
TIPS FROM JEFF AND SHARON ON TEACHING BUSINESS MATH

Chapter 2

1. Talk to the students about the *Wall Street Journal* clip “Asia Delivers for McDonald’s.” Talk about how $\frac{1}{3}$ of sales in Egypt are from delivery. Bring in a bag of M&M’s® Chocolate Candies and see how close this pack is to the results shown in the introduction to Chapter 1.
 2. Talk about pizza— $\frac{1}{2}$ or $\frac{4}{8}$ is the same amount of pizza.
 3. Talk about the step approach since many students have not seen this. Keep reinforcing the function of each color.
 4. Go over the prime numbers and how to find the least common denominator.
 5. Do the drill and word problems at the end of the chapter. Remind them of the extra practice quizzes that are available. Recommend the Interactive Chapter Organizers. Cover the Critical Thinking Discussion Questions and Concept Checks. Keep in mind that at the end of the text in Appendix A there are drill and word problems by learning unit.
 6. The *Kiplinger* article, as well as the Surf to Save, gives you lots of different slants for your class.
 7. You may want to talk about how to use the text’s website.
- P.S. If you are looking to review chapter one, you may want to print the word problems in chapter one called “Additional Problems for Classroom Use.” These five problems in each chapter make a good cumulative review.

C H A P T E R

2

FRACTIONS

Outline**LU 2-1 Types of Fractions and Conversion****Procedures**

1. Types of fractions
 - a. Proper, improper, mixed
2. Conversion procedures
 - a. Improper to whole or mixed
 - b. Mixed to improper
 - c. Converting to lowest terms
 1. Observation
 2. Step approach
 - a. Divide smaller number into larger
 - b. Divide remainder into previous divisor and continue process until no remainder results
 - d. Converting fractions to higher terms
 1. Requires multiplying the numerator and denominator by the same number

LU 2-2 Fraction and Decimal Conversion

1. Converting decimal fractions to decimals
 - a. Count the number of zeros in the denominator
 - b. Place the numerator of the decimal fraction to the right of the decimal point the same number of places as you have zeros in the denominator.
2. Converting proper fractions to decimals
 - a. Divide the numerator of the fraction by its denominator
3. Converting mixed numbers to decimals
 - a. Convert the fractional part of the mixed number to a decimal
 - b. Add the converted fractional part to the whole number
4. Converting pure and mixed decimals to

Points to Stress Based on Typical Student Misconceptions

$3\frac{2}{4}$ is a proper fraction. As seen in The Wall Street

Journal clip on drive-through windows.

Denominator stays the same in converting to an improper from a mixed number.

Last divisor is the greatest common divisor. Fractions raised to higher terms are equivalent in value.

Words to right of decimal end in ths

In rounding decimals, be sure to drop all digits to right of the identified digit

decimal fractions

- a. Place the digits to the right of the decimal point in the numerator of the fraction.
Omit the decimal point.
- b. Put a number 1 in the denominator of the fraction
- c. Count the number of digits to the right of the decimal point. Add the same number of zeros to the denominator of the fraction.
For mixed decimals, add the fraction to the whole number.

LU 2-3 Basic Math Functions with Fractions

1. Adding and subtracting fractions
2. Multiplying proper fractions
 - a. Use of cancellation
 1. Divide a number into a numerator and denominator
3. Division of fractions
 - a. Use the reciprocal (divisor inverted) and multiply
4. Dividing mixed numbers
 - a. Change to improper fractions, invert divisor and multiply

Always reduce answers to lowest terms. This will not be necessary if canceling is completely done. Canceling has no one set order.

CHAPTER 2 THE POCKET CALCULATOR WORKSHOP HANDOUT

The Problem: Frank Puleo bought 6,625 acres of land in ski country. He plans to subdivide the land into parcels of $13\frac{1}{4}$ acres each. Each parcel will sell for \$125,000. How many parcels of land will Frank develop? If Frank sells all the parcels, what will be his total sales?

Part I**Step 1**

13 [×] 4 [+] 1 [=]

Display

53

This gets the $13\frac{1}{4} = \frac{53}{4}$ **Step 2**

6625 [×] 4 [÷] 53 = M+

500

125000 [×] MR [=]

62500000

Part II (Do not clear, continue on.)**Step 3**

3 [×] [MR] [÷] 5 [×] 125000 [=]

37500000

Stored in M+ is the 500 that represents number of parcels.

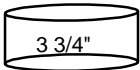
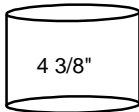
This figure is recalled [MR] in Step 3 to calculate total sales.

CHAPTER 2 SUGGESTED SOLUTIONS TO CRITICAL THINKING DISCUSSION QUESTIONS WITH CHAPTER CONCEPT CHECK

- Divide the numerator by the denominator.
If you have no remainder, the quotient is a whole number.
If you have a remainder, the answer is a mixed number with the remainder placed over the old denominator as the proper fraction of the mixed number.
 $\frac{3}{2}$ of a pizza is really $1\frac{1}{2}$ pizza; $\frac{8}{8}$ is really one pizza sliced into 8 parts.
- Multiply the whole number by the denominator (Step 1).
Add the answer from Step 1 to the numerator (Step 2).
Place the answer in Step 2 over the old denominator (Step 3).
John ordered 4 doughnuts and ate $3\frac{1}{2}$ or $\frac{7}{2}$ of the doughnuts.
- The greatest common divisor is the largest possible number (divisor) that will divide evenly into both the numerator and denominator.
If we divide the top and bottom by 5, the greatest common denominator, we could say 7 out of 12 people prefer MCI to AT&T.
- Step 1: Divide the smaller number of the fraction into the larger number.
Step 2: Divide the remainder into the divisor of Step 1. Continue this process until you have no remainder.
Step 3: The last divisor you see is the greatest common divisor.

$$\begin{array}{r} 35 \\ \underline{60} \end{array} \quad \begin{array}{r} 35 \overline{)60} \\ \underline{35} \\ 25 \end{array} \quad \begin{array}{r} 25 \overline{)35} \\ \underline{25} \\ 10 \end{array} \quad \begin{array}{r} 10 \overline{)25} \\ \underline{20} \\ 5 \end{array} \quad \begin{array}{r} (5) \overline{)10} \\ \underline{10} \\ 0 \end{array}$$

- To add proper fractions with different denominators you should: Find LCD; change each fraction to a like fraction; add the numerators and place total over the LCD; if necessary, reduce the answer to lowest terms.
To subtract proper fractions with different denominators you should: Find the LCD; raise the fraction to its equivalent value; subtract the numerators and place answer over the LCD; if necessary, reduce the answers to lowest terms.
When subtracting mixed numbers (when borrowing is necessary) you should: make sure the fractions have the LCD; borrow from the whole number; subtract the whole numbers and fractions; reduce the fraction(s) to lowest terms.

 Campbell's Soup	 OceanSpray Cranberry Sauce	$\begin{array}{r} 4\frac{3}{8} = \\ - 3\frac{3}{4} = \\ \hline \end{array} \quad \begin{array}{r} 4\frac{3}{8} = \\ \underline{3\frac{6}{8}} = \\ \hline \end{array} \quad 3\frac{11}{8} \left(\frac{3}{8} + \frac{8}{8} \right)$ $\frac{5}{8} \text{ difference}$
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6. A prime number is a whole number greater than one that is only divisible by itself and one. The number one is not a prime number.

$$\begin{array}{r|rr} 2 & 8 & 4 \\ \hline & 4 & 2 \\ & 2 & 1 \end{array} \quad \text{LCD} = 2 \times 2 \times 2 \times 1 = 8$$

7. In multiplying proper fractions you would multiply the numerators and denominators; reduce to lowest terms or use the cancellation method. If you are multiplying mixed numbers you would convert the mixed numbers to improper fractions before completing the above steps.

Let's say you bought $4\frac{1}{2}$ cartons of computer paper at Staples. Within a week, $\frac{2}{3}$ of the paper was used up. How much paper is left?

$$\frac{1}{3} \times 4\frac{1}{2} = \frac{1}{3} \times \frac{9}{2} = \frac{3}{2} = 1\frac{1}{2} \text{ cartons}$$

8. Chapter Concept Check: Answers will vary depending on students' research.

Kiplinger Worksheet

Date _____ Name _____

A Group Project

In your group you will have to either defend or reject the following business math issue based on the *Kiplinger's Personal Finance Magazine* article just presented:

The Business Math Issue

In the long run, living at home after college results in losing one's independence.

1. Write down the key points of the Kiplinger article and list information you think is missing from the article to support your position.

2. Write a group defense of your position. If possible use business math calculations to support your defense. Have a member of the group make an oral presentation.

Teaching Guide to Kiplinger Chapter 2

Points to consider:

- Unemployment rate
- Amount of debt incurred
- Paying rent
- Forcing savings
- Short vs. Long run plan
- Family relationships
- Time to stand on one's own feet
- Health issues
- Age of parents

**CHAPTER 2 ADDITIONAL WORD PROBLEMS FOR
CLASSROOM USE**

1. The computerized version of Monopoly slashes playing time by $\frac{2}{3}$ compared to the board game. The Randolphins play the board game in $9\frac{1}{2}$ hours. If they buy the computerized version, how long will it take them to play? How much time do they save? Prove your answers.
2. The following is the recipe to make one dozen muffins: $1\frac{1}{2}$ cups flour; $\frac{1}{3}$ cups sugar; 2 tsps. baking powder; 1 egg; $\frac{1}{2}$ cup Crisco; $\frac{3}{4}$ cup skim milk; $\frac{3}{4}$ cup blueberries. If Ron Regis wants to make 18 muffins, how much of each ingredient will be required for the recipe?
3. Last year the price of a Jeep wagon was \$16,000. It was announced that this year's price would go up by $\frac{1}{8}$ of last year's price. This year the dealer expects to make a profit of $\frac{1}{9}$ of the selling price. What is the new car price and what is the profit that a dealer makes on the sale of the Jeep?
4. A Texaco station was being remodeled. The contractor said the job would take $38\frac{1}{2}$ hours to complete. To date the contractor has worked the following hours:
M - $4\frac{1}{2}$; T - $9\frac{1}{2}$; W - $3\frac{1}{4}$; TH - $4\frac{1}{8}$; F - $6\frac{1}{4}$
How much longer should the job take to be completed?
5. Pete and Bill are having a debate as to which of the following fractions is the largest:

$$\frac{3}{10} \quad \frac{1}{4} \quad \frac{2}{5}$$

Using the LCD by prime numbers, could you settle this debate?

CHAPTER 2 SOLUTIONS FOR ADDITIONAL WORD PROBLEMS FOR CLASSROOM USE

Solution 1 $\frac{2}{3} \times 9\frac{1}{2} = \frac{1}{3} \times \frac{19}{2} = \frac{19}{6} = 3\frac{1}{6}$ hours to play
 $\frac{2}{3} \times 9\frac{1}{2} = \frac{2}{3} \times \frac{19}{2} = \frac{38}{6} = 6\frac{2}{6} = 6\frac{1}{3}$ hours saved

Check

$$\begin{array}{r} 9\frac{1}{2} = \quad 9\frac{3}{6} \\ -6\frac{1}{3} \quad -6\frac{2}{6} \\ \hline \quad \quad 3\frac{1}{6} \end{array}$$

Solution 2 Flour $1\frac{1}{2} \times 1\frac{1}{2} = \frac{3}{2} \times \frac{3}{2} = \frac{9}{4} = 2\frac{1}{4}$ cups
 Sugar $\frac{1}{3} \times \frac{3}{2} = \frac{3}{6} = \frac{1}{2}$ cup
 Baking powder $2 \times \frac{3}{2} = \frac{6}{2} = 3$ tsps.
 Egg $1 \times \frac{3}{2} = \frac{3}{2} = 1\frac{1}{2}$ eggs
 Crisco $\frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$ cup
 Milk $\frac{3}{4} \times \frac{3}{2} = \frac{9}{8} = 1\frac{1}{8}$ cups
 Blueberries $\frac{3}{4} \times \frac{3}{2} = \frac{9}{8} = 1\frac{1}{8}$ cups

Solution 3 $1\frac{1}{8} = \frac{9}{8} \times \$16,000 = \$18,000$ cost of new car
 $\frac{1}{9} \times \$18,000 = \$2,000$ profit

Solution 4 $4\frac{1}{2} = 4\frac{4}{8}$
 $9\frac{1}{2} = 9\frac{4}{8}$
 $3\frac{1}{4} = 3\frac{2}{8}$
 $4\frac{1}{8} = 4\frac{1}{8}$
 $6\frac{1}{4} = 6\frac{2}{8}$
 $26\frac{13}{8} = 27\frac{5}{8}$

$$\begin{array}{r} 38\frac{1}{2} = 38\frac{4}{8} = 37\frac{12}{8} \\ -27\frac{5}{8} = 27\frac{5}{8} = 27\frac{5}{8} \\ \hline \quad \quad \quad 10\frac{7}{8} \text{ hours to go} \end{array}$$

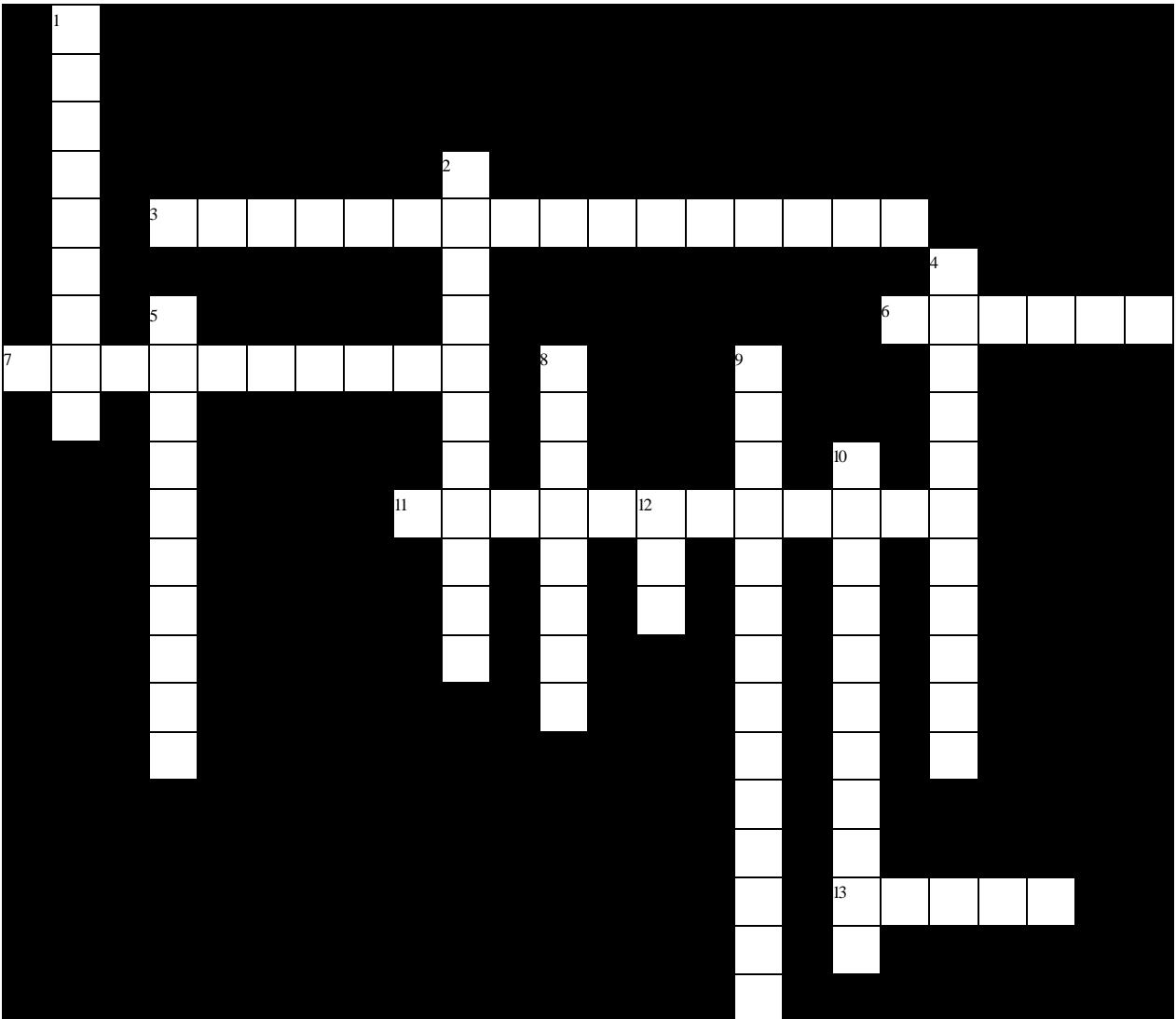
Solution 5

$$\begin{array}{r} 2 \quad | \quad 10 \quad 4 \quad 5 \\ 5 \quad | \quad 5 \quad 2 \quad 5 \\ \hline 1 \quad 2 \quad 1 \end{array} \quad 2 \times 5 \times 1 \times 2 \times 1 = 20$$

$$\frac{3}{10} = \frac{6}{20}; \quad \frac{1}{4} = \frac{5}{20}; \quad \frac{2}{5} = \frac{8}{20}$$

$\frac{2}{5}$ is the largest

Chapter 2 Crossword Puzzle



Across

- 3 Numerator is equal to or greater than denominator
- 6 Numerator is less than denominator
- 7 A fraction should be reduced to its _____
- 11 The reducing process
- 13 Whole number and proper fraction

Down

- 1 Top of fraction
- 2 Bottom of fraction
- 4 Only divisible by itself and one
- 5 Flipping a fraction
- 8 A form expressing a relationship
- 9 Largest possible number to divide evenly into top and bottom of a fraction
- 10 Fractions can be raised to _____
- 12 Abbreviation for least common denominator

Chapter 2 Solution

