Fraction Grids – A Co-Teaching Lesson Plan

Co-Teaching Approaches

A "(Y)" in front of the following list items indicates the approach is outlined in the lesson. An "(N)" in front of the following list items indicates the approach is not outlined in the lesson.

- (Y) Parallel Teaching
- (Y) Team Teaching
- (N) Station Teaching
- (Y) One Teach/One Observe
- (Y) Alternative Teaching
- (N) One Teach/One Assist

Subject

Grade 4 Mathematics

Strand

Number and Number Sense

Topic

Relating fraction and decimal equivalents

SOL

4.3 The students will

d) given a model, write the decimal and fraction equivalents

Outcomes

Students will write decimals and fractions to show how they are equivalent, and understand the relationship of fractions and decimals as it relates to the base-10 system of place-value units.

Materials

- Coffee stirrers or flat straws (ones that do not roll)
- Discovery activity sheet (attached)
- Fraction-Decimal Equivalence Recording Sheet (attached)
- Base-10 blocks (flats)
- Fraction/Decimal Equivalents Chart (attached)

Vocabulary

compare, decimal, decimal equivalent, decimal point, digit, estimate, fraction equivalent, hundredth, leading zero, order, place value, round, tenth, thousandth, whole, value

Co-Teacher Actions

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
Anticipatory Set	Team Teach	2. Ask questions for discussion on the fraction language that the students used. Record the vocabulary on the board. Ensure that they use vocabulary such as numerator/denominator, parts and whole, parts of a group. 3. Write several decimal numbers on board. Ask students to draw a representation and read the numbers to their partners. Select several students to share.	1. The SE writes fractions on the board for a variety of examples (i.e., $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{10}$) for students to read, draw a representation for, and identify/explain what each means. Have partners discuss and share their thinking for each. Select several students to share. 4. Ask questions for discussion on the decimal language that the students used. Record the vocabulary on the board. Ensure that students use vocabulary such as place value, tenths, whole numbers.
Lesson Activities/ Procedures	Alternative Teach	Have students work in small groups or pairs, have them explore different ways they might be able to represent fractions, using the base-10 blocks. Give each pair some coffee stirrers, base-10 blocks (flats), and copies of the Discovery activity sheet. Allow students only five minutes to explore, and instruct them to record their findings on the discovery handout. Facilitate each group by listening to and scaffolding their	Same as GE; however, there may be groups or individual students that need explicit examples done for them to begin the exploration on their own.

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
		discussions.	
Guided/ Independent Practice	Parallel Teach	Distribute the Fraction-Decimal Equivalence Recording Sheet. Allow students to keep the base-10 flats and stirrers for use in this activity. Ask each student to show one-half of the flat. Then ask each student to use a pencil to shade one-half of the first grid on the recording sheet. Observe students as they figure out one-half of the first grid. Discuss what different grids look like. Ask: "Do they all represent one-half?" "Do they all look the same?" "Is there more than one way to model one-half with the grid?" Discuss what students did to find one-half Ask: "How did you figure that out? Can you explain that to us?" Make sure that all students have shaded in their grids correctly. Reinforce what a row and a column are. Ask, "How many rows are in the grid?" "How many columns?" "How many rows or columns are colored in?" "How would you write that in fraction form?" ($\frac{5}{10}$) Show students how to write $\frac{5}{10}$ in decimal form (0.5). Ask, "How do you say this decimal?" (Five tenths) Emphasize that the decimal and the fraction are said the same way. Also,	Same as GE, with specially designed instruction (SDI) for the visual kinesthetic needs of some learners.* *See SDI lesson

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
		review that the first place after the decimal point is called the "tenths" place. Ask: "How many little boxes are in the grid?" (100) "How many of those boxes are shaded in?" (50) "How would you write this in fraction form?" ($\frac{50}{100}$) Show students how to write $\frac{50}{100}$ in decimal form (0.50), reviewing with them that the second place after the decimal is called the hundredths place. Ask students to go through this same process with the second grid. Tell them to use what they learned in working on the first grid to shade in the fraction and then write the equivalent decimal for the second grid. The fractions with a denominator of 5 are a little more difficult. **Differentiated Instruction** One technique is to color every fifth square, thereby forming a visual pattern. Some students will be able to reason that one-tenth is equivalent to one row on the grid, so two rows are equivalent to two-tenths or one-fifth. Another technique is to try to make five equal groups out of the 100 squares. Have students complete the remaining grids.	

Lesson Component	Co-Teaching Approach(es)	General Educator (GE)	Special Educator (SE)
		Discuss their findings, and ask them to note any relationships they notice.	
Closure	One Teach/One Assist	**Questions for students** • What are some similarities between fractions and decimals? • What are some differences?	Facilitate and scaffold students' peer discussions and think-alouds, and assist students with writing and or scribing
Formative Assessment Strategies	Team Teach	Have students use a sticky note and write an equivalent fraction/decimal they remembered from today's lesson. Have the students draw a picture to represent this fraction/decimal. Students will post it on the chart paper on the wall "labeled closure." Encourage students to brainstorm with their peers or use their notes from today. Use this to begin tomorrow's lesson.	
Homework	Team Teach	Students will practice matching fraction/decimal cards.	Same as GE, but some students will use the "five finger" sheet to assist them with homework. The SE will make sure they have both items and reinforce from the lesson to use that strategy with their homework tonight. Also, the cards may be domino-dot-coded on the back so that students can check their answers at home while matching.

Specially Designed Instruction

- Have students think about money, especially dollars and quarters.
    - Ask:
        - "How many cents are in a dollar?" (100)
        - "How many cents make a half-dollar?" (50)
        - So, 50 out of 100, or $\frac{50}{100}$, is the same as 0.50.
    - Then discuss quarters (fourths), also with the connection to money. Ask:
        - "How much are quarters worth?" (25 cents) So, let's think about one out of four quarters: $\frac{1}{4}$ is the same as 0.25.
    - Then build on and scaffold the discussion. Ask:
        - "How much is three quarters of a dollar?" (75 cents) So, let's think about three out of four quarters: $\frac{3}{4}$ is the same as 0.75
    - Finally, explain fifths using your hand. You have five fingers on your hand, ask:
    - "What can I count by using only five fingers to get to 100?" (20s)
    - So, one finger out of five, $\frac{1}{5}$, is the same as 0.20. Two fingers out of five, $\frac{2}{5}$, is the same as 0.40. Three fingers out of five, $\frac{3}{5}$, is the same as 0.60. And four out of five fingers, $\frac{4}{5}$, is the same as 0.80.
- Use the Fraction-Decimal Equivalents Chart as a guide with students and post in interactive notebooks or as a visual graphic organizer for use in finding the more common equivalent fractions.
- Use highlighting and color-coding for students to make the connections. Color the halves red, the fourths blue, the fifths green, etc.
- Use real money for students to visualize the relationship between base-10 and tenths and hundredths in decimals.
- Use of a calculator: Give explicit instruction on understanding that fractions are a division statement. Say, "One-half is 1 divided by two. Let's do that on the calculator. Now record your decimal answer. Can you read me that decimal?" (50 hundredths or five-tenths as the simplified decimal)
- Continue process with fourths ($\frac{1}{4}, \frac{2}{4}$,), fifths ($\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}$), and tenths ($\frac{1}{10}, \frac{2}{10}$ ... $\frac{9}{10}$)
- Students will color in their 10-by-10 grid to represent the decimal they calculated

Accommodations

- Use match cards for students to practice and memorize the equivalent fractions/decimals.
- Read aloud.
- Shade in 10-by-10 grids with the fraction for students to match to the correct written decimal and fraction equivalent.

- Pre-filled and colored notes to use for reference

Modifications

- For those students who require modifications, the lesson can be modified to build mastery of understanding the 10, 100 relationship in decimal place value and the corresponding fractions for each.

Notes

- "Special educator" as noted in this lesson plan might be an ELL teacher, speech pathologist, or other specialist co-teaching with a general educator.
- The co-teachers who developed this lesson plan received required professional development in the use specialized instruction techniques which combine an explicit instructional routine with the co-construction with the frame helps to develop understanding of information and procedures by associating main ideas and details. These content enhancement routines were developed at the Center for Research on Learning at the University of Kansas. http://www.kucrl.org/sim/brochures/CEoverview.pdf
- Other graphic organizers should be used by teachers who have not received professional development in these routines. If Virginia teachers would like to learn content enhancement routines, contact your regional TTAC.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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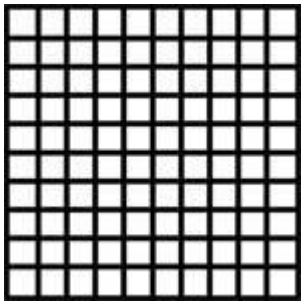
Fraction-Decimal Equivalence Recording Sheet

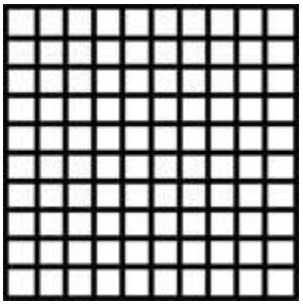
Name: _____ **Date:** _____

Shade in each grid below to represent the fraction shown above it. Use the grid to help figure out the equivalent decimal for each fraction. Write the decimal next to the fraction.

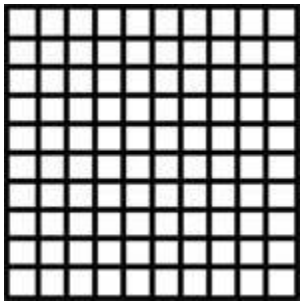
1) $\frac{1}{4}$ = _____



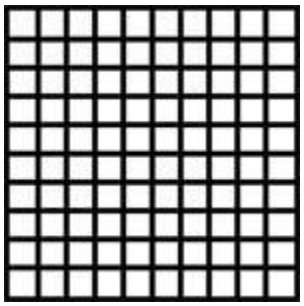
2) $\frac{1}{2}$ = _____



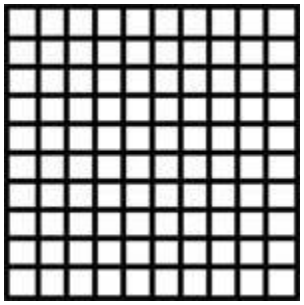
3) $\frac{1}{5}$ = _____



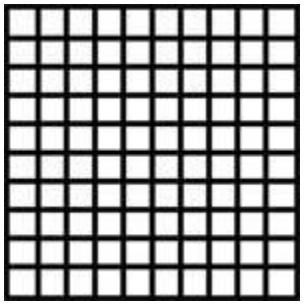
4) $\frac{2}{5}$ = _____



5) $\frac{1}{10}$ = _____

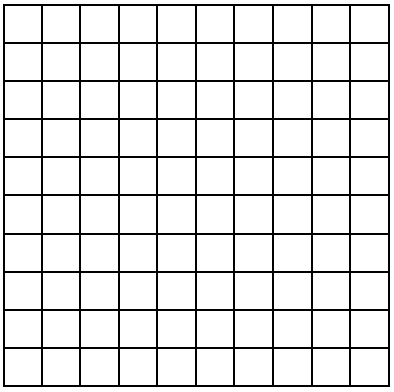
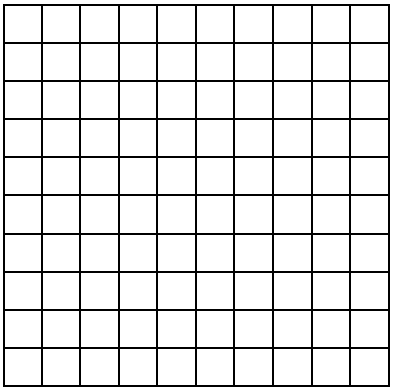
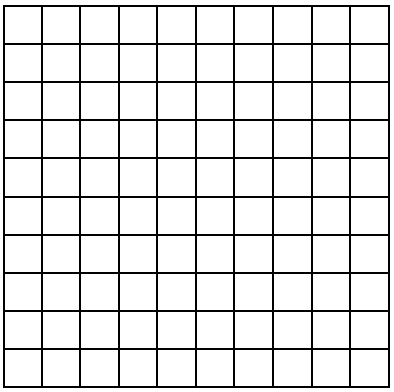


6) $\frac{3}{4}$ = _____

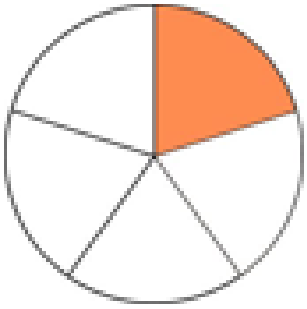
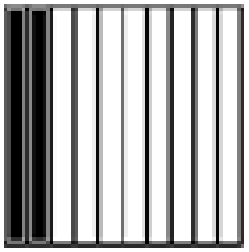
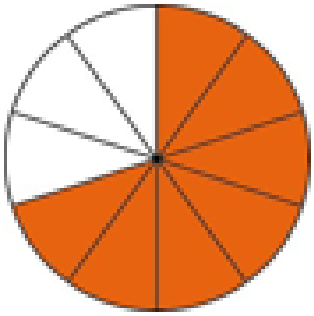
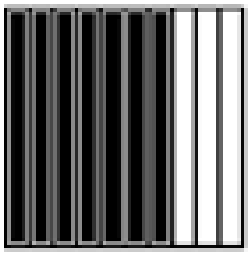
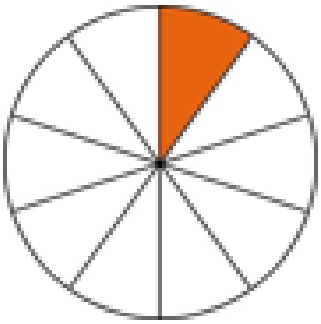
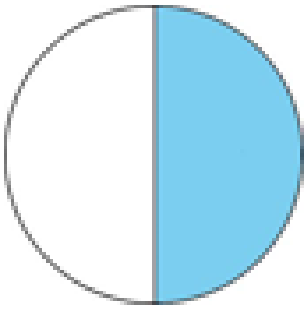
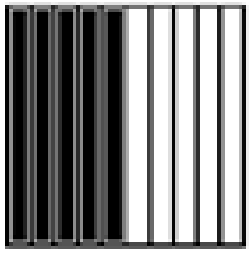
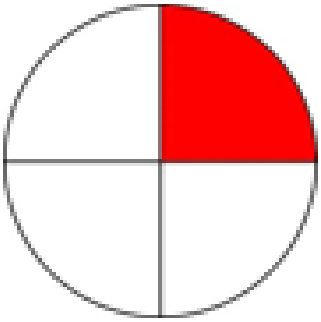
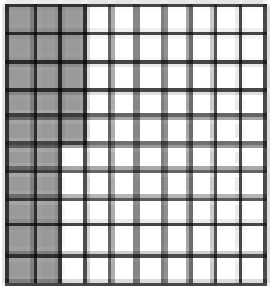


Discovery

What fraction and decimal equivalents can you find?

MODEL	FRACTION	DECIMAL
		
		
		

Fractional-Decimal Equivalents Chart

	$\frac{1}{5}$	0.2	
	$\frac{7}{10}$	0.7	
	$\frac{1}{10}$	0.1	
	$\frac{1}{2}$	0.5	
	$\frac{1}{4}$	0.25