LIFEPAC®

Consumer Math

Student Book

Unit 2

Alpha Omega Publications®

CONSUMER MATHEMATICS 2
FRACTIONS, DECIMALS, AND PERCENT

CONTENTS

Author:	Barbara L. Hintze
Editor-In-Chief:	Richard W. Wheeler, M.A.Ed.
Editor:	Robin Hintze Kreutzberg, M.B.A.
Consulting Editor:	Robert L. Zenor, M.A., M.S.
Illustrator:	Thomas Rush

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804 N. 2nd Ave. E., Rock Rapids, IA 51246-1759

FRACTIONS, DECIMALS, AND PERCENT

If we limited ourselves to whole numbers, much mathematical activity would be impossible. Any arithmetic or rational number that is not a whole number is a fraction of some kind. Fractions are essential to proper manipulation of much of the data available to us. For these reasons, and others, we embark upon a study of fractions.

OBJECTIVES

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFEPAC®

When you have finished this LIFEPAC, you should be able

1. To define a fraction.
2. To define the numerator and denominator of a fraction.
3. To identify and work with proper and improper fractions and mixed numbers.
4. To add, subtract, multiply, and divide fractions.
5. To use fractions in problems involving measurement, purchasing, distribution, and other consumer activities.
6. To convert fractions to decimals.
7. To convert decimals to fractions.
8. To add, subtract, multiply, and divide numbers involving decimals.
9. To solve consumer-related problems using decimals.
10. To change decimals and fractions to percent.
11. To change percents to decimals and fractions.
12. To work base-rate-percentage problems.
13. To solve consumer-related problems with percents.

Survey the LIFEPAC. Ask yourself some questions about this study. Write your questions here.

I. FRACTIONS

OBJECTIVES

1. To define a fraction.
2. To define the numerator and denominator of a fraction.
3. To identify and work with proper and improper fractions and mixed numbers.
4. To add, subtract, multiply and divide fractions.
5. To use fractions in problems involving measurement, purchasing, distribution, and other consumer activities.

You have no doubt met fractions before. If you are like most people, you found the meeting at least mildly unpleasant. Most people stay away from fractions as much as they can. However, fractions are more or less inevitable. We need to know how to deal with fractions when we find them.

One of the reasons fractions are inevitable is that things in this world rarely come out even. You may have ten cookies and three people to distribute them to. Hardly ever does your mother buy a whole pie or cake per person. Activities don't usually last exactly an hour. The tank of gasoline needs more than five gallons, but less than six. The dress takes three yards of material and a little bit more. These pieces, these leftovers, these divisions are fractions. If an arithmetic number is not a whole number (remember them?) it is a fraction.

Another reason that fractions are inevitable is that so many of them exist. In fact, for every whole number, an infinite number of fractions exists. For example, take the whole number 3. Some of the fractions involving 3 are $\frac{3}{2}$, $\frac{3}{3}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{3}{6}$, and so on. Since so many fractions are around, we are bound to run into them sooner or later, so let's get on with learning how to deal with them.

TERMINOLOGY

What is a fraction? You may know what a fraction looks like, but a formal definition of what a fraction is should help you to understand and use fractions.

DEFINITIONS

A. A *fraction* is a symbol consisting of three parts: a horizontal bar, a whole number above the bar, and a whole number other than zero below the bar.

B. The *numerator* of a fraction is the number above the bar.

C. The *denominator* of a fraction is the number below the bar.

Models: A. $\frac{2}{5}$, $\frac{7}{16}$, $\frac{8}{3}$, $\frac{0}{7}$, $\frac{13}{13}$

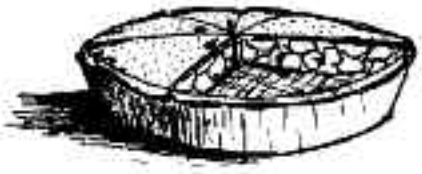
B. The numerator of $\frac{7}{13}$ is 7.

C. The denominator of $\frac{7}{13}$ is 13.

A fraction can represent several different situations. Sometimes it represents a *part of a whole*. When I say that I have $\frac{3}{8}$ of a pie left, I mean that the pie was cut into eight pieces and three of them are gone.

Sometimes a fraction represents a *division*. The fraction $\frac{5}{8}$ can mean 5 divided by 8.

Sometimes a fraction represents a *ratio*. If I say the class is $\frac{5}{8}$ girls, I mean that the ratio of girls to people in the class is 5 to 8. That is, for every eight people in the class, five are girls.



When you read a fraction, you usually say a *th* after the name of the denominator. For example, $\frac{3}{8}$ is read *three-eighths*; $\frac{4}{11}$ is read *four-elevenths*. This method is correct, but can get awkward when the denominator is large. We usually use the word *over* for fractions with large denominators. For example, $\frac{3}{107}$ is usually read *three over one hundred seven*.

[redacted] Write definitions for the following words.

1.1 fraction _____

_____

1.2 numerator _____

_____

1.3 denominator _____

_____

[redacted] On the blanks, write three items a fraction can represent.

1.4 _____

1.5 _____

1.6 _____

If the denominator of a fraction is larger than the numerator, then the fraction is less than 1. For example, $\frac{5}{8}$ and $\frac{3}{8}$ are less than 1. (Remember that one meaning of $\frac{5}{8}$ is that we had eight pieces, and three are gone). This type of fraction is called a *proper fraction*.

DEFINITION

Fractions that are less than 1 are called *proper fractions*.

If the denominator of a fraction is smaller than the numerator, then the fraction is greater than 1. For example, $\frac{16}{7}$ is greater than 1. (Remember that one thing a fraction can represent is a division. 16 divided by 7 is more than 1). This type of fraction is called an *improper fraction*.

An improper fraction can be written as a *mixed number*. The improper fraction $\frac{15}{7}$ can be written as $2\frac{2}{7}$. Notice that $2\frac{2}{7}$ has a whole number part (2) and a fraction part ($\frac{2}{7}$).

DEFINITIONS

An *improper fraction* is a fraction that is greater than 1.

A *mixed number* contains a whole number part and a fraction part.

Suppose the numerator and the denominator of a fraction are equal. What kind of fraction do we have? This kind of fraction is just another way to write 1. For example, $\frac{3}{3}$, $\frac{13}{13}$, $\frac{87}{87}$, $\frac{1046}{1046}$ are all ways to write 1.

On the blanks identify the fractions as *proper*, *improper*, or *mixed*. If the fraction is a way to write 1, put 1 in the blank.

1.7 $\frac{3}{8}$ _____

1.8 $4\frac{3}{4}$ _____

1.9 $\frac{16}{12}$ _____

1.10 $\frac{17}{18}$ _____

1.11 $\frac{18}{17}$ _____

1.12 $\frac{17}{17}$ _____

Another definition related to fractions describes *equivalent fractions*.

DEFINITION

Equivalent fractions are fractions that have the same numerical value.

Model 1: We saw that $\frac{3}{3}$, $\frac{13}{13}$, and $\frac{1046}{1046}$ all have the same value: They are all equal to 1. Therefore, they are equivalent fractions.

Model 2: Notice that $\frac{3}{6}$ is equivalent to $\frac{1}{2}$.

Model 3: Notice that $\frac{1}{3}$ is equivalent to $\frac{2}{6}$.

We find fractions equivalent to any given fraction by multiplying or dividing the numerator and the denominator of the fraction by the same number.

Model 4: $\frac{15}{20}$ $\frac{15}{20} = \frac{5 \cdot 3}{5 \cdot 4} = \frac{5}{5} \cdot \frac{3}{4} = 1 \cdot \frac{3}{4} = \frac{3}{4}$

If we divide 15 by 5, we get 3. If we divide 20 by 5, we get 4. Therefore, $\frac{3}{4}$ is equivalent to $\frac{15}{20}$.

Model 5: $\frac{3}{8}$ If we multiply 3 by 60, we get 180. If we multiply 8 by 60, we get 480. Therefore, $\frac{180}{480}$ is equivalent to $\frac{3}{8}$.

Each fraction has many equivalents.

Find two fractions equivalent to each given fraction and write them in the blanks.

1.13 $\frac{1}{3}$ a. _____ b. _____

1.14 $\frac{21}{28}$ a. _____ b. _____

1.15 $\frac{3}{5}$ a. _____ b. _____

1.16 $\frac{100}{200}$ a. _____ b. _____

1.17 $\frac{7}{12}$ a. _____ b. _____

1.18 $\frac{6}{9}$ a. _____ b. _____

If the numerator and the denominator of a fraction can both be divided evenly by a certain number, we call this number a *common factor*. If the numerator and denominator have a common factor, the fraction can be reduced by dividing both numerator and denominator by the common factor. For example, $\frac{12}{15}$ can be reduced to $\frac{4}{5}$ by dividing both numerator and denominator by 3. Note that the new fraction is equivalent to the original. When the only common factor is 1, the fraction is said to be *reduced to lowest terms*.

DEFINITIONS

A *common factor* is a number that divides evenly into both the numerator and the denominator of a fraction.

A fraction is *reduced to lowest terms* when the only common factor of the numerator and the denominator of the fraction is 1.

Reduce the following fractions to lowest terms. Some may already be in lowest terms. If so, write them in the blank as they are.

1.19 $\frac{7}{14}$ _____

1.20 $\frac{6}{9}$ _____

1.21 $\frac{3}{8}$ _____

1.22 $\frac{20}{25}$ _____

Since fractions are arithmecic numbers, we need to learn how to perform arithmetic operations with them. First, let's talk about how to add and subtract. Multiplication and division come next.

ADDITION

If the fractions we want to add (or subtract) have the same denominator, what we do is add (or subtract) the numerators and put the result over the denominator.

Models: $\frac{3}{11} + \frac{6}{11} = \frac{3+6}{11} = \frac{9}{11}$

$\frac{1}{3} + \frac{1}{3} = \frac{1+1}{3} = \frac{2}{3}$

$\frac{7}{12} + \frac{7}{12} = \frac{7+7}{12} = \frac{14}{12}$

$\frac{6}{9} - \frac{2}{9} = \frac{6-2}{9} = \frac{4}{9}$

Add or subtract the following fractions and write the answer on the line.

1.23 $\frac{1}{4} + \frac{2}{4} =$ _____

1.24 $\frac{3}{8} - \frac{2}{8} =$ _____

1.25 $\frac{6}{11} + \frac{3}{11} =$ _____

1.26 $\frac{4}{10} - \frac{3}{10} =$ _____

1.27 $\frac{8}{9} - \frac{3}{9} =$ _____

1.28 $\frac{7}{7} + \frac{3}{7} =$ _____

1.29 $\frac{14}{3} + \frac{6}{3} =$ _____

1.30 $\frac{6}{13} - \frac{1}{13} =$ _____

Suppose, however, that we want to add two fractions that do not have equal denominators. For example, suppose we want to add $\frac{1}{4}$ and $\frac{2}{5}$. We need to change these fractions in some way so that we can add them. What we do is change them so that they have the same denominator, and then we can add them as we did before. Now, the question is, how do we change $\frac{3}{4}$ and $\frac{2}{5}$ so that they have the same denominator?

Remember how to find a fraction equivalent to $\frac{3}{4}$? We can find an equivalent fraction by multiplying both numerator and denominator by the same number. Suppose we use 5. We find that $\frac{15}{20}$ is equivalent to $\frac{3}{4}$, the first fraction we want to add. Now consider $\frac{2}{5}$, the second fraction we want to add. If we multiply both numerator and denominator by 4, we find that $\frac{8}{20}$ is equivalent to $\frac{2}{5}$. Now we can add $\frac{15}{20}$ and $\frac{8}{20}$ and get $\frac{23}{20}$.

How do we determine what to multiply by to make the denominators the same? We find a *common denominator*.

DEFINITION

A *common denominator* of two fractions is a number that both denominators will divide into evenly, with no remainder.

In our example with $\frac{1}{4}$ and $\frac{2}{5}$, we find a number that both 4 and 5 will divide into evenly. That number, 20, becomes the denominator of our answer. Then we find the equivalent form of each fraction that has that number for a denominator.

Let's look at another example. Try to add $\frac{3}{7}$ and $\frac{1}{4}$. What number will both 7 and 4 divide into evenly? Right, 28. So 28 becomes the denominator of our answer. How do we find an equivalent of $\frac{3}{7}$ that has 28 for a denominator? We multiply both numerator and denominator by 4. This step gives $\frac{12}{28}$. How do we get an equivalent for $\frac{1}{4}$ that has 28 as a denominator? We multiply by 7. This step gives $\frac{7}{28}$. Now we can add: $\frac{3}{7} + \frac{1}{4} = \frac{12}{28} + \frac{7}{28} = \frac{19}{28}$.

Models:

$$\frac{1}{3} + \frac{3}{5} = \frac{5}{15} + \frac{9}{15} = \frac{14}{15}$$

$$\frac{1}{4} + \frac{1}{8} = \frac{2}{8} + \frac{1}{8} = \frac{3}{8}$$

$$\frac{1}{8} + \frac{1}{12} = \frac{3}{24} + \frac{2}{24} = \frac{5}{24}$$

Note that for any given pair of fractions many common denominators exist. Both 4 and 7 divide evenly into 56, or 280, or 2,800. However, we always try to find the *least common denominator*. That is, we try to find the smallest number that both denominators will divide into evenly, because we prefer to work with the smallest numbers possible.

DEFINITION

The *least common denominator* is the smallest number into which the denominators will divide evenly.

When you finish an addition problem, always check the answer to see if it is reduced to lowest terms.

Find a common denominator for the following fractions. Try to find the least common denominator.

1.31 $\frac{1}{4}, \frac{3}{5}$ _____

1.32 $\frac{1}{2}, \frac{5}{6}$ _____

1.33 $\frac{3}{8}, \frac{5}{12}$ _____

1.34 $\frac{6}{7}, \frac{4}{9}$ _____

1.35 $\frac{1}{3}, \frac{3}{4}$ _____

1.36 $\frac{1}{4}, \frac{3}{10}$ _____

1.37 $\frac{6}{5}, \frac{3}{3}$ _____

1.38 $\frac{3}{8}, \frac{1}{9}$ _____

Find an equivalent to the given fraction with the new denominator.

1.39 $\frac{1}{4} = \frac{}{20}$

1.40 $\frac{1}{2} = \frac{}{6}$

1.41 $\frac{3}{8} = \frac{}{24}$

1.42 $\frac{4}{9} = \frac{}{63}$

1.43 $\frac{1}{3} = \frac{}{12}$

1.44 $\frac{1}{4} = \frac{}{20}$

1.45 $\frac{6}{5} = \frac{}{15}$

1.46 $\frac{3}{8} = \frac{}{72}$

Add the following fractions. Reduce answers to lowest terms. Show your work and circle your answer.

1.47 $\frac{1}{4} + \frac{3}{5} =$ _____

1.48 $\frac{1}{2} + \frac{5}{6} =$ _____

1.49 $\frac{3}{8} + \frac{5}{12} =$ _____

1.50 $\frac{6}{7} + \frac{4}{9} =$ _____

1.51 $\frac{1}{3} + \frac{3}{4} =$ _____

1.52 $\frac{1}{4} + \frac{3}{10} =$ _____

1.53 $\frac{6}{5} + \frac{3}{3} =$ _____

1.54 $\frac{3}{8} + \frac{1}{9} =$ _____

SUBTRACTION

Subtracting two fractions with denominators that are not the same is very similar to adding such fractions. You must first find a common denominator, then write both fractions in terms of the new denominator, and then subtract.

Model: $\frac{7}{8} - \frac{5}{12}$

Find a common denominator. Both 8 and 12 will divide evenly into 96, or 48, but 24 is the least common denominator. Let's use 24.

$\frac{7}{8} - \frac{5}{12} = \frac{21}{24} - \frac{10}{24} = \frac{11}{24}$

Subtract the following fractions. Reduce answers to lowest terms Show your work and circle your answer.

1.55 $\frac{3}{5} - \frac{1}{4} =$ _____

1.56 $\frac{5}{6} - \frac{1}{2} =$ _____

1.57 $\frac{5}{12} - \frac{3}{8} =$ _____

1.58 $\frac{6}{7} - \frac{4}{9} =$ _____

1.59 $\frac{3}{4} - \frac{1}{3} =$ _____

1.60 $\frac{3}{10} - \frac{1}{4} =$ _____

1.61 $\frac{6}{5} - \frac{3}{3} =$ _____

1.62 $\frac{3}{8} - \frac{1}{9} =$ _____

Mixed numbers may be added in two different ways. One way is to add the whole numbers, then add the fractions, finding a common denominator if necessary, and then combine the parts of the sum for the answer.

Model: $2\frac{1}{4} + 3\frac{2}{5}$

First, add the whole numbers: $2 + 3 = 5$. Then, find a common denominator for the fractions; one common denominator is 20: $\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20}$. Next, add the fractions: $\frac{5}{20} + \frac{8}{20} = \frac{13}{20}$. Finally, combine the parts to the sum for the answer: $5\frac{13}{20}$.

Another way to add mixed numbers is to change them to improper fractions. Then a common denominator is found (if necessary), and addition or subtraction proceeds as for any other improper fractions.

Model: $2\frac{1}{3} + 3\frac{3}{8}$

First, change $2\frac{1}{3}$ to an improper fraction with a denominator of 3: 2 is $\frac{6}{3}$ and $\frac{1}{3}$ more is $\frac{7}{3}$. Now, change $3\frac{3}{8}$ to an improper fraction with a denominator of 8: 3 is $\frac{24}{8}$ and $\frac{3}{8}$ more is $\frac{27}{8}$. Now, add $\frac{7}{3}$ and $\frac{27}{8}$. A common denominator is 24.

$$\frac{7}{3} + \frac{27}{8} = \frac{56}{24} + \frac{81}{24} = \frac{137}{24}$$

Add or subtract the following mixed numbers using the first method. Add the whole numbers; add the fractions; combine the parts of the sum for the answer. Be sure your answers are reduced to lowest terms. Show your work and circle your answer.

1.63 $2\frac{2}{3} + 4\frac{1}{8} =$ _____

1.64 $1\frac{1}{9} + 3\frac{4}{5} =$ _____

1.65 $3\frac{3}{8} + 2\frac{1}{6} =$ _____

1.66 $5\frac{5}{9} - 3\frac{1}{3} =$ _____

1.67 $2\frac{4}{5} - 1\frac{1}{2} =$ _____

1.68 $4\frac{5}{8} - 2\frac{1}{9} =$ _____

Add or subtract the following mixed numbers. First change each mixed number to an equivalent improper fraction. Then find a common denominator, and proceed as before. Be sure your answers are reduced to lowest terms. Show your work and circle your answer.

1.69 $1\frac{4}{9} + 3\frac{1}{3} =$ _____

1.70 $3\frac{1}{4} + 6\frac{1}{2} =$ _____

1.71 $\frac{1}{5} + 2\frac{1}{3} =$ _____

1.72 $3\frac{1}{6} - 1\frac{1}{2} =$ _____

1.73 $1\frac{3}{8} - \frac{3}{4} =$ _____

1.74 $4\frac{1}{2} - 2\frac{5}{8} =$ _____

MULTIPLICATION

Multiplying fractions is easier than adding or subtracting. To multiply two fractions, multiply the numerators to get the new numerator, and multiply the denominators to get the new denominator. Always be sure to check the answer to see if it can be reduced to lowest terms.

Models: $\frac{1}{2} \times \frac{3}{4} = \frac{1 \times 3}{2 \times 4} = \frac{3}{8}$

$\frac{6}{7} \times \frac{5}{12} = \frac{30}{84}$, which reduces to $\frac{5}{14}$

[redacted] Multiply the following fractions. Reduce your answer to lowest terms. Show your work and circle your answer.

1.75 $\frac{3}{4} \times \frac{2}{3} =$ _____

1.76 $\frac{1}{8} \times \frac{1}{9} =$ _____

1.77 $\frac{3}{7} \times \frac{4}{5} =$ _____

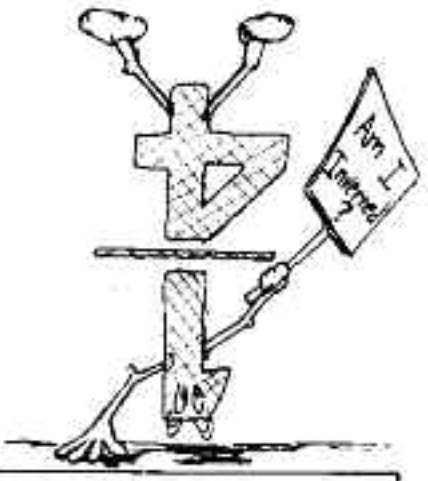
1.78 $\frac{1}{2} \times \frac{1}{2} =$ _____

1.79 $\frac{5}{6} \times \frac{1}{2} =$ _____

1.80 $\frac{8}{7} \times \frac{3}{5} =$ _____

DIVISION

To divide one fraction into another, invert the second fraction and multiply. By *invert*, we mean to interchange the numerator and denominator; to put the numerator where the denominator was and the denominator where the numerator was.



DEFINITION

To *invert* a fraction is to write the numerator where the denominator was and the denominator where the numerator was.

Models: $\frac{3}{7}$ inverted is $\frac{7}{3}$

$\frac{6}{5}$ inverted is $\frac{5}{6}$

After the second fraction has been inverted, multiply the fractions to divide.

Models: $\frac{7}{8} \div \frac{2}{3} = \frac{7}{8} \times \frac{3}{2} = \frac{7 \times 3}{8 \times 2} = \frac{21}{16}$

$\frac{3}{8} \div \frac{1}{2} = \frac{3}{8} \times \frac{2}{1} = \frac{3 \times 2}{8 \times 1} = \frac{6}{8} = \frac{3}{4}$

Perform the following divisions. Be sure all answers are reduced to lowest terms. Show your work and circle your answer.

1.81 $\frac{7}{12} \div \frac{3}{4} =$ _____

1.82 $\frac{5}{8} \div \frac{2}{5} =$ _____

1.83 $\frac{4}{3} \div \frac{1}{2} =$ _____

1.84 $\frac{1}{6} \div \frac{3}{5} =$ _____

1.85 $\frac{6}{7} \div \frac{3}{2} =$ _____

Multiplication and division of fractions follow the same rules whether the fractions are proper or improper. However, just as in addition and subtraction, mixed numbers must be changed to improper fractions before we can use them in multiplication or division.

Model 1: $3\frac{1}{4} \times 1\frac{5}{8}$

$= \frac{13}{4} \times \frac{13}{8}$

$= \frac{13 \times 13}{4 \times 8} = \frac{169}{32}$

Model 2: $2\frac{1}{4} \div 1\frac{5}{6}$

$= \frac{9}{4} \div \frac{11}{6}$

$= \frac{9}{4} \times \frac{6}{11}$

$= \frac{9 \times 6}{4 \times 11} = \frac{54}{44} = \frac{27}{22}$

Also note that in the case of division by a whole number, we write the whole number as a fraction with a denominator of 1 before we invert and multiply.

Model 3: $2\frac{1}{8} \div 3$

$= \frac{17}{8} \div \frac{3}{1}$

$= \frac{17}{8} \times \frac{1}{3}$

$= \frac{17 \times 1}{8 \times 3} = \frac{17}{24}$

Perform the following multiplications and divisions. Be sure answers are reduced to lowest terms. Show your work and circle your answer.

1.86 $2\frac{1}{7} \times 1\frac{3}{8} =$ _____

1.87 $1\frac{1}{4} \div 7 =$ _____

1.88 $2\frac{7}{8} \div \frac{1}{4} =$ _____

1.89 $3\frac{3}{5} \div 2\frac{1}{3} =$ _____

1.90 $6\frac{1}{2} \div 1\frac{1}{8} =$ _____

1.91 $4\frac{2}{3} \div 1\frac{5}{6} =$ _____

CONSUMER APPLICATIONS

Now we come to the point where we are ready to deal with real-life problems. Each of the following situations involves fractions in one way or another. See how many you can solve.

The problems have been grouped according to the operation involved in each one. You should try to analyze the problems and see why the operation we have chosen is the right one. On the tests that follow, the problems will not be grouped by operation. You will need to decide whether to use addition, subtraction, multiplication, or division.

The first set of consumer application problems requires addition. Notice how numerous fractions are in everyday situations.

Add. Show your work and circle your answer.

1.92 Joe practiced his trumpet $\frac{1}{2}$ hour on Monday and $1\frac{1}{2}$ hour on Tuesday. How long did he practice altogether?

1.93 Beth needs $1\frac{1}{3}$ cups of sugar to make a cake and $2\frac{1}{4}$ cups to make a pie. How much sugar does she need to make both?

1.94 Good Haven Church had $12\frac{1}{2}$ dozen boxes of offering envelopes. They ordered $14\frac{1}{2}$ dozen more. How many dozen do they have now?

1.95 You are decorating the church for the Christmas party. So far, you have used $12\frac{1}{2}$ yards of silver rope. You have $36\frac{1}{2}$ yards left. How much did you have to start with?

1.96 Barbara's club has gathered some food for needy families. Barbara distributes $\frac{1}{4}$ of the food to one family and $\frac{2}{4}$ to another family. How much of the food has she distributed?

Fractions to be subtracted are just as common as fractions to be added. As you work these problems, think of times you have used fractions to solve problems.

Subtract. Show your work and circle your answer.

1.97 Jim needs $3\frac{1}{2}$ yards of burlap to cover his bulletin board. His brother gives him $1\frac{1}{2}$ yards. How much more does Jim need to purchase?

1.98 Susan began a trip with $18\frac{1}{2}$ gallons of gas in the gas tank of her car. If she uned $17\frac{1}{2}$ gallons on the trip, how many gallons did she have left when she finished the trip?

1.99 The canister contained $6\frac{1}{8}$ cups of flour when Mary started making cookies. Mary used $2\frac{1}{8}$ cups. How many cups were left in the canister?

Remember that multiplying fractions is easier than adding or subtracting. These problems involve multiplication.

Multiply. Show your work and circle your answer.

1.100 Find the number of bushels of wheat to be harvested from $12\frac{1}{2}$ acres if each acre yields 36 bushels.

1.101 Sarah gives each of five friends $\frac{1}{8}$ of a pie. How much of the pie does she give them altogether?

1.102 At $6\frac{1}{2}$¢ per pound of string beans, how much does 7 pounds cost?

1.103 The Owens Chemical Co. made a shipment of 450 cartons. Each carton weighed $\frac{1}{2}$ pound. What was the total weight of the shipment?

1.104 A tithe is $\frac{1}{10}$. If Mr. Henry's salary is $600 per month, what is his monthly tithe?

1.105 The Southside Band marches $1\frac{1}{4}$ miles in an hour in a parade. How far can they march in 5 hours?

1.106 The carton of milk in the refrigerator has $\frac{3}{4}$ of a quart left. John drinks $\frac{1}{2}$ of this milk. How much does he drink?

Division problems in real life often involve equal pieces or parts, distances, time periods, or other measurements. Fractions come in handy to help solve these problems.

Divide. Show your work and circle your answer.

1.107 If the Southside Band can march $1\frac{1}{2}$ miles per hour, how long will it take them to parade along a 6-mile route?

1.108 A Sunday school teacher purchased 18 yards of ribbon. She cut the ribbon into several pieces, each $\frac{1}{4}$ yard long. How many pieces did she get?

1.109 Mr. James has a board that is $11\frac{1}{2}$ feet long. He wants to give an equal piece to each of 7 boys. How long will each piece be?

1.110 Mr. George owns 425 acres of land. If he divides the land into $\frac{1}{4}$-acre plots, how many plots will he have?

Review the material in this section in preparation for the Self Test. The Self Test will check your mastery of this particular section. The items missed on this Self Test will indicate specific areas where restudy is needed for mastery.

SELF TEST 1

Perform the indicated operations. Reduce answers to lowest terms. Show your work and circle your answer (each answer, 3 points).

1.01 $8\frac{1}{2} \times 3\frac{1}{2} =$

1.02 $\frac{1}{16} \div \frac{3}{4} =$

1.03 $\frac{8}{3} + \frac{3}{4} =$

1.04 $\frac{5}{6} - \frac{1}{8} =$

1.05 $6\frac{1}{4} \div 2\frac{1}{3} =$

1.06 $1\frac{1}{7} \times 2\frac{1}{6} =$

1.07 $14 \times \frac{7}{3} =$

1.08 $\frac{9}{5} - \frac{4}{3} =$

1.09 $2\frac{1}{2} \div 1\frac{1}{16} =$

1.010 $\frac{3}{5} \times \frac{3}{4} =$

1.011 $\frac{4}{3} + \frac{1}{9} =$

1.012 $\frac{1}{2} \div 7\frac{1}{3} =$

1.013 $\frac{6}{10} + \frac{3}{4} =$

1.014 $1\frac{3}{7} - \frac{4}{5} =$

1.015 $\frac{14}{15} - \frac{1}{3} =$

1.016 $\frac{9}{11} + \frac{3}{4} =$

1.017 $\frac{7}{16} - \frac{3}{16} =$

1.018 $6\frac{1}{2} \div 4 =$

1.019 $3\frac{1}{8} - 2\frac{1}{6} =$

1.020 $\frac{4}{10} \div \frac{1}{3} =$

1.021 $\frac{8}{5} + \frac{7}{5} =$

1.022 $\frac{6}{10} - \frac{1}{3} =$

1.023 $\frac{1}{3} \div \frac{1}{4} =$

1.024 $3\frac{1}{8} \times \frac{7}{16} =$

1.025 $\frac{1}{3} \times \frac{11}{4} =$

1.026 $\frac{7}{9} + 1\frac{1}{2} =$

Solve the following problems. Reduce answers to lowest terms. Show your work and circle your answer (each answer, 4 points).

1.027 Jerry owns 640 acres of land. If he divides the land into $\frac{1}{4}$-acre plots, how many plots will he have?

1.028 A jar in the refrigerator contains $2\frac{1}{8}$ quarts of orange juice. Alice drinks $\frac{1}{8}$ of this juice. How much does she drink?

1.029 If you have $10\frac{1}{2}$ dozen rubber bands, and you order $6\frac{1}{3}$ dozen more, how many dozen do you have in all?

1.030 At $8\frac{1}{4}$c per pound of lima beans, how much does 5 pounds cost?

1.031 If a car averages $50\frac{1}{2}$ miles per hour, how many hours will it take to go $47\frac{1}{2}$ miles?

1.032 Susan baby-sat $3\frac{1}{4}$ hours on Friday and $2\frac{1}{2}$ hours on Saturday. How long did she baby-sit altogether?

1.033 If I start with $12\frac{1}{4}$ yards of material and use $3\frac{1}{3}$, how much do I have left?

1.034 How much is $\frac{2}{3}$ of $\frac{1}{4}$?

1.035 If a board that is $16\frac{2}{3}$ feet long is divided into 9 equal pieces, how long is each piece?

On the blank, write a definition for each of the following words (each answer, 3 points).

1.036 fraction _____

_____

1.037 numerator _____

_____

1.038 denominator _____

_____

1.039 proper fraction _____

_____

1.040 improper fraction _____

_____

1.041 mixed number _____

_____

1.042 equivalent fraction _____

_____

1.043 common denominator _____

_____

1.044 invert _____

_____

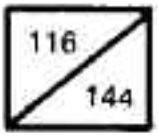
On the blank lines, write three items that a fraction can represent (each answer, 1 point).

1.045

a. _____

b. _____

c. _____



Score ____

Teacher check _____
Initial Date