

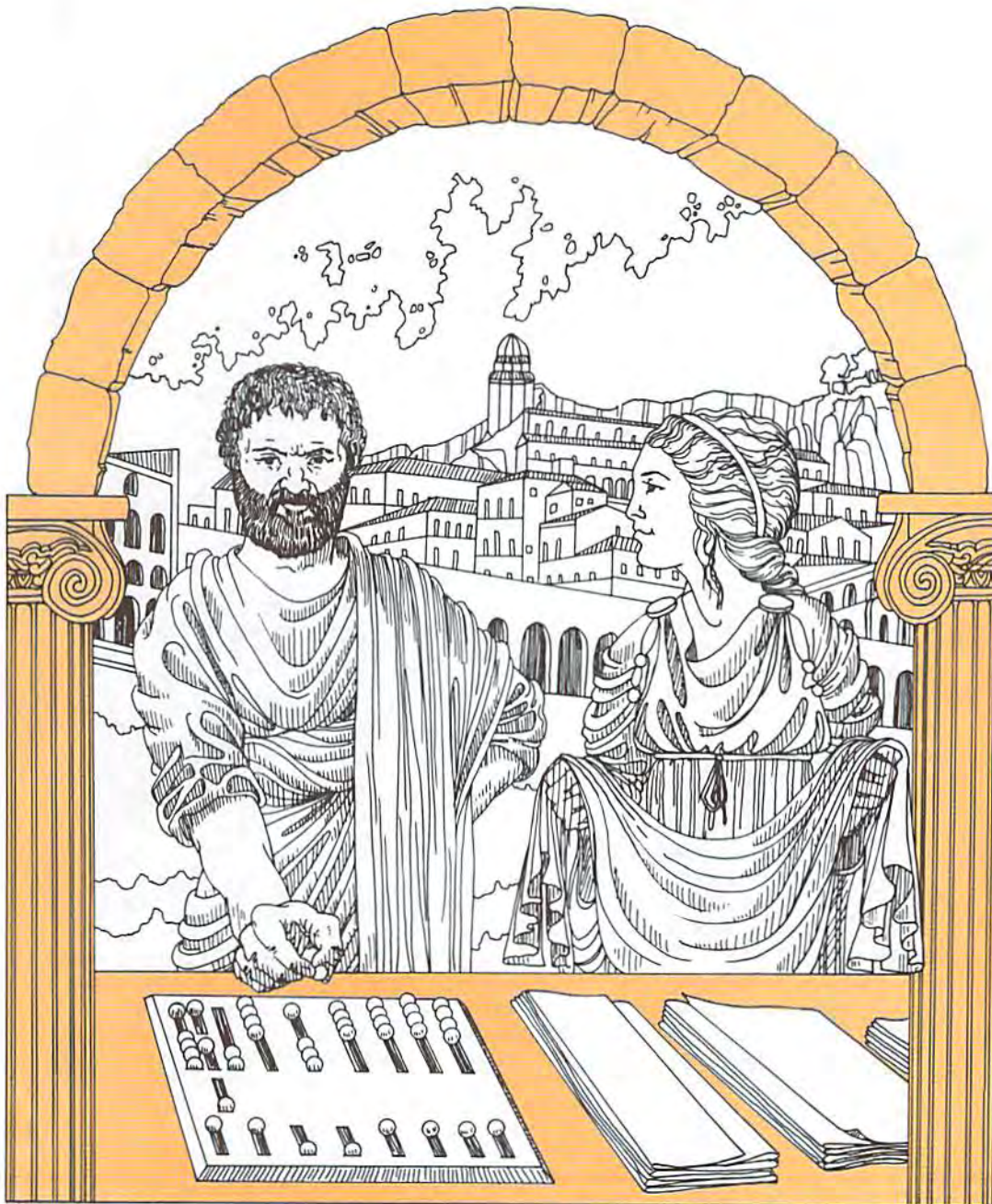
Key to

Fractions

2

Student
Workbook

Multiplying and Dividing



By Steven Rasmussen

Name _____

Class _____

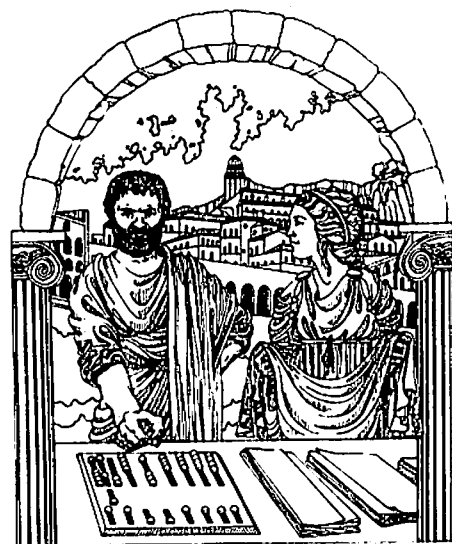
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Greek mathematicians are famous for their geometry. They did not excel in arithmetic. The number system of the early Greeks was based entirely on whole numbers and it made no provision for breaking a unit into fractions. To the early Greeks one half was not a number but was simply the relationship between the whole numbers one and two.

Later Greek mathematicians introduced fractions into their number system. Although they invented ways to represent fractions, they never developed easy ways to work with them. Greek astronomers turned to the Babylonian method of dividing a unit into 60 equal parts. They divided a circle into 360 degrees ($360 = 6 \times 60$), a degree into 60 minutes and a minute into 60 seconds. Our own way of dividing an hour can be traced to this Babylonian system of fractions. Other Greek mathematicians followed the Egyptian example and used only unit fractions.

The Romans needed fractions for their commerce—to exchange money or to weigh and measure goods. Not known as great mathematicians, the Romans limited their calculations to four types of fractions: twelfths; twenty-fourths; forty-eighths; and seventy-seconds. They simply ignored other fractions.



Cover Art by James Dykeman

On the cover of this book a Roman merchant is working out a problem involving fractions on an abacus. The abacus was the calculator of Roman times. The last two sets of grooves on the bronze plate are used for the four types of Roman fractions. If you were a student in a Roman arithmetic class, you would spend most of your time learning how to handle fractions on an abacus.

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Equal Fractions Review

If you multiply the numerator and denominator of a fraction by the same number (larger than 0), you will make an equal fraction.

Make equal fractions. First figure out what the numerator of the fraction was multiplied by, and then multiply the denominator by the same number.

$$2 \times \boxed{3} = 6 \text{ so} \\ \text{multiply by } \boxed{3}.$$

$$1 \times \boxed{} = 5 \text{ so} \\ \text{multiply by } \boxed{}.$$

$$4 \times \boxed{} = 8 \text{ so} \\ \text{multiply by } \boxed{}.$$

$$\frac{2 \times 3}{5 \times 3} = \frac{6}{15}$$

$$\frac{1 \times }{6 \times } = \frac{5}{}$$

$$\frac{4 \times }{7 \times } = \frac{8}{}$$

$$\frac{1}{5} = \frac{4}{}$$

$$\frac{2}{3} = \frac{16}{}$$

$$\frac{1}{2} = \frac{7}{}$$

$$\frac{5}{6} = \frac{20}{}$$

$$\frac{3}{8} = \frac{9}{}$$

$$\frac{4}{4} = \frac{16}{}$$

$$\frac{5}{9} = \frac{10}{}$$

$$\frac{1}{10} = \frac{2}{}$$

$$\frac{8}{15} = \frac{24}{}$$

Make equal fractions by finding the missing numerators.

$$\frac{4}{5} = \frac{}{10}$$

$$\frac{2}{7} = \frac{}{35}$$

$$\frac{1}{6} = \frac{}{18}$$

$$\frac{3}{4} = \frac{}{20}$$

$$\frac{2}{3} = \frac{}{12}$$

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

$$\frac{11}{12} = \frac{}{24}$$

$$\frac{6}{7} = \frac{}{21}$$

The problems below are like the problems above if you "think backwards."

$$\frac{}{4 \times 3} = \frac{3}{12}$$

$$\frac{}{8} = \frac{10}{16}$$

$$\frac{}{5} = \frac{8}{20}$$

$$\frac{3}{} = \frac{12}{16}$$

$$\frac{3}{21} = \frac{}{7}$$

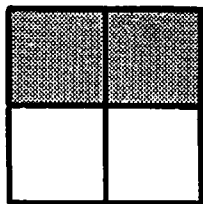
$$\frac{4}{16} = \frac{1}{}$$

$$\frac{9}{24} = \frac{}{8}$$

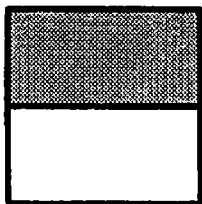
$$\frac{14}{14} = \frac{}{2}$$

Simplest Form

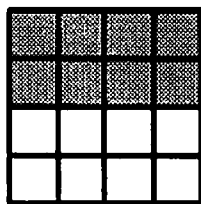
In each row below there are five squares with the same part shaded. Write the fraction for the shaded part below each square. The five fractions are equal fractions. The fraction in simplest form is the fraction that uses the smallest numbers. Circle the fraction in simplest form.



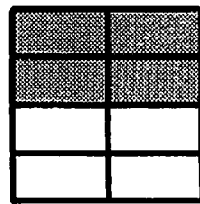
$$\frac{2}{4}$$



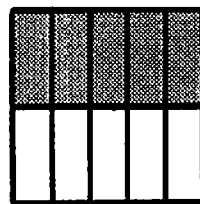
$$\frac{1}{2}$$



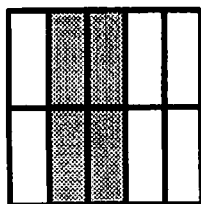
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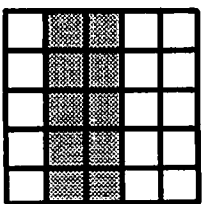
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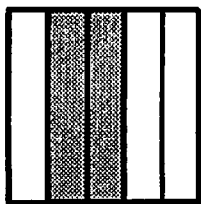
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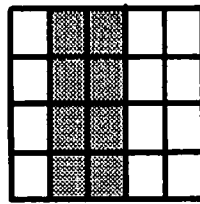
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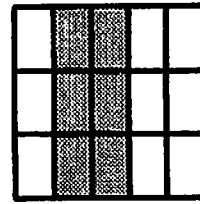
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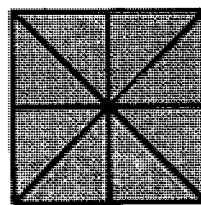
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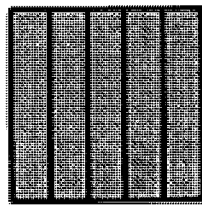
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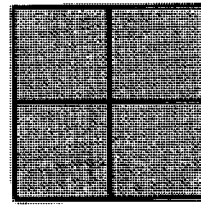
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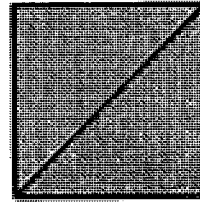
$$\frac{8}{8}$$



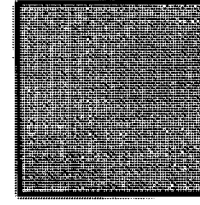
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$$\frac{1}{1} \text{ or } 1$$

In each group of equal fractions, circle the fraction that is in simplest form.

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

$$\frac{3}{9} = \frac{7}{21} = \frac{1}{3} = \frac{4}{12}$$

$$\frac{4}{5} = \frac{8}{10} = \frac{12}{15} = \frac{16}{20}$$

$$\frac{1}{8} = \frac{5}{40}$$

$$\frac{3}{6} = \frac{1}{2}$$

$$\frac{5}{7} = \frac{15}{21}$$

$$\frac{3}{8} = \frac{300}{800}$$

$$\frac{20}{30} = \frac{2}{3}$$

$$\frac{3}{21} = \frac{4}{28} = \frac{10}{70} = \frac{1}{7}$$

$$\frac{1}{10} = \frac{10}{100} = \frac{6}{60} = \frac{3}{30}$$

$$\frac{16}{44} = \frac{4}{11} = \frac{8}{22} = \frac{12}{33}$$

Factors and Products Table

Factors are the numbers multiplied to make a product. Find the missing product of each pair of factors below.

x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1						6	7	8	9	10	11	12	13	14	15
2									18	20	22	24	26	28	30
3														42	45
4													52	56	60
5													65		75
6															90
7											77			98	105
8									72	80	88	96	104	112	120
9													117	126	135
10												120	130	140	
11							77					132	143		
12					60	72	84	96	108	120	132	144			
13						78	91	104	117	130					
14	14	28				84	98	112	126	140					
15	15	30			75	90	105	120	135	150					
16	16	32				96	112	128	144						
17	17	34	51			102	119	136							
18	18	36	54			108	126	144							
19	19	38				114									
20	20					120									
21	21		63		105	126									
22	22		66	88	110	132	154								
23	23			92	115	138	161								
24	24	48				144	168								
25	25	50	75			150	175								
26	26	52	78			156	182								

On the following pages you can use this table in your work with fractions.

Factors

The factors of 28 are all the whole numbers that can be used in multiplication to make 28. You also can think of them as the numbers that divide evenly into 28.

28

$28 = 1 \times 28$
 $28 = 2 \times 14$
 $28 = 4 \times 7$

The factors of 28 are 1, 28, 2, 14, 4, 7.

15

$15 =$
 $15 =$

The factors of 15 are __, __, __, __.

12

$12 =$
 $12 =$
 $12 =$

The factors of 12 are __, __, __, __, __, __.

13

$13 =$

The factors of 13 are __, __.

18

$18 =$
 $18 =$
 $18 =$

The factors of 18 are __, __, __, __, __, __.

25

$25 =$
 $25 =$

The factors of 25 are __, __, __.

32

$32 =$
 $32 =$
 $32 =$

__, __, __, __, __, __ divide evenly into 32.

54

$54 =$
 $54 =$
 $54 =$
 $54 =$

__, __, __, __, __, __, __, __ divide evenly into 54.

List all the factors . Use the factors and products table on page 3 if you need help.

21 Factors are
 __, __, __, __.

45 Factors are
 __, __, __, __, __, __.

24 Factors are
 __, __, __, __, __, __, __, __.

43 Factors are
 __, __.

36 Factors are
 __, __, __, __, __, __, __, __, __.

7 Factors are
 __, __.

23 Factors are
 __, __.

30
 __, __, __, __, __, __, __, __
 divide evenly into 30.

60 Factors are
 __, __, __, __, __, __, __, __, __, __, __, __.

42
 __, __, __, __, __, __, __, __
 divide evenly into 42.

51 Factors are
 __, __, __, __.

Circle all the factors of the numbers below.

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

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

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

Common Factors

Below are the factors of 15 and 18. 1 and 3 are circled because they are factors of both numbers. 1 and 3 are the common factors of 15 and 18.

$\frac{15}{18}$

Factors are ①, 15, ③, 5.

Factors are ①, 18, 2, 9, ③, 6.

Common factors are 1, 3.

List the factors and common factors of each pair of numbers below.

$\frac{8}{12}$

Factors are ___ , ___ , ___ , ___ .

Factors are ___ , ___ , ___ , ___ , ___ , ___ .

Common factors are ___ , ___ , ___ .

$\frac{10}{25}$

Factors are ___ , ___ , ___ , ___ .

Factors are ___ , ___ , ___ .

Common factors are ___ , ___ .

$\frac{15}{45}$

Factors are ___ , ___ , ___ , ___ .

Factors are ___ , ___ , ___ , ___ , ___ , ___ .

Common factors are ___ , ___ , ___ , ___ .

numbers

factors

common factors

$\frac{12}{20}$	$\textcircled{1}$ <u>12</u> , $\textcircled{2}$ <u>6</u> , <u>3</u> , $\textcircled{4}$	<u>1</u> , <u>2</u> , <u>4</u>
	$\textcircled{1}$ <u>20</u> , $\textcircled{2}$ <u>10</u> , $\textcircled{4}$ <u>5</u>	

$\frac{6}{24}$	__, __, __, __	__, __, __, __
	__, __, __, __, __, __, __, __	

$\frac{25}{30}$	__, __, __	__, __
	__, __, __, __, __, __, __, __	

$\frac{27}{36}$	__, __, __, __	__, __, __
	__, __, __, __, __, __, __, __	

$\frac{28}{42}$	__, __, __, __, __, __	__, __, __, __
	__, __, __, __, __, __, __, __	

$\frac{32}{48}$	__, __, __, __, __, __	__, __, __
	__, __, __, __, __, __, __, __	

Greatest Common Factor

$$\frac{8}{12}$$

Factors are
①, 8, ②, ④.

Factors are
①, 12, ②, 6, 3, ④.

Common factors are
1, 2, 4.

GCF is
4.

4 is the largest number in the list of common factors. 4 is the greatest common factor (GCF) of 8 and 12. The greatest common factor is the largest whole number that divides evenly into both numbers.

$$\frac{12}{18}$$

Factors are
____, ____, ____, ____, ____, ____.

Factors are
____, ____, ____, ____, ____, ____.

Common factors are
____, ____, ____, ____.

GCF is
____.

$$\frac{9}{21}$$

Factors are
____, ____, ____.

Factors are
____, ____, ____, ____.

Common factors are
____, ____.

GCF is
____.

$$\frac{25}{35}$$

Factors are
____, ____, ____.

Factors are
____, ____, ____, ____.

Common factors are
____, ____.

GCF is
____.

numbers	factors	common factors	GCF
$\frac{32}{45}$	___, ___, ___, ___, ___, ___	___	___
	___, ___, ___, ___, ___, ___		

$\frac{22}{33}$	___, ___, ___, ___	___, ___	___
	___, ___, ___, ___		

$\frac{40}{42}$	___, ___, ___, ___, ___, ___, ___, ___	___, ___	___
	___, ___, ___, ___, ___, ___, ___, ___		

$\frac{27}{36}$	___, ___, ___, ___	___, ___, ___	___
	___, ___, ___, ___, ___, ___, ___, ___		

$\frac{14}{56}$	___, ___, ___, ___	___, ___, ___, ___	___
	___, ___, ___, ___, ___, ___, ___, ___		

$\frac{60}{70}$	___, ___, ___, ___, ___, ___, ___, ___, ___	___, ___, ___, ___	___
	___, ___, ___, ___, ___, ___, ___, ___		

$\frac{24}{40}$

Factors are _____, _____, _____, _____, _____, _____, _____, _____.

Factors are _____, _____, _____, _____, _____, _____, _____, _____.

Common factors are _____, _____, _____, _____.

GCF is _____.

Use the problem above to fill in the blanks below.

Name all the factors of 40. _____

Name all the numbers that divide evenly into 24. _____

1, 2, 4, 8 are the _____ factors of 24 and 40.

GCF stands for the _____ .

8 is the _____ of 24 and 40.

Circle all the common factors of each pair of numbers below. The common factors divide evenly into both members of the pair.

$\frac{10}{20}$

① ② 3 4 ⑤ 6 7 8 9 ⑩

$\frac{16}{24}$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

$\frac{18}{27}$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Look at the common factors above and pick the greatest common factor.

$\frac{10}{20}$

GCF is 10.

$\frac{16}{24}$

GCF is _____.

$\frac{18}{27}$

GCF is _____.

Finding the Greatest Common Factor

Circle all the common factors of the numerator and denominator of each fraction. The common factors are the whole numbers that divide evenly into both the numerator and denominator. Then pick their greatest common factor.

$$\frac{12}{30} \quad \textcircled{1} \quad \textcircled{2} \quad \textcircled{3} \quad 4 \quad 5 \quad \textcircled{6} \quad 7 \quad 8 \quad 9 \quad 10 \quad 11 \quad 12 \quad \text{GCF is } \underline{6}.$$

$$\frac{8}{12} \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad \text{GCF is } \underline{\quad}.$$

$$\frac{15}{30} \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10 \quad 11 \quad 12 \quad 13 \quad 14 \quad 15 \quad \text{GCF is } \underline{\quad}.$$

$$\frac{6}{18} \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad \text{GCF is } \underline{\quad}.$$

$$\frac{7}{8} \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad \text{GCF is } \underline{\quad}.$$

Find the greatest common factor of the numerator and denominator of each fraction below. Think of all the whole numbers that divide evenly into both the numerator and denominator and then pick the largest.

$$\frac{6}{9} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{5}{10} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{5}{12} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{16}{20} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{15}{21} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{4}{20} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{20}{30} \quad \text{GCF is } \underline{\quad}.$$


$$\frac{10}{14} \quad \text{GCF is } \underline{\quad}.$$

$$\frac{17}{45} \quad \text{GCF is } \underline{\quad}.$$

Simplifying Fractions

To rename a fraction in simplest form, you divide both the numerator and denominator by their greatest common factor.

Follow the steps below to simplify $\frac{10}{15}$.

Step 1 $\frac{10}{15}$ 

Find the greatest common factor (GCF) of the numerator and denominator.


Step 2 $\frac{10 \div 5}{15 \div 5}$


Divide the numerator and denominator by the GCF.

Step 3 $\frac{10 \div 5}{15 \div 5} = \frac{2}{3}$

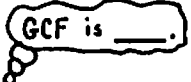
Rewrite the fraction in simplest form.

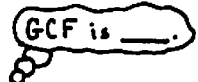
Simplify the fractions below.

$\frac{10}{15} \div 5 = \frac{2}{3}$ 


$\frac{3}{12} \div 3 =$ 

$\frac{12}{15} =$ 


$\frac{14}{21} =$ 


$\frac{14}{16} =$ 

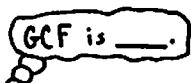
$\frac{7}{14} =$ 

$\frac{5}{35} =$ 

$\frac{3}{9} =$ 

$\frac{10}{25} =$ 

$\frac{2}{20} =$ 

$\frac{6}{14} =$ 

$\frac{2}{18} =$ 

Simplify.

$$\frac{9}{27} =$$

GCF is ____.

$$\frac{5}{25} =$$

GCF is ____.

$$\frac{2}{12} =$$

GCF is ____.

$$\frac{12}{18} =$$

GCF is ____.

$$\frac{15}{20} =$$

GCF is ____.

$$\frac{6}{27} =$$

GCF is ____.

Simplify. Remember to divide the numerator and denominator of each fraction by their greatest common factor.

$$\frac{12 \div 3}{21 \div 3} = \frac{4}{7}$$

$$\frac{5 \div 5}{20 \div 5} =$$

$$\frac{4 \div 2}{14 \div 2} =$$

$$\frac{8 \div 2}{14 \div 2} =$$

$$\frac{11 \div 11}{22 \div 11} =$$

$$\frac{15}{25} =$$

$$\frac{20 \div 10}{50 \div 10} =$$

$$\frac{14}{35} =$$

$$\frac{75}{100} =$$

$$\frac{9}{12} =$$

$$\frac{12}{20} =$$

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

$$\frac{8}{12} =$$

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

$$\frac{12}{30} =$$

Simplify. Try to do the division in your head.

$$\frac{10}{16} =$$

$$\frac{6}{10} =$$

$$\frac{6}{9} =$$

Simplify.

$$\frac{10}{22} =$$

$$\frac{3}{15} =$$

$$\frac{10}{18} =$$

$$\frac{3}{6} =$$

$$\frac{10}{20} =$$

$$\frac{4}{6} =$$

$$\frac{4}{24} =$$

$$\frac{20}{25} =$$

$$\frac{9}{21} =$$

$$\frac{4}{40} =$$

$$\frac{6}{18} =$$

$$\frac{8}{20} =$$

$$\frac{12}{18} =$$

$$\frac{28}{35} =$$

$$\frac{4}{28} =$$

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

$$\frac{14}{20} =$$

$$\frac{6}{8} =$$

$$\frac{5}{10} =$$

$$\frac{4}{12} =$$

$$\frac{2}{8} =$$

$$\frac{6}{21} =$$

$$\frac{10}{40} =$$

$$\frac{3}{18} =$$

$$\frac{2}{22} =$$

$$\frac{6}{24} =$$

$$\frac{10}{12} =$$

$$\frac{4}{10} =$$

$$\frac{2}{14} =$$

$$\frac{16}{20} =$$

$$\frac{20}{22} =$$

$$\frac{7}{28} =$$

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

$$\frac{7}{21} =$$

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

$$\frac{5}{50} =$$

$$\frac{6}{16} =$$

$$\frac{18}{20} =$$

$$\frac{12}{27} =$$

$$\frac{8}{16} =$$

$$\frac{15}{18} =$$

$$\frac{18}{21} =$$

$$\frac{8}{10} =$$

$$\frac{6}{20} =$$

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

$$\frac{30}{35} =$$

$$\frac{2}{10} =$$

$$\frac{16}{18} =$$

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

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

$$\frac{14}{18} =$$

$$\frac{10}{14} =$$

$$\frac{8}{18} =$$

$$\frac{2}{40} =$$

$$\frac{8}{22} =$$

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

$$\frac{4}{18} =$$

$$\frac{3}{21} =$$

$$\frac{12}{24} =$$

$$\frac{9}{15} =$$

Some fractions can be simplified in one step or in several steps. If you divide by the greatest common factor you will simplify in one step. If you divide by another common factor you will have to use several steps.

$$\frac{12 \div 6}{18 \div 6} = \frac{2}{3}$$

One step. Divide by the greatest common factor.

$$\frac{12 \div 3}{18 \div 3} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

Several steps. Divide by other common factors.

Simplify. Make sure you reach the simplest form for each fraction.

$$\frac{9}{18} =$$

$$\frac{15}{30} =$$

$$\frac{6}{12} =$$

$$\frac{12}{16} =$$

$$\frac{12}{28} =$$

$$\frac{20}{30} =$$

$$\frac{16}{24} =$$

$$\frac{24}{48} =$$

$$\frac{8}{28} =$$

$$\frac{4}{16} =$$

$$\frac{20}{24} =$$

$$\frac{24}{32} =$$

$$\frac{18}{24} =$$

$$\frac{18}{27} =$$

$$\frac{30}{36} =$$

$$\frac{15}{40} =$$

$$\frac{12}{36} =$$

$$\frac{25}{50} =$$

$$\frac{8}{32} =$$

$$\frac{18}{30} =$$

$$\frac{60}{100} =$$

1 and 0 are the simplest names for some fractions.

$$\frac{3}{3} = 1 \quad \frac{4}{4} = 1 \quad \frac{10}{10} = 1 \quad \frac{20}{20} = 1 \quad \frac{44}{44} = 1 \quad \frac{2000}{2000} = 1$$

$$\frac{0}{3} = 0 \quad \frac{0}{4} = 0 \quad \frac{0}{10} = 0 \quad \frac{0}{20} = 0 \quad \frac{0}{44} = 0 \quad \frac{0}{2000} = 0$$

Sandy was asked to simplify $\frac{3}{14}$.

The GCF of 3 and 14 is 1. so...

$$\frac{3 \div 1}{14 \div 1} = \frac{3}{14}$$

But that's what I started with!

That's right, Sandy. If the greatest common factor of the numerator and denominator is one, then the fraction is already in simplest form. You can't simplify it any more.

Some of the fractions below are already in simplest form. Circle them. Simplify the others.

$$\frac{2}{16} = \frac{1}{8}$$

$$\left(\frac{5}{7}\right)$$

$$\frac{8}{8} = 1$$

$$\frac{0}{15} = 0$$

$$\frac{2}{9}$$

$$\frac{14}{24}$$

$$\frac{0}{3}$$

$$\frac{2}{24}$$

$$\frac{15}{16}$$

$$\frac{10}{10}$$

$$\frac{0}{22}$$

$$\frac{16}{32}$$

$$\frac{6}{25}$$

$$\frac{16}{16}$$

$$\frac{20}{40}$$

$$\frac{2}{31}$$

$$\frac{12}{40}$$

$$\frac{10}{35}$$

$$\frac{15}{27}$$

$$\frac{0}{32}$$

$$\frac{24}{26}$$

$$\frac{1}{1}$$

$$\frac{5}{17}$$

$$\frac{9}{24}$$

$$\frac{100}{100}$$

$$\frac{9}{20}$$

$$\frac{0}{1899}$$

$$\frac{14}{28}$$

$$\frac{2361}{2361}$$

$$\frac{7}{12}$$

Chris took the quiz below. Chris was late to school and didn't finish. Put **C** or **X** by each problem that Chris did. Then you do the problems that Chris didn't have time to do.

	<i>Chris</i>		
	<i>Fraction Quiz</i>		
	<i>Simplify.</i>		
<input type="radio"/>	$\frac{9}{18} = \frac{1}{2}$ C	$\frac{18}{20} = \frac{9}{10}$	$\frac{10}{30}$
	$\frac{8}{24} = \frac{2}{6}$ <i>Not simplest form!</i>	$\frac{40}{50} = \frac{20}{25}$	$\frac{21}{35}$
<input type="radio"/>	$\frac{9}{24} = \frac{3}{4}$	$\frac{2}{10} = \frac{1}{10}$	$\frac{7}{21}$
	$\frac{15}{35} = \frac{5}{7}$	$\frac{24}{30} = \frac{4}{5}$	$\frac{6}{22}$
	$\frac{18}{32} = \frac{6}{8}$	$\frac{8}{10} = \frac{4}{5}$	$\frac{25}{40}$
	$\frac{8}{16} = \frac{5}{8}$	$\frac{9}{27} = \frac{3}{3}$	$\frac{9}{36}$
<input type="radio"/>	$\frac{12}{14} = \frac{6}{7}$	$\frac{150}{200}$	

Chris did ___ problems. ___ were correct.

What fraction of the problems that Chris did were correct? ___

What fraction of all the problems did Chris do correctly? ___

Simplifying Fractions with Large Numbers

Fractions with large numbers are hard to simplify because it is hard to find a common factor of the numerator and denominator. Below are some hints to help you simplify fractions with large numbers. You will have to simplify the fractions on this page in several steps. Use the hints to start, then simplify on your own until you reach the simplest form.

$$\frac{150 \div 10}{210 \div 10} =$$

$$\frac{1600}{2000} =$$

Hint 1 Divide by 10.

If the numerator and denominator both end in 0, then 10 is a common factor. Divide by 10 as often as you can, then see if the fraction is in simplest form.

$$\frac{128 \div 2}{144 \div 2} =$$

$$\frac{160}{192} =$$

Hint 2 Divide by 2.

If the numerator and denominator are both even (end in 0, 2, 4, 6, or 8), then 2 is a common factor. Keep dividing by 2 until they are no longer both even, then see if the fraction is in simplest form.

$$\frac{90 \div 5}{105 \div 5} =$$

$$\frac{125}{625} =$$

Hint 3 Divide by 5.

If the numerator and denominator end in 0 or 5, then 5 is a common factor. Divide by 5 as often as you can, then see if the fraction is in simplest form.

$$\frac{420}{980} =$$

$$\frac{850}{1500} =$$

$$\frac{5600}{8800} =$$

$$\frac{900}{1350} =$$

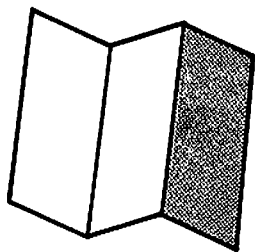
Use all three hints on these.

Do the numerator and denominator both end in 0? If yes, divide by ____.

Are the numerator and denominator both even? If yes, divide by ____.

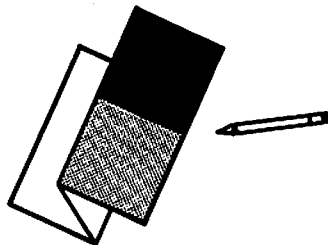
Do the numerator and denominator end in 0 or 5? If yes, divide by ____.

Multiplying Fractions



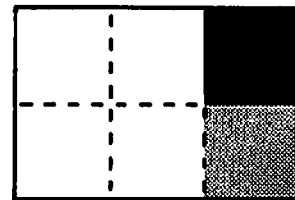
This piece of paper is folded into thirds.

is grey.

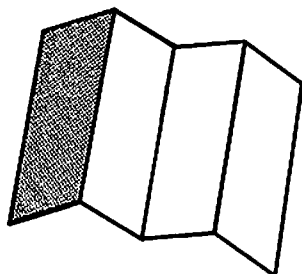


$\frac{1}{2}$ of the grey has been shaded black.

of the grey is black.

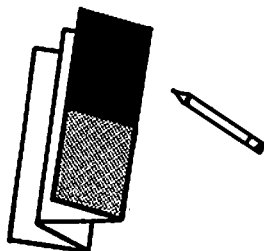


is black.



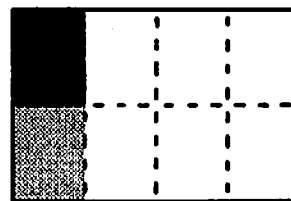
This piece of paper is folded into fourths.

is grey.

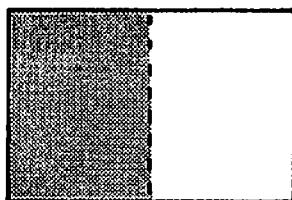


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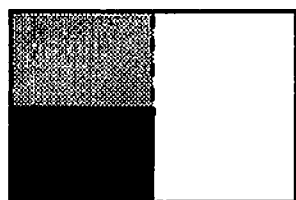
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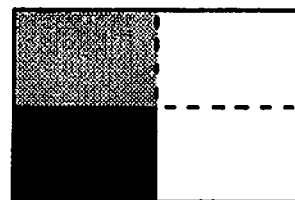
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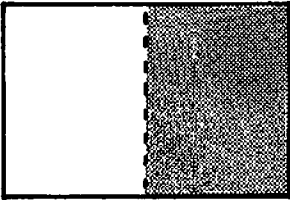

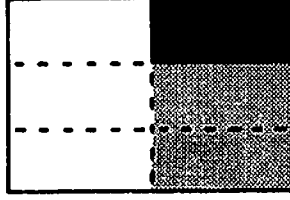
is grey.



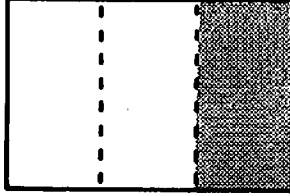
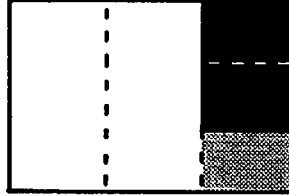
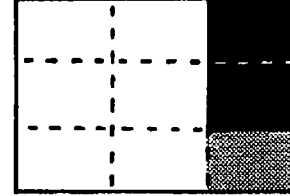
of the grey is black.



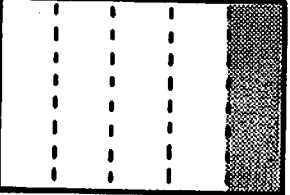
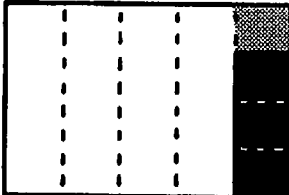
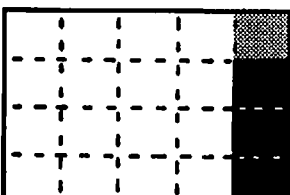
is black.

		
<p>○ is grey.</p>	<p>○ of the grey is black.</p>	<p>○ is black.</p>

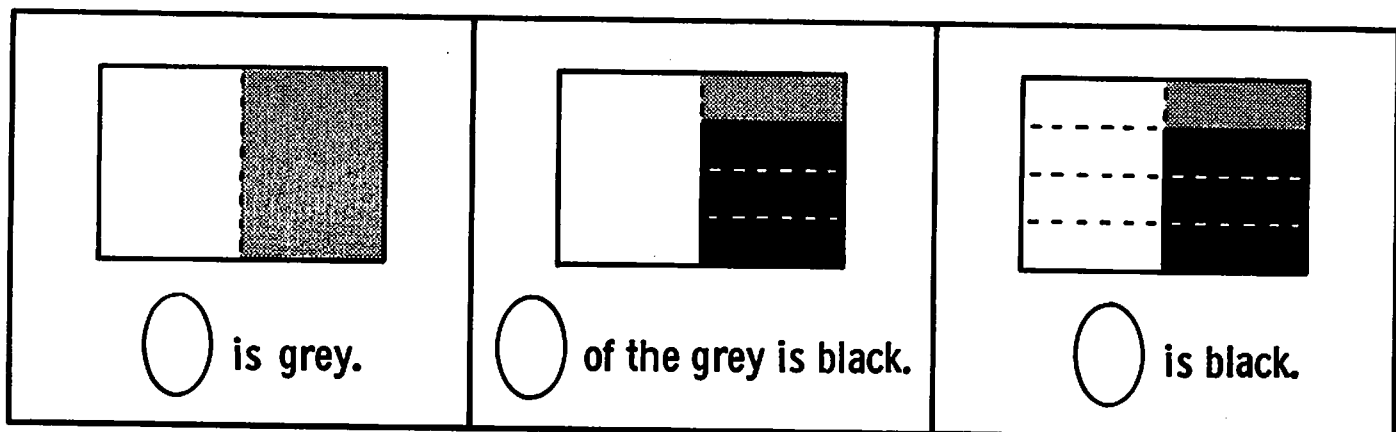
○ of ○ is ○

		
<p>○ is grey.</p>	<p>○ of the grey is black.</p>	<p>○ is black.</p>

○ × ○ = ○

		
<p>○ is grey.</p>	<p>○ of the grey is black.</p>	<p>○ is black.</p>

○ × ○ = ○



$$\bigcirc \times \bigcirc = \bigcirc$$

There is a way to multiply the fractions above without using pictures. Just multiply the numerators together and multiply the denominators together.

$$\begin{array}{l} \text{multiply numerators} \rightarrow \\ \text{multiply denominators} \rightarrow \end{array} \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$$

Multiply the fractions below.

$$\frac{4}{7} \times \frac{1}{3} =$$

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

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

$$\frac{1}{2} \times \frac{5}{12} =$$

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

$$\frac{2}{5} \times \frac{2}{5} =$$

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

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

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

$$\frac{5}{7} \times \frac{1}{2} \times \frac{1}{3} =$$

$$\frac{7}{9} \times \frac{5}{8} =$$

$$\frac{5}{8} \times \frac{7}{9} =$$

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

$$\frac{1}{2} \times \frac{3}{5} \times \frac{3}{7} =$$

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

Multiplying and Simplifying

Multiply and then simplify. Always make sure that you have found the simplest form for the answer.

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

$$\frac{2}{5} \times \frac{3}{4} =$$

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

$$\frac{4}{7} \times \frac{1}{2} =$$

$$\frac{6}{7} \times \frac{1}{3} =$$

$$\frac{8}{11} \times \frac{1}{2} =$$

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

$$\frac{1}{7} \times \frac{7}{8} =$$

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

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

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

$$\frac{2}{3} \times \frac{3}{4} \times \frac{1}{3} =$$

Look carefully below. You can save yourself some work.

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

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

$$\frac{2}{9} \times \frac{3}{10} =$$

$$\frac{3}{10} \times \frac{2}{9} =$$

$$\frac{7}{12} \times \frac{4}{5} =$$

$$\frac{4}{5} \times \frac{7}{12} =$$

Word Problems

Below are some problems. To solve each problem you must multiply fractions. Follow these four steps:

1. Read the problem.
2. Write it as multiplication of two fractions.
3. Multiply and simplify.
4. State your answer in a sentence.

Larry ordered $\frac{3}{8}$ of a pizza.
He gave Pat $\frac{1}{3}$ of his order.
How much of a pizza did
Pat get?

Problem: $\frac{1}{3} \times \frac{3}{8} = \frac{3}{24} = \frac{1}{8}$

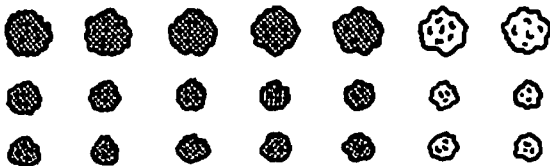
Answer: Pat got $\frac{1}{8}$ of a pizza.

My friend finished the test
in $\frac{3}{4}$ of an hour. I finished
it in $\frac{2}{3}$ of that time. How
long did it take me to finish
the test?

Problem:

Answer:

Cookies



Problem:

$\frac{2}{3}$ of the cookies are small.
 $\frac{5}{7}$ of the small cookies are chocolate.
What fraction are small chocolate
cookies?

Answer:

$\frac{3}{5}$ of the books in the library are non-fiction. $\frac{1}{12}$ of those are biographies. What fraction of the books in the library are biographies?

Problem:

Answer:

Today it took Gloria three fourths of an hour to come home from school. One third of that time she rode the bus. What part of an hour was the bus ride?

Problem:

Answer:

In ten minutes Janet walked two thirds of a mile. Pedro walked five sixths as far as Janet in ten minutes. What fraction of a mile did Pedro walk in ten minutes?

Problem:

Answer:

November 18 - Math

$\frac{4}{5}$ of the class was present. $\frac{2}{3}$ of those present turned in homework papers. $\frac{1}{2}$ of the papers turned in were correct.

A. Problem:

Answer:

Questions:

- A. What fraction of the class turned in homework?
- B. What fraction of the class had correct homework?

B. Problem:

Answer:

Simplifying and Multiplying

You can save work in some multiplication problems if you simplify before you multiply.

Here's how to simplify before you multiply:

Step 1

Find one numerator and one denominator with a common factor.



3 divides into 3.
3 divides into 6.

$$\frac{1}{\cancel{6}} \times \frac{\cancel{3}}{5} =$$

Step 2

Divide these numbers by their common factor.

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

3 into 3 is 1

3 into 6 is 2

Step 3

Multiply.

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

Simplify and multiply.

$$\frac{\cancel{4}^2}{7} \times \frac{1}{\cancel{2}_1} = \frac{2}{7}$$

$$\frac{1}{6} \times \frac{3}{4} =$$

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

$$\frac{7}{8} \times \frac{1}{7} =$$

$$\frac{5}{6} \times \frac{1}{15} =$$

$$\frac{8}{9} \times \frac{1}{2} =$$

$$\frac{5}{7} \times \frac{3}{10} =$$

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


$$\frac{4}{21} \times \frac{7}{9} =$$

$$\frac{2}{3} \times \frac{5}{6} =$$

$$\frac{1}{3} \times \frac{1}{3} \times \frac{12}{13} =$$

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

Here's another example:

 <div style="border: 1px solid black; border-radius: 15px; padding: 2px; display: inline-block; font-size: 0.8em;"> 2 divides into 6. 2 divides into 8. </div> $\frac{6}{7} \times \frac{1}{8} =$	<div style="border: 1px solid black; border-radius: 15px; padding: 2px; display: inline-block; font-size: 0.8em; margin-bottom: 10px;"> 2 into 6 is 3. </div> $\frac{\overset{3}{\cancel{6}}}{7} \times \frac{1}{\underset{4}{\cancel{8}}} =$ <div style="border: 1px solid black; border-radius: 15px; padding: 2px; display: inline-block; font-size: 0.8em; margin-top: 10px;"> 2 into 8 is 4. </div>	$\frac{\overset{3}{\cancel{6}}}{7} \times \frac{1}{\underset{4}{\cancel{8}}} = \frac{3}{28}$
--	--	--

Simplify and multiply

$$\frac{9}{11} \times \frac{5}{6} =$$

$$\frac{2}{5} \times \frac{1}{2} =$$

$$\frac{6}{13} \times \frac{1}{4} =$$

$$\frac{8}{9} \times \frac{1}{6} =$$

$$\frac{2}{7} \times \frac{3}{4} =$$

$$\frac{1}{14} \times \frac{7}{8} =$$

$$\frac{5}{7} \times \frac{1}{10} =$$

$$\frac{3}{10} \times \frac{5}{8} =$$

$$\frac{11}{12} \times \frac{5}{11} =$$

$$\frac{1}{6} \times \frac{9}{10} =$$

$$\frac{5}{6} \times \frac{7}{15} =$$

$$\frac{1}{6} \times \frac{4}{5} =$$

$$\frac{5}{6} \times \frac{10}{11} =$$

$$\frac{6}{7} \times \frac{1}{15} =$$



$$\frac{9}{10} \times \frac{13}{15} =$$

$$\frac{2}{7} \times \frac{3}{10} =$$

$$\frac{14}{15} \times \frac{1}{21} =$$

$$\frac{3}{8} \times \frac{17}{33} =$$

Sometimes you can divide two pairs of numbers to simplify a multiplication problem.

 <p>7 divides into both 7's.</p> $\frac{7}{9} \times \frac{6}{7} =$	 <p>3 divides into 6. 3 divides into 9.</p> $\frac{7}{9} \times \frac{6}{7} =$	$\frac{7}{9} \times \frac{6}{7} = \frac{2}{3}$
--	---	--

Divide two pairs of numbers and multiply.

$$\frac{2}{15} \times \frac{5}{9} = \frac{1}{9}$$

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

$$\frac{5}{12} \times \frac{3}{5} =$$

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

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

$$\frac{6}{7} \times \frac{7}{15} =$$

$$\frac{2}{21} \times \frac{9}{10} =$$

$$\frac{5}{6} \times \frac{3}{25} =$$

$$\frac{5}{14} \times \frac{4}{5} =$$

$$\frac{3}{14} \times \frac{7}{9} =$$

$$\frac{1}{4} \times \frac{2}{3} \times \frac{9}{10} =$$

$$\frac{3}{5} \times \frac{10}{11} \times \frac{2}{9} =$$

$$\frac{5}{11} \times \frac{11}{5} =$$

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

$$\frac{3}{2} \times \frac{2}{3} =$$

Pat and Sandy were asked to multiply:

$$\frac{4}{7} \times \frac{3}{8} =$$

Both students expressed their answers in simplest form, but each did the problem a different way.

Pat $\frac{\overset{1}{\cancel{4}}}{7} \times \frac{3}{\underset{2}{\cancel{8}_2}} = \frac{3}{14}$

Pat divided a numerator and denominator twice by 2.

Sandy $\frac{\overset{1}{\cancel{4}}}{7} \times \frac{3}{\underset{2}{\cancel{8}_4}} = \frac{3}{14}$

Sandy divided once by 4. 4 is the greatest common factor of 4 and 8.

Both answers are correct. Sandy's way is quicker.

Multiply and express your answer in simplest form. Try to divide using the greatest common factor. If you don't pick the greatest common factor, you will have to divide more than once.

$$\frac{11}{30} \times \frac{15}{17} =$$

$$\frac{3}{8} \times \frac{4}{11} =$$

$$\frac{6}{7} \times \frac{5}{12} =$$

$$\frac{12}{17} \times \frac{1}{12} =$$

$$\frac{1}{12} \times \frac{8}{9} =$$

$$\frac{9}{13} \times \frac{5}{18} =$$

$$\frac{4}{9} \times \frac{9}{13} =$$

$$\frac{2}{27} \times \frac{9}{11} =$$

$$\frac{12}{13} \times \frac{5}{24} =$$

Multiply. Express your answer in simplest form.

What is the product of $\frac{2}{7}$ and $\frac{14}{15}$? $\frac{2}{\cancel{7}} \times \frac{\cancel{14}^2}{15} = \frac{4}{15}$	Multiply $\frac{1}{3}$ and $\frac{12}{13}$.
What is $\frac{3}{7}$ of $\frac{4}{7}$?	What is $\frac{5}{6}$ times $\frac{3}{10}$?
Multiply $\frac{1}{6}$ by $\frac{3}{5}$.	Find the product of $\frac{2}{5}$, $\frac{3}{5}$, and $\frac{4}{5}$.

To multiply and express your answer in simplest form, you can multiply first and then simplify, or you can simplify first and then multiply. Although it is usually easier to simplify first and then multiply, you should get the same answer either way you do the problem.

Multiply first. Then simplify.	Simplify first. Then multiply.	Same answer ?
$\frac{3}{7} \times \frac{7}{10} = \frac{21}{70} = \frac{3}{10}$	$\frac{\cancel{3}}{\cancel{7}} \times \frac{7}{10} = \frac{3}{10}$	<input checked="" type="radio"/> yes <input type="radio"/> no
$\frac{5}{9} \times \frac{4}{5} =$	$\frac{5}{9} \times \frac{4}{\cancel{5}} =$	yes <input type="radio"/> no
$\frac{2}{7} \times \frac{5}{6} =$	$\frac{2}{7} \times \frac{5}{6} =$	yes <input type="radio"/> no
$\frac{9}{10} \times \frac{2}{3} =$	$\frac{9}{10} \times \frac{2}{3} =$	yes <input type="radio"/> no
$\frac{1}{2} \times \frac{2}{9} \times \frac{3}{5} =$	$\frac{1}{2} \times \frac{2}{9} \times \frac{3}{5} =$	yes <input type="radio"/> no

Reciprocals

Multiply and then simplify.

$$\frac{4}{5} \times \frac{3}{4} = \frac{12}{20} = \frac{3}{5}$$

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

$$\frac{2}{3} \times \frac{3}{2} =$$

$$\frac{2}{3} \times \frac{6}{7} =$$

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

Simplify and then multiply.

$$\frac{2}{5} \times \frac{2}{2} = \frac{2}{5}$$

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

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

$$\frac{2}{7} \times \frac{7}{2} =$$

$$\frac{5}{6} \times \frac{6}{5} =$$

Draw a loop around each pair of fractions above whose product is 1.

Two fractions whose product equals one are called reciprocals. $\frac{4}{3}$ and $\frac{3}{4}$ are reciprocals because $\frac{4}{3} \times \frac{3}{4} = 1$. $\frac{4}{3}$ is the reciprocal of $\frac{3}{4}$. $\frac{3}{4}$ is the reciprocal of $\frac{4}{3}$.

Find the reciprocal needed to make 1.

$$\frac{3}{4} \times \left(\frac{4}{3}\right) = 1$$

$$\frac{5}{2} \times (\quad) = 1$$

$$\frac{1}{9} \times (\quad) = 1$$

$$(\quad) \times \frac{5}{6} = 1$$

$$(\quad) \times \frac{3}{10} = 1$$

$$(\quad) \times \frac{1}{4} = 1$$

Find the reciprocal.

$$\frac{2}{7}, (\quad)$$

$$\frac{9}{10}, (\quad)$$

$$\frac{365}{487}, (\quad)$$

$$\frac{1}{5}, (\quad)$$

tricky!

$$5, (\quad)$$

Dividing Fractions

Reciprocals are used to divide by a fraction. Dividing by a fraction gives the same answer as multiplying by the fraction's reciprocal. Rewrite division by a fraction as multiplication by its reciprocal.

Follow the steps below to rewrite $\frac{5}{8} \div \frac{2}{3} =$ as multiplication.

Step 1 $\frac{5}{8} \div \frac{2}{3} = \frac{5}{8}$ Copy the first fraction.

Step 2 $\frac{5}{8} \div \frac{2}{3} = \frac{5}{8} \times$ Change division to multiplication.

Step 3 $\frac{5}{8} \div \frac{2}{3} = \frac{5}{8} \times \frac{3}{2}$ Change the second fraction to its reciprocal.

Fill in the missing numerators and denominators below in order to rewrite each division problem as multiplication by the reciprocal.

$$\frac{4}{5} \div \frac{3}{7} = \frac{4}{5} \times \frac{7}{\quad}$$

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

$$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{\quad}{3}$$

$$\frac{3}{8} \div \frac{2}{5} = \frac{3}{8} \times \frac{5}{\quad}$$

$$\frac{5}{6} \div \frac{1}{2} = \frac{\quad}{6} \times \frac{2}{\quad}$$

$$\frac{1}{7} \div \frac{3}{4} = \frac{1}{7} \times \frac{\quad}{\quad}$$

Circle the correct way to rewrite each division problem. Follow the steps above. Only one of the four choices is correct.

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

$$\frac{2}{5} \div \frac{3}{7} = \quad \frac{2}{5} \times \frac{7}{3} \quad \frac{2}{5} \times \frac{3}{7} \quad \frac{5}{2} \times \frac{7}{3} \quad \frac{5}{2} \times \frac{3}{7}$$

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

To divide by a fraction, rewrite the problem as multiplication by the fraction's reciprocal. Then multiply. Here are the steps:

1. Copy the first fraction.
2. Change division to multiplication.
3. Change the second fraction to its reciprocal.
4. Multiply.

Don't simplify until you have rewritten the problem as multiplication.

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

$$\frac{1}{4} \div \frac{5}{7} =$$

$$\frac{2}{5} \div \frac{3}{7} =$$

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

$$\frac{3}{5} \div \frac{2}{3} =$$

$$\frac{1}{11} \div \frac{3}{4} =$$

$$\frac{4}{27} \div \frac{1}{2} =$$

$$\frac{1}{9} \div \frac{2}{13} =$$

$$\frac{2}{15} \div \frac{3}{11} =$$

$$\frac{5}{12} \div \frac{4}{7} =$$

$$\frac{1}{8} \div \frac{2}{3} =$$

$$\frac{4}{9} \div \frac{3}{5} =$$

$$\frac{1}{6} \div \frac{5}{7} =$$

$$\frac{5}{21} \div \frac{6}{11} =$$

After you rewrite the division problems below, simplify and then multiply.

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

$$\frac{3}{8} \div \frac{1}{2} =$$

$$\frac{5}{21} \div \frac{3}{7} =$$

$$\frac{2}{3} \div \frac{5}{6} =$$

$$\frac{3}{10} \div \frac{2}{5} =$$

$$\frac{6}{13} \div \frac{3}{4} =$$

$$\frac{5}{7} \div \frac{10}{11} =$$

$$\frac{3}{14} \div \frac{2}{7} =$$

$$\frac{7}{12} \div \frac{7}{8} =$$

$$\frac{8}{15} \div \frac{4}{5} =$$

$$\frac{3}{8} \div \frac{3}{4} =$$

$$\frac{4}{9} \div \frac{8}{15} =$$

Divide. Express your answer in simplest form.

$$\frac{1}{5} \div \frac{1}{4} =$$

$$\frac{1}{8} \div \frac{1}{4} =$$

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

$$\frac{7}{12} \div \frac{5}{6} =$$

$$\frac{2}{7} \div \frac{4}{5} =$$

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

Multiplying and Dividing

Multiply or divide. Express your answer in simplest form.

$$\frac{4}{7} \times \frac{5}{12} =$$

$$\frac{3}{8} \div \frac{4}{5} =$$

$$\frac{2}{3} \div \frac{4}{5} =$$

$$\frac{10}{11} \times \frac{2}{5} =$$

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

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

$$\frac{2}{9} \times \frac{6}{7} =$$

$$\frac{18}{19} \times \frac{5}{6} =$$

$$\frac{20}{33} \times \frac{11}{30} =$$

$$\frac{2}{7} \div \frac{6}{7} =$$

$$\frac{5}{6} \div \frac{8}{9} =$$

$$\frac{3}{4} \times \frac{7}{12} =$$

Multiplication or division? Fill in \times or \div to make each statement true.

$$\frac{1}{7} \div \frac{2}{5} = \frac{5}{14}$$

$$\frac{7}{17} \frac{2}{3} = \frac{14}{51}$$

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

$$\frac{1}{7} \frac{2}{5} = \frac{2}{35}$$

$$\frac{7}{17} \frac{2}{3} = \frac{21}{34}$$

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

$$\frac{3}{5} \frac{2}{3} = \frac{2}{5}$$

$$\frac{7}{12} \frac{3}{4} = \frac{7}{16}$$

$$\frac{2}{13} \frac{4}{5} = \frac{5}{26}$$

Vocabulary Review

Make a true statement using one word or phrase from the box.

simplify - equal parts - reciprocal - whole numbers - denominator
 multiplying - factor - simplest form - GCF - fractions - numerators
 mixed numbers - equal fractions - greatest common factor

6 is a _____ of 12.

$\frac{5}{6}$ is the _____ of $\frac{6}{5}$.

$18\frac{3}{4}$, $5\frac{1}{2}$, $3\frac{1}{3}$ are examples of _____.

$\frac{20}{36}$, $\frac{10}{11}$, $\frac{4}{5}$ all have even _____.

I can _____ $\frac{8}{12}$ to $\frac{2}{3}$.

The _____ of 12 and 18 is 6.

Fractions can be shown by dividing a unit into _____.

12 is the _____ of 12 and 24.

$\frac{3}{5}$, $\frac{18}{5}$, $\frac{5}{5}$ all have the same _____.

Dividing a fraction by a fraction is the same as _____ the fraction by the reciprocal of the second fraction.

306, 2, 5 are all _____.

$\frac{4}{9}$, $\frac{10}{3}$, $\frac{7}{8}$ are all _____.

$\frac{4}{10}$, $\frac{6}{20}$, $\frac{2}{5}$ are _____; only $\frac{2}{5}$ is in

_____.

Practice Test - Key To Fractions Book 2

Name _____

Date _____

Make equal fractions.

Circle the fraction in simplest form.

$\frac{5}{7} = \frac{10}{\quad}$

$\frac{3}{4} = \frac{\quad}{16}$

$\frac{7}{14} = \frac{3}{6} = \frac{1}{2} = \frac{9}{18} = \frac{4}{8}$

numbers	factors	common factors	GCF
$\frac{12}{20}$	____, ____ , ____ , ____ , ____ , ____	____, ____ , ____	____
	____, ____ , ____ , ____ , ____ , ____		

Find the GCF.

$\frac{7}{21}$

GCF is ____.

$\frac{15}{21}$

GCF is ____.

Simplify.

$\frac{6 \div 2}{16 \div 2} =$

$\frac{4}{12} =$

$\frac{12}{18} =$

$\frac{10}{10} =$

Extra Credit:

$\frac{15}{30} =$

$\frac{15}{20} =$

$\frac{100}{250} =$

GCF stands for the _____ .

Multiply.

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

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

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

Multiply and then simplify.

$\frac{8}{9} \times \frac{1}{2} =$

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

$\frac{7}{10} \times \frac{5}{6} =$

Practice Test - Page 2

One snowy day, $\frac{3}{4}$ of Ms. Stapler's class was late to school. $\frac{1}{3}$ of the late students brought notes. What fraction of Ms. Stapler's class brought late notes that day?

Problem:

Answer:

Simplify and then multiply.

$$\frac{2}{3} \times \frac{3}{7} =$$

$$\frac{1}{8} \times \frac{2}{5} =$$

$$\frac{4}{5} \times \frac{5}{8} =$$

Multiply. Express your answer in simplest form.

$$\frac{5}{7} \times \frac{1}{5} =$$

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

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

Find the reciprocal.

$$\frac{3}{4}, \bigcirc$$

$$\frac{8}{9}, \bigcirc$$

$$\frac{37}{100}, \bigcirc$$

$$\frac{7}{10} \times \bigcirc = 1$$

Divide. Remember to rewrite each problem as multiplication by the reciprocal.

$$\frac{3}{8} \div \frac{2}{5} =$$

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

Divide. Express your answer in simplest form.

$$\frac{3}{8} \div \frac{1}{2} =$$

$$\frac{1}{7} \div \frac{1}{7} =$$

Key to Fractions

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