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**Lesson 6.2d**

# Fractions and Decimals

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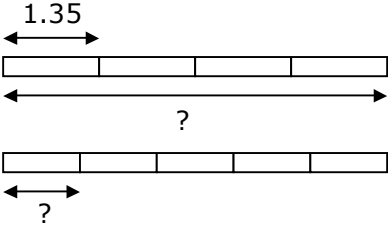
| **Objectives** | **California Standards** |
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| • Express a 2-place decimal as a fraction in its simplest form. <br> • Express a fraction with a denominator that is a factor of 100 as a decimal. | **NS 1.6:** Write tenths and hundredths in decimal and fraction notations and know the fraction and decimal equivalents for halves and fourths. |

| **Vocabulary/Phrases** | | |
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| Numerator | Simplest form | |
| Denominator | Factor | |

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| **Teaching Strategies** | | |
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| **Express 2- place decimals as fractions in simplest form** | Write 1.24 on the board and have students convert this to a fraction with 100 as the <u>denominator</u>. Ask them how this fraction can be simplified. Tell them that it can be done in either one or two steps. Lead students to see that it can be done by dividing both <u>numerator</u> and denominator by 2 and then 2 again, or in one step, by dividing both by 4. <br><br> Write 0.75 on the board and ask students to write it as a fraction in its <u>simplest form</u>. Tell them that thinking of decimals as money will make help to convert them into fractions. For example, if we remember that 3 quarters is 75 cents, we can use that to know that <br><br> $0.75 = \frac{3}{4}$ . | $1.24 = 1\frac{24}{100}$ <br><br> $= 1\frac{12}{50} = 1\frac{6}{25}$ <br><br> $0.75 = \frac{75}{100} = \frac{3}{4}$ |
| | Write a decimal on the board. Ask students how to convert this as a fraction in its simplest form. Tell them to set the denominator as 100. Lead students to see that since the <u>factors</u> of 100 are 2, 4, 5, 10, 20, 25 and 50, all 2-place decimals rewritten as fractions in their simplest form will have one of these in the denominator. <br><br> Note: Show students that a quick way of finding the equivalent fraction is to divide the numerator by 5 or 2 successively. If it cannot be divided by 5 or 2, it cannot be simplified any further. | $0.25 = \frac{1}{4}$ |
| | Write some common decimal/fraction equivalents. Encourage students to memorize them. Point out that if they know $0.20 = \frac{1}{5}$ then 0.40, which is 2 x 0.20, is also $2 \times \frac{1}{5}$ , or $\frac{2}{5}$ . | $0.20 = \frac{1}{5}$ <br><br> $0.50 = \frac{1}{2}$ |

| **Lesson 7.3f** | **Word Problems** |
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| **Objectives** | **California Standards** |
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| Solve word problems involving division of decimals. | **MR 2.1**: Use estimation to verify the reasonableness of calculated results.<br>**MR 3.2**: Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems. |
| **Vocabulary/Phrases**<br>Unit              Divide<br>Equal            Total | |

| **Teaching Strategies** | | |
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| **Word problems involving division of decimals** | Use **tasks 23-26, Textbook p. 65-66** to discuss word problems involving division of decimals. Make sure that students are able to relate the word problems to the drawings on these pages. In each of the drawings, the parts are <u>equal</u> <u>units</u>. A major strategy in solving these type of word problems is to find the value for one unit. In problems that involve <u>division</u> as a first step, we are usually given either the <u>total</u> or the value of several units and need to first find the value of 1 unit.<br><br>For task 23:<br><br>1 unit represents the cost of 1 packet of dates. All units are the same since each packet costs the same. We need to find the value of 1 unit.<br><br>5 units = $8<br><br>1 unit = $8 ÷ 5 = $1.60<br><br>2 units = $1.60 × 2 = $3.20 | Textbook p. 65<br>23. 3.20<br>24. 3.60, 3.60<br>Textbook p. 66<br>25. 0.95, 0.95<br>26. 1.08, 1.08 |
| | For task 24:<br><br>The shorter bar is 1 unit of money. The longer bar represents 3 times as much money, and is therefore 3 units.<br><br>3 units = $5.40<br><br>1 unit = $5.40 ÷ 3 = $1.80<br><br> We can find how much more one has than the other by subtraction, as shown in the text. If we have the unit value, we may also use multiplication.<br><br>2 units = $1.80 × 2 = $3.60<br><br>You can also ask how much money they have altogether.<br><br>4 units = $1.80 × 4 = $7.20<br><br>or: $5.40 + $1.80 = $7.20 | |

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| | For task 25:<br>5 units = 5 − 0.25 = 4.75<br>1 unit = 4.75 ÷ 5 = 0.95 |

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| | For task 26:<br><br>Have students illustrate this problem with a diagram and ask them to share their solutions. A possible solution is as follows. We can draw two bars of the same length to represent the total amount of flour. Divide one bar into fourths, for the amount of flour in each packet. Divide the other up into fifths, for the amount of flour in each cake. First, we find the total amount of flour, using the first bar, then use that to find the value of each unit in the second bar. | 1.35<br><br>?<br><br>?<br><br>1 unit (packet) = 1.35 kg<br>4 units (packets) = 1.35 kg × 4 = 5.4 kg<br><br>5 units (cakes) = 5.4 kg<br>1 unit (cake) = 5.4 ÷ 5 = 1.08 kg |
| **Activity** | Provide students with worksheets containing 5 division problems. Let students see how fast they can find the correct answers. You can do this at the beginning or end of other sessions so students can see if their work is improving. | |
| **Practice** | Workbook Exercise 20, p. 74–76 | |