e.g., what kinds of denominators do you get and where do they appear in the sequence).

(continued)



### MEETING INDIVIDUAL NEEDS

Check that all students are able to reduce fractions to lowest terms and help those who are having difficulties.



### INCORPORATING TECHNOLOGY

Have students use calculators to find numbers that might divide the numerators of more difficult fractions, such as  $\frac{38}{100}$  and  $\frac{87}{100}$ .

Standards Link  
4.1.8

## Activity (continued)

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### C. Discussion

With the whole class, discuss the patterns they found.

These could include:


- a. The only denominators are 2, 4, 5, 10, 20, 25, 50, and 100 (which are the numbers between 1 and 100 that divide 100 exactly).
- b. The denominator 2 appears just once (in the middle), the denominator 4 appears twice (at the one-quarter and three-quarter points), the denominator 5 appears every 20<sup>th</sup> number, etc.


## Questions for Review


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### Basic Concepts and Processes

During the activity, discuss the following questions with students to gauge their understanding of the indicators:

 Is this the correct fraction for this decimal?

 Can you reduce this fraction to a simpler one?

 What patterns do you see in these fractions?

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