

ACADEMIC STUDIES

MATH

**Support Materials and Exercises
for**

FRACTIONS

Book 3

The Multiplication and Division of Fractions



SPRING 1999

MULTIPLYING FRACTIONS

There are many situations in everyday life that require you to multiply fractions. Recipe measurement is one of them. Let's say you were having a dinner party tonight for 12 people and you wanted to make your famous spaghetti sauce. The problem you are faced with is that your recipe makes only four servings. What do you do????



Well, you could make three batches of your sauce; but, this would take a lot of time and energy, not to mention a lot of dirty dishes. OR . . . you could simply triple the servings in the recipe using multiplication of fractions.

Let's assume that the following is the ingredient list for your sauce: $1\frac{1}{4}$ cups of both chopped onions and celery; 1 clove of garlic; $1\frac{1}{2}$ tsp of oregano; $\frac{1}{3}$ kg of hot sausage; $2\frac{2}{3}$ - 796 ml cans of tomatoes; enough tomato paste to thicken; and salt and pepper to taste.

In order to make enough sauce to feed 12 people, we will need to multiply the measurements by three (12 people divided by the serving size of four equals three).

- a) $1\frac{1}{4}$ cups of both chopped onions and celery x 3
- b) 1 clove of garlic x 3

- c) $1\frac{1}{2}$ tsp of oregano x 3
- d) $\frac{1}{3}$ kg of hot sausage x 3
- e) $2\frac{2}{3}$ cans of tomatoes x 3

1. Let's start with the onions and celery:
The fractional multiplication problem is set up like this:

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



The most important thing to keep in mind is:

*****ALL NUMBERS MUST BE IN FRACTION FORM*****

This means that all whole numbers and mixed numbers must be changed to improper fractions before you can multiply them.

Because $1\frac{1}{4}$ is a mixed number, it must be made into an improper fraction before you can multiply. Therefore, $1\frac{1}{4}$ becomes $\frac{5}{4}$ (remember: $4 \times 1 + 1 = 5$ placed over the old denominator = $\frac{5}{4}$)

As well, because 3 is a whole number, it must also be changed. Remember, a whole number becomes a fraction simply by placing it over the denominator one (1).

Therefore, 3 becomes $\frac{3}{1}$.

The equation now looks like this: $\frac{5}{4} \times \frac{3}{1}$

In order to multiply, you simply multiply the two numerators, and then multiply the denominators:

$$\frac{5 \times 3 = 15}{4 \times 1 = 4}$$

So, $\frac{5}{4} \times \frac{3}{1} = \frac{15}{4}$.

The final step is to reduce to lowest terms; therefore, $\frac{15}{4} = 3\frac{3}{4}$.

The entire equation looks like this: $1\frac{1}{4} \times 3 = \frac{5}{4} \times \frac{3}{1} = \frac{15}{4} = 3\frac{3}{4}$

Now we know how much onions and celery to put into our sauce
 📏 $3\frac{3}{4}$ cups of each.

2. The second ingredient is easy. 1 clove of garlic x 3 = 3 cloves of garlic.



3. Step 1: create your equation 📏 $1\frac{1}{2}$ tsp of oregano x 3 = $1\frac{1}{2} \times 3$

Step 2: change all numbers to fraction form 📏 $\frac{3}{2} \times \frac{3}{1}$

Step 3: multiply 📏 $\frac{3 \times 3}{2 \times 1} = \frac{9}{2}$

Step 4: reduce to lowest terms 📏 $\frac{9}{2} = 4\frac{1}{2}$

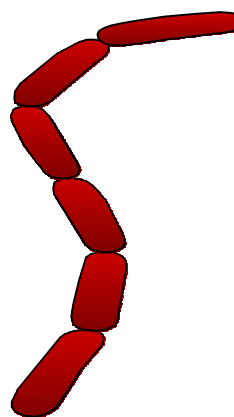
You will need $4\frac{1}{2}$ tsp of oregano.

4. Step one: $\frac{1}{3}$ kg of hot sausage x 3

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

Step two $= \frac{1}{3} \times \frac{3}{1}$

Step three $= \frac{1}{3} \times \frac{3^1}{1} ***$



Step four $=\frac{1}{1}=1$

1 kg of hot sausage will be needed for your sauce.

***** Did you notice what I did here? Instead of multiplying these numbers out, I did what is called canceling.

Cancelling

Cancelling is done before the multiplying. It decreases the size of the numbers you are multiplying; and therefore, cuts down on the need to reduce the product to its lowest terms.

Before we look at the steps to cancelling, we must first be clear on what a Greatest Common Factor (GCF) is.

Greatest Common Factor (GCF):

A **factor** is any number used as a multiplier in an equation. In the equation $2 \times 3 = 6$, the 2 and 3 are factors. The six is called the **product**.

A **common factor** is any number that a given list of numbers has in common; for example, the numbers 6 and 9 have the number 3 in common. The number 3 is a factor for both 6 and 9.

In order to find out the common factors for a group of numbers, you simply list all of the factors for each given number and check which factors they have in common.

$$6 = \{1, 3, 6\} \quad 9 = \{1, 3, 9\}$$

What about the numbers 12 and 16?

$12=\{1, 2, 3, 4, 6, 12\}$ $16=\{1, 2, 4, 8, 16\}$

They have the factors 2 and 4 in common.

The **greatest common factor** (GCF) is simply the largest factor that is common to all numbers. In the case of 12 and 16 the greatest common factor would be **4**.

Let's try a larger group of numbers. How about 24, 36, and 12.

$24=\{1, 2, 3, 4, 6, 8, 12, 24\}$

$36=\{1, 2, 3, 4, 6, 9, 12, 18, 36\}$

$12=\{1, 2, 3, 4, 6, 12\}$

The common factors for 24, 36, and 12 are $\{1, 2, 3, 4, 6, 12\}$. The GCF is 12.

Now, you try a few.

Exercise 1: Find the GCF for the following

1. 4, 12, and 24

2. 8, 10, and 4

3. 14, 28, and 7

4. 2, 40, and 10

5. 16, 36, and 8

6. 9, 3, and 72

7. 8, 4, and 20

8. 10, 12, and 4

9. 6, 16, and 4

10. 6, 2, and 12

11) 80, 96, and 20

12) 32, 8, and 36

13) 70, 120, and 40

14) 22, 10, and 14

15) 144, 8, and 24

16) 24, 6, and 3

17) 45, 3, and 9

18) 6, 72, and 4

19) 45, 20, and 15

20) 25, 125, and 50

Now back to Cancelling . . .

Steps:

1. Look at the numbers in your equation and ask yourself if any of the numerators have any factors in common with any of the denominators. Then you choose the GCF.

Ex: $\frac{3}{8} \times \frac{4}{5} =$ For this equation, the GCF of 8 and 4 is **4**.

2. You divide the numerator and denominator by the common factor.

$$8 \div 4 = 2 \quad \text{and} \quad 4 \div 4 = 1$$

3. Now, you cancel by drawing a line through the numerator and denominator you are dividing; and then, you place the new amounts over the old ones.

$$\frac{3}{\cancel{2}8} \times \frac{4^1}{5} =$$

4. Multiply.

$$\frac{3}{\cancel{2}8} \times \frac{4^1}{5} = \frac{3 \times 1}{2 \times 5} = \frac{3}{10}$$

Let's do that again. Here is the equation: $\frac{8}{9} \times \frac{3}{10}$

First we look for numerators and denominators that have factors in common. There are two sets in this equation: {3 and 9} and {8 and 10}. The GCF for 3 and 9 is 3; and the GCF for 8 and 10 is 2.

Let's divide $3 \div 3 = 1$; $9 \div 3 = 3$
and $8 \div 2 = 4$; $10 \div 2 = 5$

So, $\frac{4}{3} \frac{8}{9} \times \frac{3^1}{10_5} = \frac{4 \times 1}{3 \times 5} = \frac{4}{15}$

5. Step one: $2 \frac{2}{3}$ can of tomatoes x 3
 $= 2 \frac{2}{3} \times 3$
 Step two: $= \frac{8}{3} \times \frac{3}{1}$
 Step three: $= \frac{8}{1} \times \frac{3^1}{1}$
 Step four: $= \frac{8}{1} = 8$



Therefore, you will need 8 cans of tomatoes.

Exercise 2: Now you get a chance to multiply fractions. Try these!!

1) $5 \times \frac{3}{4} =$

11) $6 \frac{7}{10} \times \frac{5}{12} =$

2) $\frac{8}{9} \times \frac{3}{4} =$

12) $\frac{19}{20} \times 2 =$

3) $\frac{2}{5} \times \frac{3}{8} =$

13) $\frac{7}{8} \times \frac{4}{11} =$

4) $7 \times \frac{11}{14} =$

14) $3 \frac{3}{10} \times \frac{2}{3} =$

5) $\frac{4}{15} \times 9 =$

15) $\frac{8}{15} \times \frac{3}{4} =$

6) $\frac{5}{9} \times \frac{18}{25} =$

16) $\frac{5}{8} \times 2 \frac{6}{7} =$

7) $\frac{3}{5} \times \frac{4}{7} =$

17) $\frac{7}{8} \times \frac{4}{21} =$

8) $13x\frac{1}{3} =$

18) $6\frac{3}{5} \times \frac{2}{7} =$

9) $\frac{8}{11} \times \frac{3}{8} =$

19) $\frac{4}{5} \times \frac{4}{5} =$

10) $5\frac{1}{2} \times \frac{4}{9} =$

20) $10x\frac{3}{5} =$

Multiplying Mixed Numbers by Mixed Numbers

Multiplying mixed numbers by mixed numbers is basically the same as what we have been doing so far. The only difference is that you have two sets of numbers to make into improper fractions before you multiply them.

Look at the following example:

$$4\frac{2}{3} \times 2\frac{4}{5} = \frac{14}{3} \times \frac{14}{5} = \frac{196}{15} = 13\frac{1}{15}$$

Example 2:

$$7\frac{1}{5} \times 4\frac{7}{12} = \frac{36}{5} \times \frac{55}{12} = \frac{3\cancel{3}6}{\cancel{1}5} \times \frac{5\cancel{5}11}{\cancel{1}2} = \frac{33}{1} = 33$$

Exercise 3: Now you try!!

1) $4\frac{2}{3} \times 5\frac{3}{8} =$

11) $3\frac{1}{3} \times 5\frac{2}{3} =$

2) $7\frac{2}{9} \times 5\frac{2}{5} =$

12) $7\frac{1}{2} \times 2\frac{14}{15} =$

3) $5\frac{4}{5} \times 8\frac{1}{3} =$

13) $6\frac{7}{8} \times 3\frac{1}{5} =$

4) $10\frac{1}{8} \times 5\frac{1}{3} =$

14) $7\frac{7}{9} \times 6\frac{6}{7} =$

5) $8\frac{8}{9} \times 4\frac{1}{2} =$

15) $6\frac{1}{4} \times 4\frac{1}{2} =$

6) $2\frac{7}{10} \times 1\frac{5}{6} =$

16) $2\frac{5}{8} \times 6\frac{2}{9} =$

7) $6\frac{1}{4} \times 6\frac{2}{5} =$

17) $5\frac{1}{6} \times 2\frac{4}{7} =$

8) $5\frac{4}{7} \times 2\frac{6}{11} =$

18) $4\frac{1}{2} \times 9\frac{1}{3} =$

9) $10\frac{4}{5} \times 5\frac{2}{3} =$

19) $8\frac{4}{7} \times 5\frac{3}{5} =$

10) $9\frac{1}{5} \times 2\frac{1}{2} =$

20) $3\frac{1}{3} \times 4\frac{8}{15} =$

DIVISION OF FRACTIONS

Like whole numbers, when you divide fractions, you end up with a lesser amount than what you started with. Always check your answer to make sure it makes sense!

example: If you begin with half of an apple, and divide that half in 2, the equation would look like this:

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



One quarter of the whole is less than one half of the whole.

But sometimes dividing fractions can be confusing to us, because we are not dealing with whole numbers. And, because we cannot always do math in our heads, someone developed an easy way to divide fractions.

To divide by a fraction:

Invert the fraction you are dividing by (that means turn it upside down) and multiply as you would any other fraction problem. Don't forget to reduce!

Example 1: $\frac{3}{5} \div \frac{1}{4}$

11. Invert the fraction you are dividing by. $\frac{3}{5} \div \frac{4}{1}$
12. Multiply. $\frac{3}{5} \times \frac{4}{1} = \frac{12}{5}$
13. Reduce $\frac{12}{5} = 2\frac{2}{5}$

Remember - once you have the division problem set up, you may be able to cancel diagonally before you multiply. This avoids multiplying large numbers.

Example 2: $\frac{2}{4} \div \frac{3}{8}$

1. Invert. $\frac{2}{4} \div \frac{8}{3}$
2. Multiply. $\frac{2}{4} \times \frac{8}{3} = \frac{4}{3}$
3. Reduce. $\frac{4}{3} = 1\frac{1}{3}$



You can also divide a whole number by a fraction. Just remember that the denominator of a whole number is always 1. example: $4 = \frac{4}{1}$

Example 3: $3 \div \frac{4}{7} = \frac{3}{1} \div \frac{4}{7}$

1. Invert. $\frac{3}{1} \div \frac{7}{4}$
2. Multiply. $\frac{3}{1} \times \frac{7}{4} = \frac{21}{4}$
3. Reduce $\frac{21}{4} = 5\frac{1}{4}$

You can also divide a fraction by a whole number. just put the whole number over 1. example: $4 \div \frac{2}{3} = \frac{4}{1} \div \frac{2}{3}$

Example 4: $10 \div \frac{1}{4} = \frac{10}{1} \div \frac{1}{4}$

1. Invert. $\frac{10}{1} \div \frac{4}{1}$
2. Multiply. $\frac{10}{1} \times \frac{4}{1} = \frac{40}{1}$
3. Reduce. $\frac{40}{1} = 40$





Exercise 4: Divide and Reduce.

1) $\frac{3}{7} \div \frac{4}{10}$

2) $\frac{9}{10} \div \frac{1}{4}$

3) $\frac{10}{12} \div \frac{3}{4}$

4) $\frac{6}{7} \div \frac{5}{8}$

5) $\frac{6}{10} \div \frac{2}{3}$

6) $\frac{3}{5} \div \frac{8}{9}$

7) $\frac{2}{10} \div \frac{1}{9}$

8) $\frac{1}{3} \div \frac{4}{8}$

9) $\frac{7}{8} \div \frac{10}{11}$

10) $\frac{3}{9} \div \frac{2}{4}$

11) $\frac{4}{10} \div \frac{1}{3}$

12) $\frac{6}{9} \div \frac{7}{12}$

13) $\frac{4}{10} \div \frac{3}{6}$

14) $\frac{4}{5} \div \frac{9}{10}$

15) $\frac{4}{10} \div \frac{8}{9}$

16) $\frac{3}{7} \div \frac{4}{7}$

17) $\frac{5}{10} \div \frac{6}{8}$

18) $\frac{1}{2} \div \frac{2}{9}$

19) $\frac{7}{11} \div \frac{4}{6}$

Exercise 5: Divide and Reduce.

1) $\frac{1}{2} \div 4$

2) $\frac{3}{4} \div 2$

3) $\frac{1}{4} \div 5$

4) $\frac{4}{5} \div 10$

5) $\frac{6}{7} \div 8$

6) $\frac{1}{6} \div 3$

7) $\frac{8}{10} \div 4$

8) $\frac{3}{5} \div 5$

9) $\frac{10}{11} \div 2$

10) $\frac{1}{2} \div 9$

11) $\frac{10}{12} \div 6$

12) $\frac{1}{3} \div 2$

13) $\frac{7}{12} \div 3$

14) $\frac{1}{10} \div 10$

15) $\frac{6}{8} \div 5$

16) $\frac{4}{5} \div 8$

17) $\frac{12}{14} \div 5$

18) $\frac{2}{5} \div 7$

19) $\frac{50}{100} \div 4$

20) $\frac{8}{9} \div 10$

Exercise 6: Divide and Reduce.

1) $10 \div \frac{4}{7}$

2) $6 \div \frac{1}{2}$

3) $11 \div \frac{2}{6}$

4) $5 \div \frac{4}{8}$

5) $3 \div \frac{4}{5}$

6) $9 \div \frac{4}{7}$

7) $2 \div \frac{1}{10}$

8) $1 \div \frac{8}{10}$

9) $2 \div \frac{3}{9}$

10) $6 \div \frac{6}{9}$

11) $4 \div \frac{3}{10}$

12) $12 \div \frac{2}{3}$

13) $6 \div \frac{1}{3}$

14) $2 \div \frac{1}{4}$

15) $4 \div \frac{4}{11}$

16) $20 \div \frac{2}{3}$

17) $100 \div \frac{5}{10}$

18) $8 \div \frac{4}{10}$

19) $1 \div \frac{1}{2}$

20) $10 \div \frac{7}{12}$

Dividing with Mixed Numbers

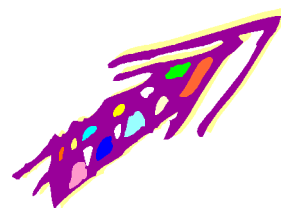
To divide with mixed numbers, change mixed numbers to improper fractions, then divide as usual.

Example: $2\frac{2}{3} \div 5\frac{1}{3}$

- 1) Change mixed numbers to improper fractions.

$$\frac{8}{3} \div \frac{16}{3}$$

- 2) Invert. $\frac{8}{3} \div \frac{3}{16}$



3) Multiply. $\frac{8}{1} \times \frac{1}{16} = \frac{8}{16}$ CANCEL BEFORE MULTIPLYING!

4) Reduce. $\frac{8}{16} = \frac{1}{2}$ The answer is $\frac{1}{2}$.

Example 2: $1\frac{7}{8} \div 1\frac{1}{9}$

1. Change numbers to improper fractions. $\frac{15}{8} \div \frac{10}{9}$

2. Invert. $\frac{15}{8} \div \frac{9}{10}$

3. Multiply. $\frac{3}{8} \times \frac{9}{2} = \frac{27}{16}$ CANCEL BEFORE MULTIPLYING!

4. Reduce. $\frac{27}{16} = 1\frac{11}{16}$

Example 3: $10 \div 2\frac{1}{3}$ $\frac{10}{1} \div 2\frac{1}{3}$

1. Change mixed numbers to improper fraction. $\frac{10}{1} \div \frac{7}{3}$
2. Invert. $\frac{10}{1} \div \frac{3}{7}$
3. Multiply. $\frac{10}{1} \times \frac{3}{7} = \frac{30}{7}$
4. Reduce. $\frac{30}{7} = 4\frac{2}{7}$

Example 4: $5\frac{3}{4} \div 7$ $5\frac{3}{4} \div \frac{7}{1}$

Change mixed numbers to improper fractions. $\frac{23}{4} \div \frac{7}{1}$

1. Invert. $\frac{23}{4} \div \frac{1}{7}$
2. Multiply. $\frac{23}{4} \times \frac{1}{7} = \frac{23}{28}$ This answer cannot be reduced.

Exercise 7: Divide and reduce these fractions.

- | | | | |
|-------------------------------------|--------------------------------------|--|--------------------------------------|
| 1) $3\frac{1}{2} \div 4\frac{3}{4}$ | 2) $2\frac{4}{7} \div 1\frac{3}{5}$ | 3) $4 \div 3\frac{6}{8}$ | 4) $1\frac{7}{8} \div 6$ |
| 5) $4\frac{5}{9} \div 2$ | 6) $1\frac{9}{10} \div 7\frac{3}{5}$ | 7) $10 \div 4\frac{4}{6}$ | 8) $5\frac{5}{6} \div 10\frac{5}{7}$ |
| 9) $2\frac{2}{3} \div 2\frac{3}{4}$ | 10) $9\frac{3}{9} \div 7$ | 11) $10\frac{9}{10} \div 3\frac{1}{2}$ | 12) $7 \div 1\frac{3}{66}$ |

Exercise 8: Mixed Review - Divide and Reduce.

1) $\frac{4}{6} \div 3$

2) $\frac{1}{2} \div \frac{8}{9}$

3) $3\frac{3}{5} \div 10$

4) $3\frac{5}{7} \div 2\frac{7}{8}$

5) $6 \div 1\frac{9}{12}$

6) $10\frac{2}{9} \div 2\frac{2}{4}$

7) $\frac{6}{9} \div \frac{4}{5}$

8) $2 \div 1\frac{1}{2}$

9) $\frac{7}{8} \div \frac{11}{12}$

10) $2 \div \frac{8}{10}$

11) $4\frac{4}{6} \div 3\frac{3}{7}$

12) $\frac{8}{10} \div 2\frac{1}{2}$

13) $1\frac{3}{10} \div 7$

14) $\frac{1}{2} \div 2\frac{3}{4}$

15) $\frac{3}{8} \div \frac{4}{9}$

16) $2\frac{5}{10} \div 3\frac{3}{4}$

17) $10\frac{1}{2} \div \frac{6}{7}$

18) $5 \div 3\frac{1}{3}$

19) $7\frac{7}{9} \div 1\frac{3}{4}$

20) $3 \div 9\frac{9}{12}$

WORD PROBLEMS

Addition

1. If Mary ate $\frac{1}{4}$ of the pie, John ate $\frac{1}{10}$ of the pie, and Shelley ate $\frac{2}{5}$ of the pie, how much of the pie has been eaten?
2. If Jane used $10\frac{3}{5}$ cm of lace while making her pillow and then used another $17\frac{3}{8}$ cm as a border for the pillow, how much lace did Jane use?
3. When Bob was fixing his lamp, he cut off $1\frac{3}{4}$ cm of the damaged cord. Then he noticed another damaged part and had to cut the cord again. This time he cut $4\frac{1}{3}$ cm of cord. How much cord did Bob cut off altogether?

Subtraction

4. If Bob's cord (in question #3) was $60\frac{1}{2}$ cm long before he cut it, how long is it now?
5. Joyce's hair was $25\frac{3}{16}$ cm long before she got it cut. Now it is $21\frac{5}{6}$ cm long. How much hair did Joyce have cut off?
6. The Jones's dog broke his $7\frac{3}{4}$ metre long chain and ran away.

There is now only $2\frac{11}{16}$ metres of chain left. The dog was found $2\frac{1}{2}$ blocks away. How much chain did the dog have attached to his collar?

Division

- 7) A pilot flew 350 km in $3\frac{1}{2}$ hours. How many kilometres per hour did she fly?
- 8) Sandra made a batch of spaghetti sauce which she wanted to freeze. Each of her containers holds $2\frac{1}{2}$ cups of liquid. If she made $12\frac{2}{3}$ cups of sauce, how many containers will she need?
- 9) Fred worked $51\frac{3}{4}$ hours this week. How many hours per day did he work if he worked the same amount of hours each day for five days?

Multiplication

10. There are 10 students in Sally's math class; $\frac{1}{5}$ of the class failed the exam. How many students failed the exam?
11. If Fred (from question #9) worked the same amount of hours for three weeks, how many hours would he have worked at the end of the three week period?
12. Joe, the plumber, had seven jobs last Monday. For each job, he

needed to install a $2\frac{1}{4}$ cm piece of pipe. How much pipe did Joe have to install last Monday?

Mixed Word Problems

13. Mary had 20 metres of material. She made 3 curtains. Each curtain used $4\frac{1}{3}$ metres of material. How much material does she have left?
14. Jim had a 100-cm pipe. He cut it into pieces. The pieces were the following lengths: $4\frac{11}{16}$, $7\frac{5}{8}$, $4\frac{1}{2}$, and 9 cm. How much pipe did he have left?
15. Linda weighed $178\frac{3}{4}$ lb before she lost weight. After she lost weight she weighed $152\frac{2}{3}$ lb, how much weight did she lose?
16. If Linda gained $5\frac{7}{8}$ lb back, how much does she weigh now?
17. Sam jogged $5\frac{4}{5}$ km each day for 30 days. What distance did Sam cover at the end of the 30 days?
18. Margaret made $10\frac{3}{4}$ cups of chocolate pudding for dessert. If there are eight people eating desert, how much pudding will each person get?
19. Shirley was making a Rugrats' bedroom set for her grandson. She bought $50\frac{1}{2}$ metres of material. If she used $21\frac{2}{3}$ metres for

the bedspread, $5\frac{1}{4}$ metres for the curtains, and $7\frac{3}{8}$ metres for the pillows, how much material did she use altogether?

20. How much material does Shirley have left?

Answer Key - Multiplication

Exercise 1 page 5:

- 1) 4 2) 2 3) 7 4) 2 5) 4 6) 3
 7) 4 8) 2 9) 2 10) 2 11) 4 12) 4
 13) 10 14) 2 15) 8 16) 3 17) 3 18) 2
 19) 5 20) 25

Exercise 2 page 7:

$$1. \quad 5 \times \frac{3}{4} = \frac{5}{1} \times \frac{3}{4} = \frac{15}{4} = 3 \frac{3}{4}$$

$$2. \quad \frac{8}{9} \times \frac{3}{4} = \frac{2^3}{3^2} \times \frac{3^1}{4_1} = \frac{2}{3}$$

$$3. \quad \frac{2}{5} \times \frac{3}{8} = \frac{1^2}{5} \times \frac{3}{8_4} = \frac{3}{20}$$

$$4. \quad 7 \times \frac{11}{14} = \frac{1^7}{1} \times \frac{11}{14_2} = \frac{11}{2} = 5 \frac{1}{2}$$

$$5. \quad \frac{4}{15} \times 9 = \frac{4}{15_5} \times \frac{9^3}{1} = \frac{12}{5} = 2 \frac{2}{5}$$

$$6. \quad \frac{5}{9} \times \frac{18}{25} = \frac{1^5}{9} \times \frac{18^2}{25_5} = \frac{2}{5}$$

$$7. \quad \frac{3}{5} \times \frac{4}{7} = \frac{12}{35}$$

$$8. \quad 13 \times \frac{1}{3} = \frac{13}{1} \times \frac{1}{3} = \frac{13}{3} = 4 \frac{1}{3}$$

$$9. \quad \frac{8}{11} \times \frac{3}{8} = \frac{^1 8}{11} \times \frac{3}{8_1} = \frac{3}{11}$$

$$10. \quad 5 \frac{1}{2} \times \frac{4}{9} = \frac{11}{2} \times \frac{4^2}{9} = \frac{22}{9} = 2 \frac{4}{9}$$

$$11. \quad 6 \frac{7}{10} \times \frac{5}{12} = \frac{67}{_{2}10} \times \frac{5^1}{12} = \frac{67}{24} = 2 \frac{19}{24}$$

$$12. \quad \frac{19}{20} \times 2 = \frac{19}{_{10}20} \times \frac{2^1}{1} = \frac{19}{10} = 1 \frac{9}{10}$$

$$13. \quad \frac{7}{8} \times \frac{4}{11} = \frac{7}{_2 8} \times \frac{4^1}{11} = \frac{7}{22}$$

$$14. \quad 3 \frac{3}{10} \times \frac{2}{3} = \frac{^{11} 33}{_5 10} \times \frac{2^1}{3_1} = \frac{11}{5} = 2 \frac{1}{5}$$

$$15. \quad \frac{8}{15} \times \frac{3}{4} = \frac{^2 8}{_5 15} \times \frac{3^1}{4_1} = \frac{2}{5}$$

$$16. \quad \frac{5}{8} \times 2 \frac{6}{7} = \frac{5}{_2 8} \times \frac{20^5}{7} = \frac{25}{14} = 1 \frac{9}{14}$$

$$17. \quad \frac{7}{8} \times \frac{4}{21} = \frac{17}{28} \times \frac{4^1}{21_3} = \frac{1}{6}$$

$$18. \quad 6\frac{3}{5} \times \frac{2}{7} = \frac{33}{5} \times \frac{2}{7} = \frac{66}{35} = 1\frac{31}{35}$$

$$19. \quad \frac{4}{5} \times \frac{4}{5} = \frac{16}{25}$$

$$20. \quad 10 \times \frac{3}{5} = \frac{210}{1} \times \frac{3}{5_1} = \frac{6}{1} = 6$$

Exercise 3 page 8:

$$1. \quad 4\frac{2}{3} \times 5\frac{3}{8} = \frac{714}{3} \times \frac{43}{8_4} = \frac{301}{12} = 25\frac{1}{12}$$

$$2. \quad 7\frac{2}{9} \times 5\frac{2}{5} = \frac{1365}{9} \times \frac{27^3}{5_1} = \frac{39}{1} = 39$$

$$3. \quad 5\frac{4}{5} \times 8\frac{1}{3} = \frac{29}{5} \times \frac{25^5}{3} = \frac{145}{3} = 48\frac{1}{3}$$

$$4. \quad 10\frac{1}{8} \times 5\frac{1}{3} = \frac{2781}{8} \times \frac{16^2}{3_1} = \frac{54}{1} = 54$$

$$5. \quad 8\frac{8}{9} \times 4\frac{1}{2} = \frac{4080}{9} \times \frac{9^1}{2_1} = \frac{40}{1} = 40$$

$$6) \quad 2 \frac{7}{10} \times 1 \frac{5}{6} = \frac{9 \cdot 27}{10} \times \frac{11}{6_2} = \frac{99}{20} = 4 \frac{19}{20}$$

$$7) \quad 6 \frac{1}{4} \times 6 \frac{2}{5} = \frac{5 \cdot 25}{1 \cdot 4} \times \frac{32^8}{5_1} = \frac{40}{1} = 40$$

$$8) \quad 5 \frac{4}{7} \times 2 \frac{6}{11} = \frac{39}{1 \cdot 7} \times \frac{28^4}{11} = \frac{156}{11} = 14 \frac{2}{11}$$

$$9) \quad 10 \frac{4}{5} \times 5 \frac{2}{3} = \frac{18 \cdot 54}{5} \times \frac{17}{3_1} = \frac{306}{5} = 61 \frac{1}{5}$$

$$10) \quad 9 \frac{1}{5} \times 2 \frac{1}{2} = \frac{23 \cdot 46}{1 \cdot 5} \times \frac{5^1}{2_1} = \frac{23}{1} = 23$$

$$11) \quad 3 \frac{1}{3} \times 5 \frac{2}{3} = \frac{10}{3} \times \frac{17}{3} = \frac{170}{9} = 18 \frac{8}{9}$$

$$12) \quad 7 \frac{1}{2} \times 2 \frac{14}{15} = \frac{1 \cdot 15}{1 \cdot 2} \times \frac{44^{22}}{15_1} = \frac{22}{1} = 22$$

$$13) \quad 6 \frac{7}{8} \times 3 \frac{1}{5} = \frac{11 \cdot 55}{1 \cdot 8} \times \frac{16^2}{5_1} = \frac{22}{1} = 22$$

$$14) \quad 7 \frac{7}{9} \times 6 \frac{6}{7} = \frac{10 \cdot 70}{3 \cdot 9} \times \frac{48^{16}}{7_1} = \frac{160}{3} = 53 \frac{1}{3}$$

$$15) \quad 6 \frac{1}{4} \times 4 \frac{1}{2} = \frac{25}{4} \times \frac{9}{2} = \frac{225}{8} = 28 \frac{1}{8}$$

$$16. \quad 2\frac{5}{8} \times 6\frac{2}{9} = \frac{{}^7 21}{18} \times \frac{56^7}{9_3} = \frac{49}{3} = 16\frac{1}{3}$$

$$17. \quad 5\frac{1}{6} \times 2\frac{4}{7} = \frac{31}{6} \times \frac{18^3}{7} = \frac{93}{7} = 13\frac{2}{7}$$

$$18. \quad 4\frac{1}{2} \times 9\frac{1}{3} = \frac{{}^3 9}{2} \times \frac{28^{14}}{3_1} = \frac{42}{1} = 42$$

$$19. \quad 8\frac{4}{7} \times 5\frac{3}{5} = \frac{{}^{12} 60}{7} \times \frac{28^4}{5_1} = \frac{48}{1} = 48$$

$$20. \quad 3\frac{1}{3} \times 4\frac{8}{15} = \frac{{}^2 10}{3} \times \frac{68}{15_3} = \frac{136}{9} = 15\frac{1}{9}$$

Answer Key- Word Problems - pages 18-20

$$1) \quad \frac{1}{4} + \frac{1}{10} + \frac{2}{5} = \frac{5}{20} + \frac{2}{20} + \frac{8}{20} = \frac{15}{20} = \frac{3}{4}$$

$\frac{3}{4}$ of the pie has been eaten.

$$2) \quad 10\frac{3}{5} + 17\frac{3}{8} = 10\frac{24}{40} + 17\frac{15}{40} = \quad \text{—}$$

Jane used $\quad \text{—}$ cm of lace.

3) — — = — — = — —

Bob cut off — cm of cord.

4) — — = — — = —

The cord is now — cm long.

5) — — = — — = — — = —

Joyce had — cm of hair cut off.

6) — — = — — = —

— metres of chain was attached to the dog's collar.

7) — = — — = — — = — = 100

The pilot flew 100 km/hour.

8) $-\quad - = \quad - \quad - = \quad - \quad - = \quad -$ This needs to be rounded up to 6. It would take 6 containers to hold the sauce.

9) $-\quad = \quad - \quad - = \quad - \quad - = \quad - \quad -$
Fred worked $\quad -$ hours/day.

10) $-\quad = \quad - \quad - = \quad -$

There were 2 students who failed the exam.

11) $-\quad = \quad - \quad - = \quad - \quad -$

At the end of six weeks, Fred worked $\quad -$ hours.

12) $-\quad = \quad - \quad - = \quad - \quad -$

Joe installed $\quad -$ cm of pipe.

13) $20 - 13 = 7$ metres used for the curtains

$$20 - 13 = 7$$

Mary has 7 metres of material left over.

14) $100 - 30 = 70$ cm cut

$$100 - 30 = 70$$

Jim had 70 cm of pipe left over.

15) $150 - 20 = 130$

Linda lost 20 lb.

16) $150 - 20 = 130$

Linda now weighs 130 lb.

17) $100 - 30 = 70$ km were covered

18) $100 - 30 = 70$

Each person gets $\frac{1}{4}$ cups of pudding

$$19) \quad \frac{3}{7} \div \frac{4}{10} = \frac{3}{7} \times \frac{10}{4} = \frac{30}{28} = 1 \frac{1}{14}$$

Shirley used $\frac{3}{5}$ metres of material.

$$20) \quad \frac{5}{10} \div \frac{6}{8} = \frac{5}{10} \times \frac{8}{6} = \frac{20}{30} = \frac{2}{3}$$

Shirley has $\frac{1}{3}$ metres of material left over.

Answer key: Dividing Fractions

Exercise 4 page 13

$$1) \quad \frac{3}{7} \div \frac{4}{10} = \frac{3}{7} \times \frac{10}{4} = \frac{30}{28} = 1 \frac{1}{14}$$

$$16) \quad \frac{3}{7} \div \frac{4}{7} = \frac{3}{7} \times \frac{7}{4} = \frac{3}{4}$$

$$2) \quad \frac{9}{10} \div \frac{1}{4} = \frac{9}{10} \times \frac{4}{1} = \frac{18}{5} = 3 \frac{3}{5}$$

$$17) \quad \frac{5}{10} \div \frac{6}{8} = \frac{5}{10} \times \frac{8}{6} = \frac{20}{30} = \frac{2}{3}$$

$$3) \quad \frac{10}{12} \div \frac{3}{4} = \frac{10}{12} \times \frac{4}{3} = \frac{10}{6} = 1 \frac{4}{6} = 1 \frac{2}{3}$$

$$18) \quad \frac{1}{2} \div \frac{2}{9} = \frac{1}{2} \times \frac{9}{2} = \frac{9}{4} = 2 \frac{1}{4}$$

$$4) \quad \frac{6}{7} \div \frac{5}{8} = \frac{6}{7} \times \frac{8}{5} = \frac{48}{35} = 1 \frac{13}{35}$$

$$19) \quad \frac{7}{11} \div \frac{4}{6} = \frac{7}{11} \times \frac{6}{4} = \frac{21}{22} = 1 \frac{1}{22}$$

$$5) \quad \frac{6}{10} \div \frac{2}{3} = \frac{6}{10} \times \frac{3}{2} = \frac{9}{10}$$

$$6) \quad \frac{3}{5} \div \frac{8}{9} = \frac{3}{5} \times \frac{9}{8} = \frac{27}{40}$$

$$7) \quad \frac{2}{10} \div \frac{1}{9} = \frac{2}{10} \times \frac{9}{1} = \frac{18}{10} = 1 \frac{8}{10} = 1 \frac{4}{5}$$

$$8) \quad \frac{1}{3} \div \frac{4}{8} = \frac{1}{3} \times \frac{8}{4} = \frac{8}{12} = \frac{2}{3}$$

$$9) \quad \frac{7}{8} \div \frac{10}{11} = \frac{7}{8} \times \frac{11}{10} = \frac{77}{80}$$

$$10) \quad \frac{3}{9} \div \frac{2}{4} = \frac{3}{9} \times \frac{4}{2} = \frac{12}{18} = \frac{2}{3}$$

$$11) \quad \frac{4}{10} \div \frac{1}{3} = \frac{4}{10} \times \frac{3}{1} = \frac{12}{10} = 1 \frac{2}{10} = 1 \frac{1}{5}$$

$$12) \quad \frac{6}{9} \div \frac{7}{12} = \frac{6}{9} \times \frac{12}{7} = \frac{24}{21} = 1 \frac{3}{21} = 1 \frac{1}{7}$$

$$13) \quad \frac{4}{10} \div \frac{3}{6} = \frac{4}{10} \times \frac{6}{93} = \frac{12}{15} = \frac{4}{5}$$

$$14) \quad \frac{4}{5} \div \frac{9}{10} = \frac{4}{5} \times \frac{10}{9} = \frac{8}{9}$$

$$15) \quad \frac{4}{10} \div \frac{8}{9} = \frac{4}{10} \times \frac{9}{8} = \frac{9}{20}$$

Exercise 5 page 13:

1) $\frac{1}{2} \div 4 = \frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = \frac{4}{2} = 2$

18) $\frac{2}{5} \div 7 = \frac{2}{5} \div \frac{7}{1} = \frac{2}{5} \times \frac{1}{7} = \frac{2}{35}$

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

19) $\frac{50}{100} \div 4 = \frac{50}{100} \div \frac{4}{1} = \frac{50}{100} \times \frac{1}{4} = \frac{50}{400} = \frac{25}{200} = \frac{1}{8}$

3) $\frac{1}{4} \div 5 = \frac{1}{4} \div \frac{5}{1} = \frac{1}{4} \times \frac{1}{5} = \frac{1}{20}$

20) $\frac{8}{9} \div 10 = \frac{8}{9} \div \frac{10}{1} = \frac{8}{9} \times \frac{1}{10} = \frac{8}{90} = \frac{4}{45}$

4) $\frac{4}{5} \div 10 = \frac{4}{5} \div \frac{10}{1} = \frac{4}{5} \times \frac{1}{10} = \frac{4}{50} = \frac{2}{25}$

5) $\frac{6}{7} \div 8 = \frac{6}{7} \div \frac{8}{1} = \frac{6}{7} \times \frac{1}{8} = \frac{6}{56} = \frac{3}{28}$

6) $\frac{1}{6} \div 3 = \frac{1}{6} \div \frac{3}{1} = \frac{1}{6} \times \frac{1}{3} = \frac{1}{18}$

7) $\frac{8}{10} \div 4 = \frac{8}{10} \div \frac{4}{1} = \frac{8}{10} \times \frac{1}{4} = \frac{8}{40} = \frac{2}{10} = \frac{1}{5}$

8) $\frac{3}{5} \div 5 = \frac{3}{5} \div \frac{5}{1} = \frac{3}{5} \times \frac{1}{5} = \frac{3}{25}$

9) $\frac{10}{11} \div 2 = \frac{10}{11} \div \frac{2}{1} = \frac{10}{11} \times \frac{1}{2} = \frac{10}{22} = \frac{5}{11}$

10) $\frac{1}{2} \div 9 = \frac{1}{2} \div \frac{9}{1} = \frac{1}{2} \times \frac{1}{9} = \frac{1}{18}$

$$11) \quad \frac{10}{12} \div 6 = \frac{10}{12} \div \frac{6}{1} = \frac{10}{12} \times \frac{1}{6} = \frac{5}{36}$$

$$12) \quad \frac{1}{3} \div 2 = \frac{1}{3} \div \frac{2}{1} = \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

$$13) \quad \frac{7}{12} \div 3 = \frac{7}{12} \div \frac{3}{1} = \frac{7}{12} \times \frac{1}{3} = \frac{7}{36}$$

$$14) \quad \frac{1}{10} \div 10 = \frac{1}{10} \div \frac{10}{1} = \frac{1}{10} \times \frac{1}{10} = \frac{1}{100}$$

$$15) \quad \frac{6}{8} \div 5 = \frac{6}{8} \div \frac{5}{1} = \frac{6}{8} \times \frac{1}{5} = \frac{6}{40} = \frac{3}{20}$$

$$16) \quad \frac{4}{5} \div 8 = \frac{4}{5} \div \frac{8}{1} = \frac{4}{5} \times \frac{1}{8} = \frac{4}{40} = \frac{1}{10}$$

$$17) \quad \frac{12}{14} \div 5 = \frac{12}{14} \div \frac{5}{1} = \frac{12}{14} \times \frac{1}{5} = \frac{12}{70} = \frac{6}{35}$$

Exercise 6 page 14:

$$1) \quad 10 \div \frac{4}{7} = \frac{10}{1} \div \frac{4}{7} = \frac{10}{1} \times \frac{7}{4} = \frac{35}{2} = 17 \frac{1}{2} \quad 18) \quad 8 \div \frac{4}{10} = \frac{8}{1} \div \frac{4}{10} = \frac{8}{1} \times \frac{10}{4} = \frac{20}{1} = 20$$

$$2) \quad 6 \div \frac{1}{2} = \frac{6}{1} \div \frac{1}{2} = \frac{6}{1} \times \frac{2}{1} = \frac{12}{1} = 12 \quad 19) \quad 1 \div \frac{1}{2} = \frac{1}{1} \div \frac{1}{2} = \frac{1}{1} \times \frac{2}{1} = \frac{2}{1} = 2$$

$$3) \quad 11 \div \frac{2}{6} = \frac{11}{1} \div \frac{2}{6} = \frac{11}{1} \times \frac{6}{2} = \frac{66}{2} = 33 \quad 20) \quad 10 \div \frac{7}{10} = \frac{10}{1} \div \frac{7}{10} = \frac{10}{1} \times \frac{10}{7} = \frac{100}{7} = 14 \frac{2}{7}$$

$$4) \quad 5 \div \frac{4}{8} = \frac{5}{1} \div \frac{4}{8} = \frac{5}{1} \times \frac{8}{4} = \frac{40}{4} = 10$$

$$5) \quad 3 \div \frac{4}{5} = \frac{3}{1} \div \frac{4}{5} = \frac{3}{1} \times \frac{5}{4} = \frac{15}{4} = 3\frac{3}{4}$$

$$6) \quad 9 \div \frac{4}{7} = \frac{9}{1} \div \frac{4}{7} = \frac{9}{1} \times \frac{7}{4} = \frac{63}{4} = 15\frac{3}{4}$$

$$7) \quad 2 \div \frac{1}{10} = \frac{2}{1} \div \frac{1}{10} = \frac{2}{1} \times \frac{10}{1} = \frac{20}{1} = 20$$

$$8) \quad 1 \div \frac{8}{10} = \frac{1}{1} \div \frac{8}{10} = \frac{1}{1} \times \frac{10}{8} = \frac{10}{8} = 1\frac{2}{8} = 1\frac{1}{4}$$

$$9) \quad 2 \div \frac{3}{9} = \frac{2}{1} \div \frac{3}{9} = \frac{2}{1} \times \frac{9}{3} = \frac{18}{3} = 6$$

$$10) \quad 6 \div \frac{6}{9} = \frac{6}{1} \div \frac{6}{9} = \frac{6}{1} \times \frac{9}{6} = \frac{9}{1} = 9$$

$$11) \quad 4 \div \frac{3}{10} = \frac{4}{1} \div \frac{3}{10} = \frac{4}{1} \times \frac{10}{3} = \frac{40}{3} = 13\frac{1}{3}$$

$$12) \quad 12 \div \frac{2}{3} = \frac{12}{1} \div \frac{2}{3} = \frac{12}{1} \times \frac{3}{2} = \frac{18}{1} = 18$$

$$13) \quad 6 \div \frac{1}{3} = \frac{6}{1} \div \frac{1}{3} = \frac{6}{1} \times \frac{3}{1} = \frac{18}{1} = 18$$

$$14) \quad 2 \div \frac{1}{4} = \frac{2}{1} \div \frac{1}{4} = \frac{2}{1} \times \frac{4}{1} = \frac{8}{1} = 8$$

$$15) \quad 4 \div \frac{4}{11} = \frac{4}{1} \div \frac{4}{11} = \frac{4}{1} \times \frac{11}{4} = \frac{11}{1} = 11$$

$$16) \quad 20 \div \frac{2}{3} = \frac{20}{1} \div \frac{2}{3} = \frac{20}{1} \times \frac{3}{2} = \frac{30}{1} = 30$$

$$17) \quad 100 \div \frac{5}{10} = \frac{100}{1} \div \frac{5}{1} = \frac{100}{1} \times \frac{1}{5} = \frac{20}{5} = 4$$

Exercise 7 page 16:

$$1) \quad 3\frac{1}{2} \div 4\frac{3}{4} = \frac{6}{2} \div \frac{19}{4} = \frac{6}{2} \times \frac{4}{19} = \frac{12}{19}$$

$$2) \quad 2\frac{4}{7} \div 1\frac{3}{5} = \frac{18}{7} \div \frac{8}{5} = \frac{18}{7} \times \frac{5}{8} = \frac{45}{28} = 1\frac{17}{28}$$

$$3) \quad 4 \div 3\frac{6}{8} = \frac{4}{1} \div \frac{30}{8} = \frac{4}{1} \times \frac{8}{30} = \frac{16}{15} = 1\frac{1}{15}$$

$$4) \quad 1\frac{7}{8} \div 6 = \frac{15}{8} \div \frac{6}{1} = \frac{15}{8} \times \frac{1}{6} = \frac{5}{16}$$

$$5) \quad 4\frac{5}{9} \div 2 = \frac{23}{9} \div \frac{1}{2} = \frac{23}{9} \times \frac{1}{2} = \frac{23}{18} = 1\frac{5}{18}$$

$$6) \quad 1\frac{9}{10} \div 7\frac{3}{5} = \frac{19}{10} \div \frac{38}{5} = \frac{19}{10} \times \frac{5}{38} = \frac{19}{76}$$

$$7) \quad 10 \div 4\frac{4}{6} = \frac{10}{1} \div \frac{28}{6} = \frac{10}{1} \times \frac{6}{28} = \frac{30}{14} = 2\frac{2}{14} = 2\frac{1}{7}$$

$$8) \quad 5\frac{5}{6} \div 10\frac{5}{7} = \frac{35}{6} \div \frac{75}{7} = \frac{35}{6} \times \frac{7}{75} = \frac{49}{90}$$

$$9) \quad 2\frac{2}{3} \div 2\frac{3}{4} = \frac{8}{3} \div \frac{11}{4} = \frac{8}{3} \times \frac{4}{11} = \frac{32}{33}$$

$$10) \quad 9\frac{3}{9} \div 7 = \frac{84}{9} \div \frac{7}{1} = \frac{84}{9} \times \frac{1}{7} = \frac{12}{9} = 1\frac{3}{9} = 1\frac{1}{3}$$

$$11) \quad 10\frac{9}{10} \div 3\frac{1}{2} = \frac{109}{10} \div \frac{7}{2} = \frac{109}{10} \times \frac{2}{7} = \frac{109}{35} = 3\frac{4}{35}$$

$$12) \quad 7 \div 1\frac{3}{66} = \frac{7}{1} \div \frac{3}{66} = \frac{7}{1} \times \frac{66}{3} = \frac{462}{3} = 154$$

Exercise 8 page 17:

$$1) \quad \frac{4}{6} \div 3 = \frac{4}{6} \div \frac{3}{1} = \frac{4}{6} \times \frac{1}{3} = \frac{4}{18} = \frac{2}{9}$$

$$2) \quad \frac{1}{2} \div \frac{8}{9} = \frac{1}{2} \times \frac{9}{8} = \frac{9}{16}$$

$$3) \quad 3\frac{3}{5} \div 10 = \frac{18}{5} \div \frac{10}{1} = \frac{18}{5} \times \frac{1}{10} = \frac{9}{25}$$

$$4) \quad 3\frac{5}{7} \div 2\frac{7}{8} = \frac{26}{7} \div \frac{23}{8} = \frac{26}{7} \times \frac{8}{23} = \frac{208}{161} = 1\frac{47}{161}$$

$$5) \quad 6 \div 1\frac{9}{12} = \frac{6}{1} \div \frac{21}{12} = \frac{6}{1} \times \frac{12}{21} = \frac{72}{21} = 3\frac{9}{21} = 3\frac{3}{7}$$

$$6) \quad 10\frac{2}{9} \div 2\frac{2}{4} = \frac{92}{9} \div \frac{10}{4} = \frac{92}{9} \times \frac{4}{10} = \frac{184}{45} = 4\frac{4}{45}$$

$$7) \quad \frac{6}{9} \div \frac{4}{5} = \frac{6}{9} \times \frac{5}{4} = \frac{15}{18} = \frac{5}{6}$$

$$8) \quad 2 \div 1\frac{1}{2} = \frac{2}{1} \div \frac{3}{2} = \frac{2}{1} \times \frac{2}{3} = \frac{2}{3}$$

$$9) \quad \frac{7}{8} \div \frac{11}{12} = \frac{7}{8} \times \frac{12}{11} = \frac{21}{22}$$

$$10) \quad 2 \div \frac{8}{10} = \frac{2}{1} \div \frac{8}{10} = \frac{2}{1} \times \frac{10}{8} = \frac{10}{4} = 2\frac{2}{4} = 2\frac{1}{2}$$

$$11) \quad 4\frac{4}{6} \div 3\frac{3}{7} = \frac{28}{6} \div \frac{24}{7} = \frac{28}{6} \times \frac{7}{24} = \frac{49}{36} = 1\frac{13}{36}$$

$$12) \quad \frac{8}{10} \div 2\frac{1}{2} = \frac{8}{10} \div \frac{5}{2} = \frac{8}{10} \times \frac{2}{5} = \frac{8}{25}$$

$$13) \quad 1\frac{3}{10} \div 7 = \frac{13}{10} \div \frac{7}{1} = \frac{13}{10} \times \frac{1}{7} = \frac{13}{70}$$

$$14) \quad \frac{1}{2} \div 2\frac{3}{4} = \frac{1}{2} \div \frac{11}{4} = \frac{1}{2} \times \frac{4}{11} = \frac{2}{11}$$

$$15) \quad \frac{3}{8} \div \frac{4}{9} = \frac{3}{8} \times \frac{9}{4} = \frac{27}{32}$$

$$16) \quad 2\frac{5}{10} \div 3\frac{3}{4} = \frac{15}{10} \div \frac{15}{4} = \frac{15}{10} \times \frac{4}{15} = \frac{2}{5}$$

$$17) \quad 10 \frac{1}{2} \div \frac{6}{7} = \frac{21}{2} \div \frac{6}{7} = \frac{21}{7} \times \frac{7}{6} = \frac{21}{6} = 3 \frac{3}{6} = 3 \frac{1}{2}$$

$$18) \quad 5 \div 3 \frac{1}{3} = \frac{5}{1} \div \frac{10}{3} = \frac{5}{1} \times \frac{3}{10} = \frac{3}{2} = 1 \frac{1}{2}$$

$$19) \quad 7 \frac{7}{9} \div 1 \frac{3}{4} = \frac{70}{9} \div \frac{7}{4} = \frac{70}{9} \times \frac{4}{7} = \frac{40}{9} = 4 \frac{4}{9}$$

$$20) \quad 2 \div 2 \frac{3}{7} = \frac{2}{1} \div \frac{17}{7} = \frac{2}{1} \times \frac{7}{17} = \frac{14}{17}$$

FEEDBACK PROCESS

For feedback, please forward your comments to:

New Brunswick Community College - Woodstock
 100 Broadway Street
 Woodstock, NB
 E7M 5C5

Attention: Kay Curtis
 Tel.: 506-325-4866 Fax.: 506-328-8426

* In case of errors due to typing, spelling, punctuation or any proofreading errors, please use the enclosed page to make the proposed correction using red ink and send it to us.

* For feedback regarding the following items, please use the form below:

- insufficient explanations;
- insufficient examples;
- ambiguity or wordiness of text;
- relevancy of the provided examples;
- others...

Page number	Nature of the problem	Proposed solution (include your text if possible)

FEEDBACK PROCESS

Page number	Nature of the problem	Proposed solution (include your text if possible)
Comments:		