

Fraction–Decimal Number Relationships

Connecting Fractions and Decimal Numbers Using 10x10 Grids

Materials

- overhead projector
- overhead transparency of Shaded 10x10 Grid (attached)
- copies of “Connecting Fractions and Decimal Numbers” (attached) – 1 per pair of students
- copies of “More Fraction–Decimal Number Connections” (attached) – 1 per pair of students

Activity

Show students an overhead transparency of the Shaded 10x10 Grid. Ask them to express the shaded portion of the grid in different ways. Discuss the following expressions of the shaded portion:

- as a fraction with a denominator of 100: $\frac{20}{100}$
- as a simple fraction: $\frac{1}{5}$
- as a decimal number: 0.2

Provide each pair of students with a copy of “Connecting Fractions and Decimal Numbers.” Ask students to express the shaded portion of each grid as a fraction with a denominator of 100, as a simple fraction, and as a decimal number.

After students have completed the worksheet, provide each pair of students with a copy of “More Fraction–Decimal Number Connections.” Challenge them to shade portions of the grid to find other quantities that can be expressed using a fraction with a denominator of 100, a simple fraction, and a decimal number.

With the students, develop a list of the following fraction–decimal number equivalencies on the board and have students discuss patterns they observe.

Fraction–Decimal Number Relationships

$$\frac{10}{100} = \frac{1}{10} = 0.1$$

$$\frac{20}{100} = \frac{2}{10} = \frac{1}{5} = 0.2$$

$$\frac{30}{100} = \frac{3}{10} = 0.3$$

$$\frac{40}{100} = \frac{4}{10} = \frac{2}{5} = 0.4$$

$$\frac{50}{100} = \frac{5}{10} = \frac{1}{2} = 0.5$$

$$\frac{60}{100} = \frac{6}{10} = \frac{3}{5} = 0.6$$

$$\frac{70}{100} = \frac{7}{10} = 0.7$$

$$\frac{80}{100} = \frac{8}{10} = \frac{4}{5} = 0.8$$

$$\frac{90}{100} = \frac{9}{10} = 0.9$$

Note: *This activity could be done with other manipulatives or representations of other manipulatives, such as a hundredths wheel, base-ten materials, or fraction strips. Using a variety of manipulatives also supports students who prefer to use models other than 10x10 grids.*

Fraction–Decimal Number Relationships

Close Fractions and Decimal Numbers

Activity

On the board, list five simple fractions such as the following:

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

$$\frac{3}{4}$$

$$\frac{2}{5}$$

$$\frac{7}{10}$$

$$\frac{4}{5}$$

Have students copy the fractions onto a sheet of paper and, beside each fraction, record a decimal number that is close but not equal to the fraction. For example, students might identify 0.52 as a decimal number that is close to $\frac{1}{2}$.

Ask students to name decimal numbers that are close to each fraction and record them on the board. Have students explain why each decimal number is close to the fraction.

Note: *Using a pictorial representation of the numbers or using base-ten or other concrete materials to complete this activity may help support students who are struggling.*

Fraction–Decimal Number Relationships

Mystery Decimal Numbers

Activity

Ask students to think of a mystery decimal number by giving clues that involve fractional language. For example, clues for 0.32 might be:

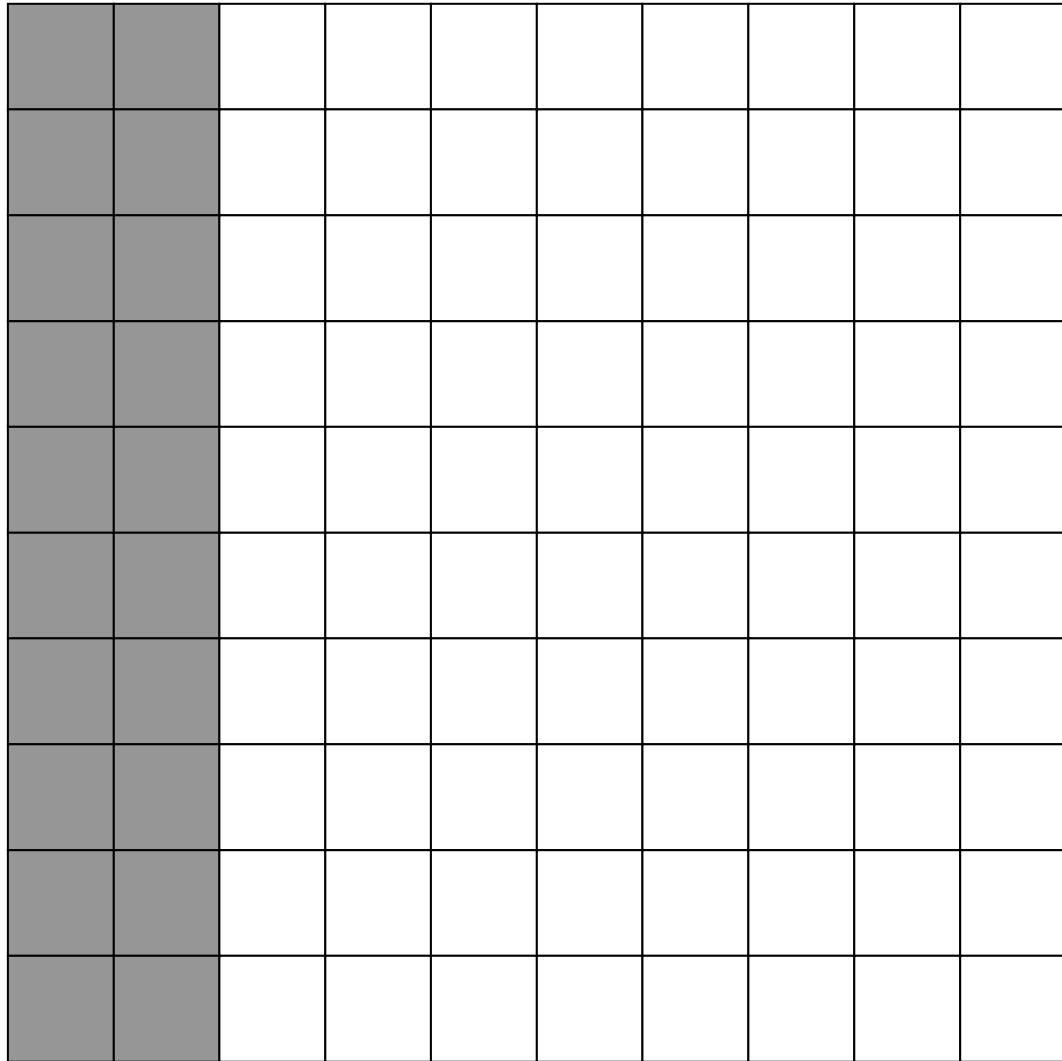
- less than one half
- greater than one fourth
- greater than 3 tenths
- less than 4 tenths

Have students write clues for mystery decimal numbers to share with their classmates.

Extension

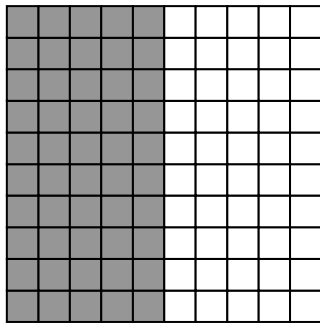
Have students create “Wanted” posters showing several clues to identify the mystery decimal number.

Shaded 10x10 Grid



Connecting Fractions and Decimal Numbers

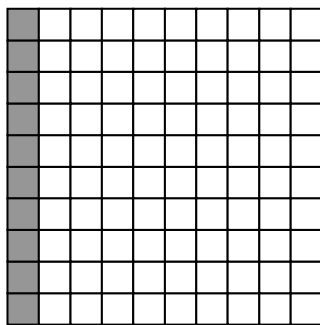
Describe the shaded portion of each grid as a fraction with a denominator of 100, as a simple fraction, and as a decimal number. The entire 10x10 grid represents one whole.



Fraction with a denominator of 100: _____

Simple fraction: _____

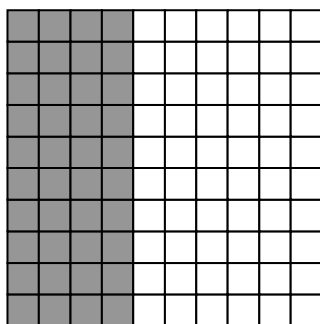
Decimal number: _____



Fraction with a denominator of 100: _____

Simple fraction: _____

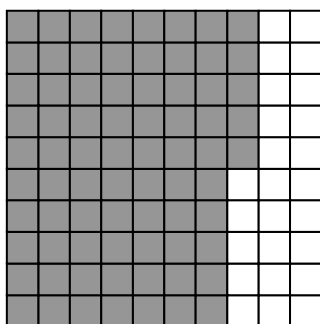
Decimal number: _____



Fraction with a denominator of 100: _____

Simple fraction: _____

Decimal number: _____



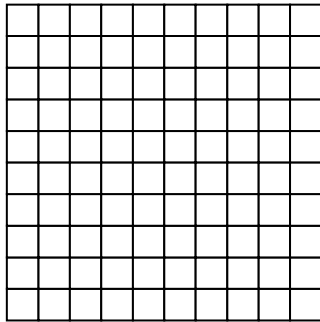
Fraction with a denominator of 100: _____

Simple fraction: _____

Decimal number: _____

More Fraction–Decimal Number Connections

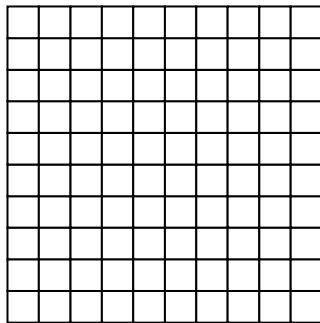
Shade portions of each grid to find other quantities that can be expressed as a fraction with a denominator of 100, as a simple fraction, and as a decimal number. The entire 10x10 grid represents one whole.



Fraction with a denominator of 100: _____

Simple fraction: _____

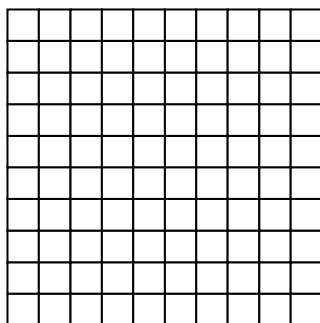
Decimal number: _____



Fraction with a denominator of 100: _____

Simple fraction: _____

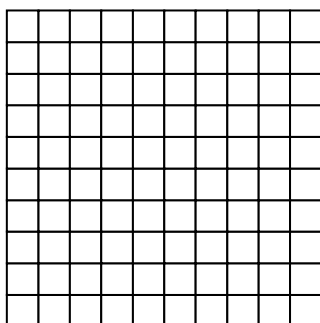
Decimal number: _____



Fraction with a denominator of 100: _____

Simple fraction: _____

Decimal number: _____



Fraction with a denominator of 100: _____

Simple fraction: _____

Decimal number: _____