3rd Quarter

Mad Minute Averages

Name

wk of 1-4	wk of 1-9	wk of 1-16	wk of 1-23
Mon. No School	Mon. 29=73%	Mon. No School	Mon. 33=83%
Tues. No School	Tues. 27=68%	Tues. 25=63%	Tues. 35=88%
Wed. 27=68%	Wed. Mad Minute Quiz	Wed. 27=68%	Wed. 36=90%
Thurs. 29=73%	Thurs. 28=70%	Thurs. Mad Minute Quiz	Thurs. 34=85%
Fri. Midterm	Fri. 29=73%	Fri. 26=65%	Fri. 32=80%

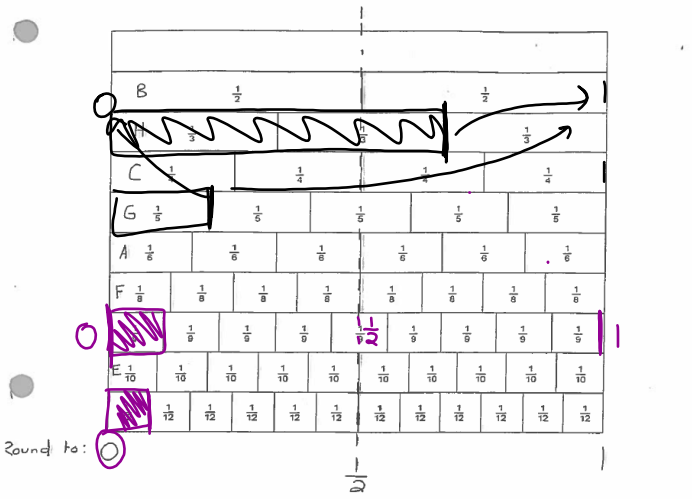
Catholic Schools Week

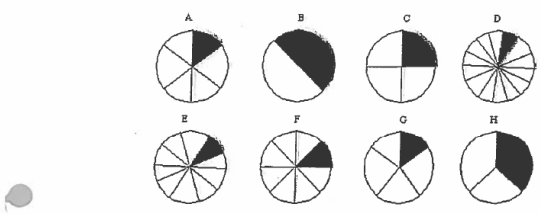
wk of 1-30	wk of 2-6		
Mon. 36=90%	Mon. 36=90%	Mon.	Mon.
Tues. No class	Tues. 37=93%	Tues.	Tues.
Wed. 37=93%	Wed. 38=95%	Wed.	Wed.
Thurs. Ch 7 Quiz	Thurs.	Thurs.	Thurs.
Fri. No class	Fri.	Fri.	Fri.

Mon.	Tues.	Wed.	Thurs.	Fri.
Mon.	Tues.	Wed.	Thurs.	Fri.

Week	Average	Parent Signature	Week	Average	Parent Signature
x one	28=70%		x six		
x two	28=70%		seven		
÷ three	26=65%		eight		
mixed four	34=85%		nine		
x five	37=93%		ten		

Name : _____ Date : _____





NAME _____ DATE _____ PERIOD ____

7-1

Study Guide and Intervention

Estimating Products

Numbers that are easy to divide mentally are called **compatible numbers**. One way to estimate the products of fractions is to use compatible numbers.

EXAMPLE 1 Estimate $\frac{2}{3} \times 8$.

Estimate $\frac{2}{3} \times 8$. Make it easier by finding $\frac{1}{3} \times 8$ first.

$\frac{1}{3} \times 9 = ?$ Change 8 to 9 since 3 and 9 are compatible numbers.

$\frac{1}{3} \times 9 = 3$ $\frac{1}{3}$ of 9, or 9 divided by 3, is 3.

$\frac{2}{3} \times 9 = 6$ Since $\frac{1}{3}$ of 9 is 3, $\frac{2}{3}$ of 9 is 2 × 3 or 6.

So, $\frac{2}{3} \times 8$ is about 6.

You can estimate the product of fractions by rounding to 0, $\frac{1}{2}$, or 1.

EXAMPLE 2 Estimate $\frac{1}{3} \times \frac{5}{6}$.

$\frac{1}{3} \times \frac{5}{6} \rightarrow \frac{1}{2} \times 1 = \frac{1}{2}$.

So, $\frac{1}{3} \times \frac{5}{6}$ is about $\frac{1}{2}$.

You can estimate the product of mixed numbers by rounding to the next whole number.

EXAMPLE 3 Estimate $3\frac{1}{4} \times 5\frac{7}{8}$.

Since $3\frac{1}{4}$ rounds to 3 and $5\frac{7}{8}$ rounds to 6, $3\frac{1}{4} \times 5\frac{7}{8} \rightarrow 3 \times 6 = 18$.

So, $3\frac{1}{4} \times 5\frac{7}{8}$ is about 18.

Lesson 7–1

EXERCISES

Estimate each product. Show how you found your estimate.

1. $\frac{1}{5} \times 24$ ≈ $\frac{1}{5} \cdot \frac{25}{1} \rightarrow 5$
2. $\frac{7}{8} \times \frac{3}{5}$ ≈ $1 \times \frac{1}{2} \rightarrow \frac{1}{2}$
3. $7\frac{2}{7} \times 5\frac{3}{4}$ ≈ $7 \cdot 6 \rightarrow 42$
4. $\frac{4}{7} \times 20$
5. $\frac{5}{8} \times 19$ ≈ $\frac{5}{8} \cdot \frac{20}{1} \rightarrow 10$
6. $2\frac{4}{5} \times 6\frac{1}{12}$
7. $\frac{1}{9} \times \frac{1}{12}$ ≈ $0 \times 0 \rightarrow 0$
8. $3\frac{7}{8} \times 10\frac{1}{10}$
9. $\frac{11}{12} \times \frac{6}{7}$
10. $\frac{3}{8} \times 17$
11. $4\frac{7}{8} \times 2\frac{9}{10}$ ≈ $5 \times 3 \rightarrow 15$
12. $\frac{11}{12} \times \frac{1}{3}$

≈ $\frac{1}{2} \cdot \frac{20}{1} = 10$

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7-1

Practice: Word Problems

Estimating Products

Estimate by using rounding or compatible numbers. Show how you found your estimates.

FOOD For Exercises 1–3, use the table. The table lists the grams of saturated fat per tablespoon of some common fats.

Grams of Saturated Fat per Tablespoon	
Safflower Oil	$\frac{4}{5}$
Olive Oil	$1\frac{4}{5}$
Butter	$7\frac{1}{5}$
Cream Cheese	$3\frac{1}{5}$

1. Jenny is making muffins. The recipe calls for 4 tablespoons of oil. If she uses safflower oil, about how many grams of saturated fat would she be adding to the muffin batter?

2. Curtis spread 2 tablespoons of butter on his slice of bread. About how many grams of saturated fat did Curtis add to the slice of bread?

3. Rubin is fond of bagels and cream cheese. He spreads $5\frac{2}{3}$ tablespoons of cream cheese on his bagel and ate the bagel. About how many grams of saturated fat did Rubin eat by eating the cream cheese?

≈ $6 \times 3 \rightarrow 18$ grams of saturated fat

4. **WATER** Marcia is making a habit of drinking at least 7 cups of water a day. About how many cups of water did she drink if she drank $\frac{3}{4}$ the number of cups she wanted to drink?

5. **TRAVEL** Seth has been driving for $4\frac{3}{4}$ hours at 62 miles per hour. About how many miles has he driven?

$d = 4\frac{3}{4} \times 62$

$d \approx 5 \times 60$

$d \approx 300$ miles

Seth has driven about 300 miles so far.

6. **MAIL** The U.S. Postal Service delivers about 199 billion pieces of mail each year. Of this mail, $\frac{4}{5}$ is sent by big commercial users. About how many pieces of mail are sent by big commercial users each year?

$\frac{4}{5}$ of 199

≈ $\frac{4}{1} \times \frac{200 \div 5}{1} = \frac{4 \cdot 40}{1} = \frac{160}{1}$

The U.S. P.S. delivers about 160 billion pieces of mail from big commercial users.

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Lesson 7–1

NAME _____ DATE _____ PERIOD ____

7-2

Study Guide and Intervention

Multiplying Fractions

Type of Fraction	Rename as Like	Example
two fractions	Multiply the numerators. Then multiply the denominators.	$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \frac{8}{15}$
fraction and a whole number	Rename the whole number as an improper fraction. Multiply the numerators. Then multiply the denominators.	$\frac{3}{11} \times 6 = \frac{3}{11} \times \frac{6}{1} = \frac{18}{11} = 1\frac{7}{11}$

EXAMPLE 1 Find $\frac{2}{5} \times \frac{3}{4}$. Estimate: $\frac{1}{2} \times 1 = \frac{1}{2}$

$\frac{2}{5} \times \frac{3}{4} = \frac{2 \times 3}{5 \times 4}$ Multiply the numerators. Multiply the denominators.

$= \frac{6}{20}$ or $\frac{3}{10}$ Simplify. Compare to the estimate.

EXAMPLE 2 Find $\frac{4}{9} \times 8$. Estimate: $\frac{1}{2} \times 8 = 4$

$\frac{4}{9} \times 8 = \frac{4}{9} \times \frac{8}{1}$ Write 8 as $\frac{8}{1}$.

$= \frac{4 \times 8}{9 \times 1}$ Multiply.

$= \frac{32}{9}$ or $3\frac{5}{9}$ Simplify. Compare to the estimate.

EXAMPLE 3 Find $\frac{2}{5} \times \frac{3}{8}$. Estimate: $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

$\frac{2}{5} \times \frac{3}{8} = \frac{\overset{1}{\cancel{2}} \times 3}{5 \times \underset{4}{\cancel{8}}}$ Divide both the numerator and denominator by the common factor, 2.

$= \frac{3}{20}$ Simplify. Compare to the estimate.

EXERCISES

Multiply. Write in simplest form.

1. $\frac{1}{4} \times \frac{5}{6} = \frac{1 \cdot 5}{4 \cdot 6} = \frac{5}{24}$
2. $\frac{3}{7} \times \frac{3}{4} = \frac{3 \cdot 3}{7 \cdot 4} = \frac{9}{28}$
3. $4 \times \frac{1}{6}$
4. $\frac{5}{12} \times \frac{2}{1} = \frac{5 \cdot 2}{12 \cdot 1} = \frac{10 \div 2}{12 \div 2} = \frac{5}{6}$
5. $\frac{3}{5} \times 10$
6. $\frac{3}{4} \times \frac{2}{3} = \frac{1}{4}$
7. $\frac{1}{7} \times \frac{1}{7}$
8. $\frac{2}{9} \times \frac{1}{2}$

$\frac{2}{3} \cdot \frac{3}{8} = \frac{6 \div 2}{24 \div 3}$

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

$\frac{1}{4}$

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7-2

Practice: Word Problems

Multiplying Fractions

COOKING For Exercises 1 and 2, use the recipe for chocolate frosting.

Chocolate Frosting Recipe

$\frac{1}{3}$ cup butter
2 ounces melted unsweetened chocolate
2 cups powdered sugar
$\frac{1}{2}$ teaspoon vanilla
2 tablespoons milk

4 oz
4 cups
4 tablespoons

1. Georgia wants to cut the recipe for chocolate frosting in half for a small cake that she's making. How much of each ingredient will she need?

Butter $\frac{1}{2} \cdot \frac{1}{3} = \frac{1}{6}$ cup

2. Suppose Georgia wanted to double the recipe; what would the measurements be for each ingredient? ×2

Butter: $\frac{1}{3} \times \frac{2}{1} = \frac{1 \cdot 2}{3 \cdot 1} = \frac{2}{3}$ cups

Vanilla: $\frac{1}{2} \times \frac{2}{1} = \frac{1 \cdot 2}{2 \cdot 1} = \frac{1}{1} = 1$ teaspoon

3. **COMPUTERS** $\frac{1}{5}$ of today's college students began using computers between the ages of 5 and 8. If a college has 3,500 students, how many of the students began using computers between the ages of 5 and 8?

$\frac{1}{5} \times \frac{3500}{1} = \frac{1 \cdot 700}{1 \cdot 1} = 700$ students

4. **EXERCISE** A paper published in a medical journal reported that about $\frac{11}{25}$ of girls ages 16 to 17 do not exercise at all. The entire study consisted of about 2,500 girls. About how many did not exercise?

$\frac{11}{25} \times \frac{2500}{1} = \frac{11 \cdot 100}{1 \cdot 1} = 1100$ girls did not exercise in the survey.

5. **ANIMALS** Catherine walks her dog $\frac{3}{4}$ mile every day. How far does she walk each week?

6. **MUSIC** If you practice a musical instrument each day for $\frac{2}{3}$ of an hour, how many hours of practice would you get in each week?

$\frac{2}{3}$ per day
7 days in a week

$\frac{2}{3}$ of 7

$\frac{2}{3} \times \frac{7}{1} = \frac{14}{3} = 4\frac{2}{3}$ hours

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7-3

Study Guide and Intervention

Multiplying Mixed Numbers

To multiply mixed numbers, write the mixed numbers as improper fractions, and then multiply as with fractions.

EXAMPLE 1 Find $2\frac{1}{4} \times 1\frac{2}{3}$. Estimate: $2 \times 2 = 4$.

$2\frac{1}{4} \times 1\frac{2}{3} = \frac{9}{4} \times \frac{5}{3}$ Write mixed numbers as improper fractions.

$= \frac{\overset{3}{\cancel{9}} \times 5}{4 \times \underset{1}{\cancel{3}}}$ Divide the numerator and denominator by their common factor, 3.

$= \frac{15}{4}$ or $3\frac{3}{4}$ Simplify. Compare to the estimate.

EXAMPLE 2 If $a = 1\frac{1}{3}$ and $b = 2\frac{1}{4}$, what is the value of ab?

$ab = 1\frac{1}{3} \times 2\frac{1}{4}$ Replace a with $1\frac{1}{3}$ and b with $2\frac{1}{4}$.

$= \frac{4}{3} \times \frac{9}{4}$ Write mixed numbers as improper fractions.

$= \frac{\overset{1}{\cancel{4}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{4}}}$ Divide the numerator and denominator by their common factors, 3 and 4.

$= \frac{3}{1}$ or 3 Simplify.

EXERCISES

Multiply. Write in simplest form.

1. $\frac{1}{3} \times 1\frac{1}{3}$
2. $1\frac{1}{5} \times \frac{3}{4}$
3. $3 \times 1\frac{3}{5}$
4. $\frac{2}{3} \times 3\frac{1}{2}$
5. $9 \times 1\frac{1}{6}$
6. $2\frac{4}{9} \times \frac{4}{11}$
7. $2\frac{1}{2} \times 1\frac{1}{3}$
8. $1\frac{1}{4} \times \frac{3}{5}$
9. $8 \times 1\frac{1}{4}$
10. $\frac{3}{8} \times 2\frac{1}{2}$
11. $\frac{4}{1} \times 1\frac{1}{8}$
12. $1\frac{1}{9} \times 3$
13. Evaluate $5x$ if $x = 1\frac{2}{3}$.
14. If $t = 2\frac{3}{8}$, what is $4t$?

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Lesson 7–3

NAME _____ DATE _____ PERIOD ____

7-3

Practice: Word Problems

Multiplying Mixed Numbers

FOOD For Exercises 1–3, use the table. The table shows Keith's food options for a 7-day outdoor survival course.

Food Options for 7-day Outdoor Survival Course	
peanut butter	1 plastic jar = $4\frac{5}{6}$ cups
dried noodles/rice	$14\frac{2}{3}$ cups
dried fruit/nuts	$6\frac{1}{6}$ cups
concentrated juice boxes	8 boxes = $16\frac{1}{4}$ cups
beef jerky	$3\frac{1}{3}$ cups
powdered milk	1 box = $8\frac{4}{5}$ cups
dehydrated soup	5 packages = $15\frac{2}{3}$ cups
canned tuna/meat	4 cans = $5\frac{3}{5}$ cups

1. Keith wants to divide his tuna over the seven-day course. How many cups of tuna meat can Keith plan on consuming each day?
2. Keith would like to bring enough concentrated juice in order to have $2\frac{1}{2}$ cups available per day. How much juice does he need and is 8 boxes of concentrated juice enough? see notes
3. Six other students have been advised to bring the same menu on the course. How many cups of dried fruits and nuts will the students be bringing all together?
4. **MEASUREMENT** Bill wants to put a large mural on a wall that is $9\frac{1}{3}$ feet long and $8\frac{1}{8}$ feet wide. Find the area of the wall. If the mural is 100 square feet, will it fit on the wall?
5. **PAINTING** Pam is mixing $3\frac{1}{5}$ batches of paint. If one batch calls for $2\frac{3}{4}$ tablespoons of detergent to add to the tempera powder, how many tablespoons of detergent will Pam need?
6. **COOKING** To make a batch of fruit punch, Steve needs $2\frac{2}{3}$ cups blackberry juice. If he wants to make $2\frac{3}{4}$ batches of punch, how many cups of blackberry juice will he need?

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Lesson 7–3

2) 7 days $2\frac{1}{4}$ cups per day

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

$\frac{7}{1} \times \frac{9}{4}$

$\frac{7 \cdot 9}{1 \cdot 4} \Rightarrow \frac{63}{4} \rightarrow 4\overline{)63}$ -4 23 -20 3 → $15\frac{3}{4}$

Keith needs $15\frac{3}{4}$ cups total.

8 boxes is equal to $16\frac{1}{4}$ cups, so Keith will have enough juice.

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Study Guide and Intervention

Dividing Fractions → x by reciprocal ("flip")

When the product of two numbers is 1, the numbers are called **reciprocals**.

EXAMPLE 1 Find the reciprocal of 8.

Since $8 \times \frac{1}{8} = 1$, the reciprocal of 8 is $\frac{1}{8}$.

EXAMPLE 2 Find the reciprocal of $\frac{5}{9}$.

Since $\frac{5}{9} \times \frac{9}{5} = 1$, the reciprocal of $\frac{5}{9}$ is $\frac{9}{5}$.

You can use reciprocals to divide fractions. To divide by a fraction, multiply by its reciprocal.

EXAMPLE 3 Find $\frac{2}{3} \div \frac{4}{5}$.

$\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{5}{4}$ Multiply by the reciprocal, $\frac{5}{4}$.

$= \frac{1}{\cancel{2}_{3}} \times \frac{5}{\cancel{4}_{2}}$ Divide 2 and 4 by the GCF, 2.

$= \frac{5}{6}$ Multiply numerators and denominators.

EXERCISES

Find the reciprocal of each number.

1. $\frac{2}{1} \rightarrow \frac{1}{2}$ 2. $\frac{1}{6} \rightarrow \frac{6}{1}$ 3. $\frac{4}{11} \rightarrow \frac{11}{4}$ 4. $\frac{3}{5} = \frac{5}{3}$

Divide. Write in simplest form.

5. $\frac{1}{3} \div \frac{2}{5}$ $\frac{1}{3} \times \frac{5}{2} \rightarrow \frac{5}{6}$ 6. $\frac{1}{9} \div \frac{1}{2}$ 7. $\frac{2}{3} \div \frac{1}{4}$ 8. $\frac{1}{2} \div \frac{3}{4}$ $\frac{1}{\cancel{2}_{1}} \times \frac{\cancel{4}^{2}}{3} \rightarrow \frac{2}{3}$

9. $\frac{4}{5} \div 2$ 10. $\frac{4}{5} \div \frac{1}{10}$ 11. $\frac{5}{12} \div \frac{5}{6}$ 12. $\frac{9}{10} \div 3$

13. $\frac{3}{4} \div \frac{7}{12}$ $\frac{3}{1} \times \frac{\cancel{12}^{3}}{7} \rightarrow \frac{9}{7} = 7\overline{)9}$ -7 2 → $1\frac{2}{7}$ 14. $\frac{9}{10} \div 9$ 15. $\frac{2}{3} \div \frac{5}{8}$ 16. $\frac{4}{1} \div \frac{7}{9}$ $\frac{4}{1} \times \frac{9}{7} \rightarrow \frac{36}{7}$ → $5\frac{1}{7}$ $7\overline{)36}$ -35 1

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7-4

Practice: Word Problems

Dividing Fractions

1. **PIZZA** Norberto has $\frac{9}{10}$ of a pizza. The pizza will be divided equally among 6 people. How much will each person get?

$\frac{9}{10} \div \frac{6}{1}$ Each person will get

$\frac{9}{10} \times \frac{1}{6} \rightarrow \frac{3}{20}$ $\frac{3}{20}$ of a pizza.

2. **CARPENTRY** Laura wants to cut a board into three equal pieces. The board is $\frac{5}{8}$ feet long. How long will each piece be?

3. **PETS** Errol uses $\frac{1}{3}$ can of wet dog food for his dog, Muddy, each day. How many servings will he get from 5 cans of dog food?

4. **ICE CREAM** Julia ate $\frac{1}{2}$ pint of mint chocolate chip ice cream. Mark ate $\frac{3}{4}$ pint of malt ice cream. How many times more ice cream did Mark eat?

$\frac{3}{4} \cdot \frac{1}{2} \cdot p = \frac{3}{4} \cdot \frac{2}{1}$

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

Mark ate $1\frac{1}{2}$ times more ice cream than Julia.

5. **GARDENING** Talia wants to give away 6 bundles of rosemary from her herb garden. If she has $\frac{1}{2}$ pound of rosemary, how much will each bundle weigh?

6. **SCHOOL** Kirsten has $\frac{3}{4}$ hour left to finish 5 math problems on the test. How much time does she have to spend on each problem?

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

$\frac{3}{4} \times \frac{1}{5} \rightarrow \frac{3}{20}$

Kirsten spends $\frac{3}{20}$ hours doing each Math problem.

7. **FOOD** Joe has $\frac{1}{2}$ of a cake he would like to split among 3 people. What part of the cake will each person get?

8. **INTERNET** $\frac{3}{4}$ of college students use the Internet more than the library. $\frac{9}{100}$ use the library more. How many times more students use the Internet?

$\frac{3}{4} \div \frac{9}{100}$

$\frac{3}{4} \times \frac{100}{9} \rightarrow \frac{25}{3}$

$\frac{25}{3} = 3\overline{)25}$ $8\frac{1}{3}$

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1

$8\frac{1}{3}$ times as many students use the Internet as the library.

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Name _____ Date _____ Class _____

LESSON 5-9

Review for Mastery

Dividing Fractions and Mixed Numbers

Two numbers are reciprocals if their product is 1. $\frac{2}{3}$ and $\frac{3}{2}$ are reciprocals because $\frac{2}{3} \cdot \frac{3}{2} = \frac{6}{6} = 1$.

Dividing by a number is the same as multiplying by its reciprocal.

$\frac{1}{4} \div 2 = \frac{1}{8}$ $\frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$

So, you can use reciprocals to divide by fractions.

To find $\frac{2}{3} \div 4$, first rewrite the expression as a multiplication expression using the reciprocal of the divisor, 4.

$\frac{2}{3} \cdot \frac{1}{4}$

Then use canceling to find the product in simplest form.

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

To find $3\frac{1}{4} \div 1\frac{1}{2}$, first rewrite the expression using improper fractions.

$\frac{13}{4} \div \frac{3}{2}$

Next, write the expression as a multiplication expression.

$\frac{13}{4} \cdot \frac{2}{3}$

$3\frac{1}{4} \div 1\frac{1}{2} = \frac{13}{4} \div \frac{3}{2} = \frac{13}{4} \cdot \frac{2}{3} = \frac{13}{2} \cdot \frac{1}{3} = \frac{13}{6} = 2\frac{1}{6} \rightarrow 1\frac{1}{5}$

Divide. Write each answer in simplest form.

1. $\frac{1}{4} \div 3$ $\frac{1}{4} \div \frac{3}{1}$ $\frac{1}{4} \cdot \frac{1}{3} \rightarrow \frac{1}{12}$

2. $1\frac{1}{2} \div 1\frac{1}{4}$ $\frac{3}{2} \div \frac{5}{4}$ $\frac{3}{2} \cdot \frac{4}{5} \rightarrow \frac{6}{5}$

3. $\frac{3}{8} \div 2$ $\frac{3}{8} \div \frac{1}{1}$ ____ · ____ / ____

4. $2\frac{1}{3} \div 1\frac{3}{4}$ ____ · ____ / ____

5. $\frac{1}{5} \div 2$ ____

6. $1\frac{1}{6} \div 2\frac{2}{3}$ ____

7. $\frac{1}{8} \div 4$ ____

8. $3\frac{1}{8} \div \frac{1}{2}$ $\frac{25}{8} \div \frac{1}{2}$ $\frac{25}{8} \times \frac{2}{1} \rightarrow \frac{25}{4}$

$4\overline{)25}$ $6\frac{1}{4}$

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1

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LESSON 5-9

Practice C

Dividing Fractions and Mixed Numbers

Find the reciprocal.

1. $10\frac{1}{2}$
2. $6\frac{3}{7}$
3. $2\frac{8}{9}$
4. $15\frac{1}{4} = \frac{61}{4} \rightarrow \frac{4}{61}$
5. $9\frac{2}{3} = \frac{29}{3} \rightarrow \frac{3}{29}$
6. $7\frac{5}{8}$

Divide. Write each answer in simplest form.

7. $\frac{8}{10} \div 1\frac{5}{6}$
8. $\frac{8}{9} \div \frac{6}{7}$
9. $3\frac{3}{5} \div 2\frac{1}{4}$
10. $4\frac{1}{2} \div 2\frac{3}{8}$
11. $5\frac{5}{6} \div 3\frac{1}{6}$
12. $\frac{11}{12} \div 2\frac{5}{8}$
13. $1\frac{9}{13} \div \frac{3}{8}$
14. $8\frac{4}{5} \div 3\frac{2}{9}$
15. $8\frac{2}{11} \div 2\frac{4}{7}$
16. $9\frac{6}{13} \div 10$ see notes
17. $12\frac{1}{3} \div 5\frac{4}{5}$
18. $9\frac{2}{3} \div 6\frac{8}{9}$ see notes
19. The area of the public swimming pool is $510\frac{7}{8}$ square feet. The pool is $30\frac{1}{2}$ feet long. What is the width of the pool? see notes
20. At the bank, Pamela exchanged all of her quarters for 16 five-dollar bills. How many quarters did Pamela exchange?
21. Barney has $16\frac{1}{5}$ yards of fabric. He will use $5\frac{2}{5}$ yards to make each costume. How many costumes can Barney make?

Total

$16\frac{1}{5} \div 5\frac{2}{5}$

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$\frac{81}{5} \div \frac{27}{5}$

$\frac{81}{5} \times \frac{5}{27} = \frac{3}{1} =$ Barney can make 3 costumes.

16) $9\frac{6}{13} \div 10$

$\frac{123}{13} \cdot \frac{1}{10} = \frac{123}{130}$

$13 \times 9 = 117$, $117 + 6 = 123$

18) $9\frac{2}{3} \div 6\frac{8}{9}$ → $\frac{62}{9}$

$\frac{29}{3} \times \frac{9^3}{62} = \frac{87}{62}$

$62\overline{)87}$ $1\frac{25}{62}$

-62

25

$29 \times 3 = 87$

19) $A = 510\frac{7}{8}\ ft^2$

$\ell = 30\frac{1}{2}\ ft$

$w = ?$

$A = \ell \cdot w$

$\frac{510\frac{7}{8}}{30\frac{1}{2}} = \frac{30\frac{1}{2} \cdot w}{30\frac{1}{2}}$

$510\frac{7}{8} \div 30\frac{1}{2}$

$510 \times 8 = 4080 + 7 = 4087$

$30 \times 2 = 60 + 1 = 61$

$\frac{4087}{8} \div \frac{61}{2}$

$\frac{4087}{8} \times \frac{2}{61} \rightarrow \frac{67}{4} = 4\overline{)67}$ $16\frac{3}{4}$

-4

27

-24

3

$61 \times 65 = 3965$ (66×)

$3965 + 61 = 4026$

$4026 + 61 = 4087$ (67×)

The width of the pool is $16\frac{3}{4}$ ft.

NAME _____ DATE _____ PERIOD ____

7-6

Study Guide and Intervention

Sequences

A **sequence** is a list of numbers in a specific order that follows a pattern or rule.

EXAMPLE 1 **Describe the pattern in the sequence 41, 37, 33, 29, ... Then find the next two numbers in the sequence.**

41, 37, 33, 29, ...
−4 −4 −4

In this sequence, 4 is subtracted from each number.
The next two numbers are 29 − 4, or 25, and 25 − 4, or 21.

EXAMPLE 2 **Describe the pattern in the sequence 243, 81, 27, 9, ... Then find the next two numbers in the sequence.**

243, 81, 27, 9, ...
$\times\frac{1}{3}$ $\times\frac{1}{3}$ $\times\frac{1}{3}$ or $\div 3$

In this sequence, each number is multiplied by $\frac{1}{3}$.
The next two numbers are $9 \times \frac{1}{3}$, or 3, and $3 \times \frac{1}{3}$, or 1.

EXERCISES

Describe each pattern. Then find the next two numbers in the sequence.

1. 72, 77, 82, 87, ..., 92, 97 — adding by 5
2. 3, 6, 12, 24, ..., 48, 96 — ×2
3. 32, 29, 26, 23, ...
4. $14\frac{1}{2}, 14, 13\frac{1}{2}, 13, 12\frac{1}{2}, \ldots$ — $-\frac{1}{2}$ $-\frac{1}{2}$ $-\frac{1}{2}$ — $12, 11\frac{1}{2}$
5. $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \ldots$
6. $3, 4\frac{1}{2}, 6, 7\frac{1}{2}, \ldots$

Find the missing number in each sequence.

7. ___, 75, 50, 25, ...
8. $17\frac{1}{3}, 18\frac{2}{3}, 20, \_\_\_, 22\frac{2}{3}, \ldots$ — $+1\frac{1}{3}$ $+1\frac{1}{3}$ — $21\frac{1}{3}$

NAME _____ DATE _____ PERIOD ____

7-6

Practice: Word Problems

Sequences

1. **SPORTS** Thomas is getting in shape for track. He is starting with a 2 mile run and will increase the run by $\frac{1}{2}$ mile each week for 4 weeks. What will his distance be for the second, third, and fourth weeks?

2. **WATER** Kevin is pumping water from a small pond into a water tank. At 9 A.M. the water level was 2 inches. At 11 A.M. it was $3\frac{1}{2}$ inches. At 1 P.M. it was 5 inches. If the pattern continues, what will the level be at 3 P.M.? Explain.

3. **BACKPACKING** A group of backpackers started with 5 pounds of cheese. On the second day they had only $2\frac{1}{2}$ pounds. On the third day they had $1\frac{1}{4}$ pounds. If the pattern continues, how much will they have on the fourth day? Explain.

Day 1st 2nd 3rd 4th
5 $2\frac{1}{2}$ $1\frac{1}{4}$? $\frac{5}{8}$
$\div 2$ $\times\frac{1}{2}$
1 2 $1\frac{1}{2}$ $1\frac{1}{4}$ 1 2
$2\frac{1}{2} \div 2 = 1\frac{1}{4}$ $2\frac{1}{2} \times \frac{1}{2}$ $\frac{5}{4} \times \frac{1}{2} = \frac{5}{8}$ lb

The group will have $\frac{5}{8}$ lb of cheese left on the 4th day.

4. **FROGS** The frog population in a Japanese garden is growing at an alarming rate. The counts taken show there were 14 frogs to start, then 28, then 56, then 112. If they continue to grow at this rate, what will the next count be? Explain.

5. **MONEY** James borrowed $315 from his parents for a snowboard. He agreed to pay them back in monthly payments. In February he owed $265. In March he owed $215. In April he owed $165. What are his monthly payments? How much will he owe in August?

Jan Feb Mar Apr
315 265 215 165
−50 −50 −50

His monthly payment is $50.

315 − 80 = 235
315 − 70 = 245
315 − 60 = 255
315 − 65 = 250
315 − 55 = 260
315 − 50 = 265

6. **TRAVEL** Jessica is on a road trip. At noon she still had 372 miles to go. At 1 P.M. she had 307 miles to go. At 2 P.M. she had 242 miles to go. At this rate, how many miles will Jessica have left to go at 5 P.M.? Explain.

May Jun Jul Aug
−50 −50 −50 −50
165 115 65 15

By August he will have nothing.