6th Grade Math

Monday, April 13 – Lesson 4-3, Dividing Mixed Numbers

Tuesday, April 14 – Lesson 6-1, Ratios

Wednesday, April 15 – Lesson 6-2, Rates

Thursday, April 16 – Lesson 7-2, Solving Problems with Proportions

Friday, April 17 – Lesson 8-2, Percents, Fractions, and Decimals

Name _____ Date _____ Class _____

LESSON 4-3

Dividing Mixed Numbers

Reteach

Two numbers are **reciprocals** if their product is 1.

$\frac{7}{3}$ and $\frac{3}{7}$ are reciprocals because $\frac{7}{3} \times \frac{3}{7} = 1$.

Write a mixed number as an improper fraction to find its reciprocal.

$2\frac{3}{4}$ and $\frac{4}{11}$ are reciprocals because $2\frac{3}{4} = \frac{11}{4}$ and $\frac{11}{4} \times \frac{4}{11} = 1$.

To find $2\frac{3}{4} \div 1\frac{3}{4}$, first rewrite the mixed numbers as improper fractions.

$\frac{11}{4} \div \frac{7}{4}$

Next, rewrite the expression as a multiplication expression and replace the divisor with its reciprocal.

$\frac{11}{4} \times \frac{4}{7}$

Solve. Write your answer in simplest form.

$2\frac{3}{4} \div 1\frac{3}{4} = \frac{11}{4} \div \frac{7}{4} = \frac{11}{4} \times \frac{4}{7} = \frac{11}{7} = 1\frac{4}{7}$

When Dividing Fractions

K C F
e h l
e a i
p n p
e

Find the reciprocal.

1. $\frac{9}{14}$ $\frac{14}{9}$

2. $3\frac{1}{2} = \frac{7}{2}$ $\frac{2}{7}$

3. $10\frac{2}{3} = \frac{32}{3}$ $\frac{3}{32}$

Complete the division. Write each answer in simplest form.

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

$= \frac{18}{5} \div \frac{9}{4}$

$= \frac{18}{5} \times \frac{4}{9} =$

$\frac{72}{45} = \frac{8}{5} = 1\frac{3}{5}$

5. $1\frac{1}{2} \div 1\frac{1}{4}$

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

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

$\frac{12}{10} = \frac{6}{5} = 1\frac{1}{5}$

6. $\frac{5}{12} \div 1\frac{7}{8}$

$= \frac{5}{12} \div \frac{15}{8}$

$= \frac{5}{12} \times \frac{8}{15} =$

$\frac{40}{180} = \frac{2}{9}$

Name _____ Date _____ Class _____

LESSON 4-3

Dividing Mixed Numbers

Practice and Problem Solving: A/B

Find the reciprocal. Show that the product of the mixed number and its reciprocal is 1.

1. $10\frac{1}{2}$ _____

2. $6\frac{3}{7}$ _____

3. $2\frac{8}{9}$ _____

4. $15\frac{1}{4}$ _____

5. $9\frac{2}{3}$ _____

6. $7\frac{5}{8}$ _____

Divide. Write each answer in simplest form.

7. $\frac{8}{10} \div 1\frac{5}{6}$ _____

8. $2 \div 1\frac{6}{7}$ _____

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. $6\frac{4}{5} \div 3\frac{2}{9}$ _____

15. $9\frac{2}{3} \div 6\frac{8}{9}$ _____

Write each situation as a division problem. Then solve.

16. A concrete patio is $5\frac{2}{3}$ feet wide. It has an area of $36\frac{5}{6}$ square feet.

    Is the concrete slab long enough to fit a 7-foot picnic table without placing the table along the diagonal of the patio? Explain.

    _____

17. The area of a mirror is 225 square inches, and its width is $13\frac{3}{4}$ inches.

    Will the mirror fit in a space that is 15 inches by 16 inches? Explain.

    _____

4-3 Answer Sheet

Reteach

1. $\frac{14}{9}$
2. $\frac{2}{7}$
3. $\frac{3}{32}$
4. $\frac{18}{5} \div \frac{9}{4}$

   $\frac{18}{5} \times \frac{4}{9}$

   $\frac{72}{45} = \frac{8}{5} = 1\frac{3}{5}$
5. $\frac{3}{2} \div \frac{5}{4}$

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

   $\frac{12}{10} = \frac{6}{5} = 1\frac{1}{5}$
6. $\frac{5}{12} \div \frac{15}{8}$

   $\frac{5}{12} \times \frac{8}{15}$

   $\frac{40}{180} = \frac{2}{9}$

Practice and Problem Solving: A/B

1. $\frac{2}{21}$; $\frac{21}{2} \times \frac{2}{21} = 1$
2. $\frac{7}{45}$; $\frac{45}{7} \times \frac{7}{45} = 1$
3. $\frac{9}{26}$; $\frac{26}{9} \times \frac{9}{26} = 1$
4. $\frac{4}{61}$; $\frac{4}{61} \times \frac{61}{4} = 1$
5. $\frac{3}{29}$; $\frac{3}{29} \times \frac{29}{3} = 1$
6. $\frac{8}{61}$; $\frac{61}{8} \times \frac{8}{61} = 1$
7. $\frac{24}{55}$
8. $1\frac{1}{13}$
9. $1\frac{3}{5}$
10. $1\frac{17}{19}$
11. $1\frac{16}{19}$
12. $\frac{22}{63}$
13. $4\frac{20}{39}$
14. $2\frac{16}{145}$
15. $1\frac{25}{62}$

Practice and Problem Solving: A/B (Continued)

16. $36\frac{5}{6} \div 5\frac{2}{3} = 6\frac{1}{2}$; No, the slab is not long enough for a 7-ft picnic table since $36\frac{5}{6} \div 5\frac{2}{3} = 6\frac{1}{2}$ ft.
17. $225 \div 13\frac{3}{4} = 16\frac{4}{11}$; The space is wide enough, but since $225 \div 13\frac{3}{4} = 16\frac{4}{11}$ in. and $16\frac{4}{11} > 16$, the space is not long enough to fit the mirror.

Name _____ Date _____ Class _____

LESSON 6-1

Ratios

Reteach

A ratio is a comparison of two quantities by division.

To compare the number of times vowels are used to the number of time consonants are used in the word "mathematics," first find each quantity.

Number of times vowels are used: 4

Number of times consonants are used: 7

Then write the comparison as a ratio, using the quantities in the same order as they appear in the word expression. There are three ways to write a ratio.

$\frac{4}{7}$ 4 to 7 4:7

Write each ratio.

1. days in May to days in a year
   31 to 365
2. sides of a triangle to sides of a square
   3 to 4

Equivalent ratios are ratios that name the same comparison.

The ratio of inches in a foot to inches in a yard is $\frac{12}{36}$. To find equivalent ratios, divide or multiply the numerator and denominator by the same number.

$\frac{12}{36} = \frac{12 \div 3}{36 \div 3} = \frac{4}{12}$ $\frac{12}{36} = \frac{12 \cdot 2}{36 \cdot 2} = \frac{24}{72}$

So, $\frac{12}{36}$, $\frac{4}{12}$, and $\frac{24}{72}$ are equivalent ratios.

Write three equivalent ratios to compare each of the following.

3. 8 triangles to 12 circles Sample Answers
   $\frac{8}{12} = \frac{4}{6} = \frac{2}{3} = \frac{6}{9}$
4. 20 pencils to 25 erasers Sample Answers
   20:25=4:5=8:10=12:15
5. 5 girls to 6 boys Sample Answers
   5 to 6 = 10 to 12 = 15 to 18 = 20 to 24
6. 10 pants to 14 shirts Sample Answers
   $\frac{10}{14} = \frac{5}{7} = \frac{15}{21} = \frac{20}{28}$

Name _____ Date _____ Class _____

LESSON 6-1

Ratios

Practice and Problem Solving: A/B

The number of animals at the zoo is shown in the table. Write each ratio in three different ways.

Animals in the Zoo	
Elephants	12
Giraffes	8
Lions	9
Seals	10
Otters	16

1. lions to elephants

   _____

2. giraffes to otters

   _____

3. lions to seals

   _____

4. seals to elephants

   _____

5. elephants to lions

   _____

Write three equivalent ratios for the given ratio.

6. $\frac{4}{3}$ _____ 7. $\frac{12}{14}$ _____ 8. $\frac{6}{9}$ _____

Find three ratios equivalent to the ratio described in each situation.

9. The ratio of cats to dogs in a park is 3 to 4. _____

10. The ratio of rainy days to sunny days is $\frac{5}{7}$. _____

11. The ratio of protein to fiber in a granola bar is $\frac{9}{2}$. _____

12. The ratio of clown fish to angelfish at a pet store is 5:4. The ratio of angelfish to goldfish is 4:3. There are 60 clown fish at the pet store.

    a. How many angelfish are there? _____

    b. How many goldfish are there? _____

6-1 Answer Sheet

Reteach

1. 31 to 365
2. 3 to 4
3. Sample answer: 2:3, 4:6. 6:9
4. Sample answer: 4:5, 8:10, 12:15
5. Sample answer: 10:12, 15:18, 20:24
6. Sample answer: 5:7, 15:21, 20:28

Practice and Problem Solving: A/B

1. 9 to 12; 9:12; $\frac{9}{12}$
2. 8 to 16; 8:16; $\frac{8}{16}$
3. 9 to 10; 9:10; $\frac{9}{10}$
4. 10 to 12; 10:12; $\frac{10}{12}$
5. 12 to 9; 12:9; $\frac{12}{9}$
6. Answers may vary. Sample answers: $\frac{8}{6}, \frac{16}{12}, \frac{32}{24}$
7. Answers may vary. Sample answers: $\frac{6}{7}, \frac{18}{21}, \frac{24}{28}$
8. Answers may vary. Sample answers: $\frac{2}{3}, \frac{8}{12}, \frac{12}{18}$
9. Answers may vary. Sample answers: 6 to 8, 9 to 12, 12 to 16
10. Answers may vary. Sample answers: $\frac{10}{14}, \frac{15}{21}, \frac{20}{28}$
11. Answers may vary. Sample answers: $\frac{18}{4}, \frac{27}{6}, \frac{36}{8}$
12. a. 48
    b. 36

Name _____ Date _____ Class _____

LESSON 6-2

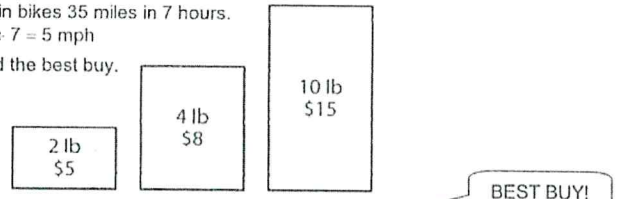
Rates

Reteach

You can divide to find a unit rate or to determine a best buy.

A. Find the unit rate.
Karin bikes 35 miles in 7 hours.
$35 \div 7 = 5$ mph

B. Find the best buy.

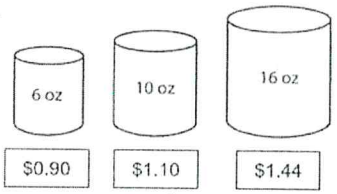


Divide to find each unit rate. Show your work.

1. Jack shells 315 peanuts in 15 minutes. $15\overline{)315} = 21$ peanuts per min.
2. Sharmila received 81 texts in 9 minutes. $9\overline{)81} = 9$ texts per min.
3. Karim read 56 pages in 2 hours. $2\overline{)56} = 28$ pages per hr.

Find the best buy. Show your work.

4.



$.15$ / $.11$ / $.09$ / $.09 per oz. The
$6\overline{).90}$ / $10\overline{)1.10}$ / $16\overline{)1.44}$ / 16oz can is the best buy

5.

Bread	Weight (oz)	Cost ($)
Whole wheat	16	2.24
Pita	20	3.60
7-grain	16	2.56

W.W. $16\overline{)2.24} = .14$ per ounce
P $20\overline{)3.60} = .18$ per ounce
7-G $16\overline{)2.56} = .16$ per ounce
Whole Wheat is the Best buy

Name _____ Date _____ Class _____

LESSON 6-2

Rates

Practice and Problem Solving: A/B

Find the unit rate.

1. David drove 135 miles in 3 hours. _____

2. Three medium apples have about 285 calories.

   _____

3. A 13-ounce package of pistachios costs $5.99. _____

Use the information in the table to solve Exercises 4–6.

Morgan's favorite spaghetti sauce is available in two sizes: pint and quart. Each size and its price are shown in the table.

Size	Quantity (oz)	Price ($)
pint	16	3.98
quart	32	5.98

4. What is the unit rate to the nearest cent per ounce for each size?

   a. pint: _____ b. quart: _____

5. Which size is the better buy? _____

6. A coupon offers $1.00 off the 16-ounce size. Which size is the better buy then?

   _____

Find the unit rate to the nearest cent per ounce. Compare.

7. a. A 24-ounce box of cornflakes costs $4.59. _____

   b. A 36-ounce box of cornflakes costs $5.79. _____

   c. Which is the better buy? _____

6-2 Answer Sheet

Reteach

1. 315 ÷ 15 = 21 peanuts a minute
2. 81 ÷ 9 = 9 texts per minute
3. 56 ÷ 2 = 28 pages per hour
4. 6 oz: \$0.90 ÷ 6 = \$0.15, 10 oz: \$1.10 ÷ 10 = \$0.11; 16 oz: \$1.44 ÷ 16 = \$0.09; The 16-oz can is the best buy.
5. \$2.24 ÷ 16 = \$0.14; \$3.60 ÷ 20 = \$0.18; \$2.56 ÷ 16 = \$0.16; whole wheat

Practice and Problem Solving: A/B

1. 45 mph
2. 95 calories per apple
3. \$0.46 per oz
4. a. \$0.25 per oz
   b. \$0.19 per oz
5. quart
6. Both are the same unit rate.
7. a. \$0.19 per oz
   b. \$0.16 per oz
   c. the 36-oz box
8. a. 7.5 pages per h
   b. \$2.67 per page

Name _____ Date _____ Class _____

1. $\frac{4}{5} = \frac{16}{20}$ (×4)

2. $\frac{3}{7} = \frac{15}{35}$ (×5)

3. $\frac{4}{3} = \frac{12}{9}$ (×3)

4. $\frac{13}{15} = \frac{52}{60}$ (×4)

5. $\frac{3}{5} = \frac{9}{15}$ (×3)

6. $\frac{10}{30} = \frac{4}{12}$

7. $\frac{41 \text{ logs}}{2 \text{ hours}} = \frac{16 \text{ logs}}{8 \text{ hours}}$ (×4)

8. $5\overline{)2.20}$ → .44 = 1 stamp

-20

20

-20

0

$7 \times .44 =$

$.44 \times 7 = 3.08$

$3.08

9. a. $2.5 \times 4 = 10.0$ → 10 mi

b. $\frac{2 \text{ in}}{5 \text{ mi}} = \frac{6 \text{ in}}{15 \text{ mi}}$ (×3) → 6 in

c. $3\overline{)16}$ → 3 in

10. $250\overline{)378.0}$ → 1.5 in

250

1280

1250

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LESSON 7-2

Solving Problems with Proportions

Reteach

You can solve problems with proportions in two ways.

A. Use equivalent ratios.

Hanna can wrap 3 boxes in 15 minutes.
How many boxes can she wrap in 45 minutes?

$\frac{3}{15} = \frac{}{45}$

$\frac{3 \cdot 3}{15 \cdot 3} = \frac{9}{45}$

$3 \times 3 = ?$
$15 \times \mathbf{3} = 45$

Hanna can wrap 9 boxes in 45 minutes.

B. Use unit rates.

Dan can cycle 7 miles in 28 minutes.
How long will it take him to cycle 9 miles?

$\frac{28 \text{ min}}{7 \text{ mi}} = \frac{\quad}{1 \text{ mi}}$ Divide by 7.

$\frac{28}{7} = \frac{28 \div 7}{1} = \frac{4}{1}$, or 4 minutes per mile

To cycle 9 miles, it will take Dan 9×4, or 36 minutes.

1. $\$2.04$ / 12 eggs — .17¢ per egg; 12⟌2.04
18 eggs × .17¢ each = $3.06

2. $10.43 / 7 lbs. — $1.49 per lb.; 7⟌10.43
$1.49 per lb. × 3 lbs. = $4.47

Solve each proportion. Use equivalent ratios or unit rates. Round to the nearest hundredth if needed.

1. Twelve eggs cost $2.04. How much would 18 eggs cost?

   _____

2. Seven pounds of grapes cost $10.43. How much would 3 pounds cost? _____

3. Roberto wants to reduce a drawing that is 12 inches long by 9 inches wide. If his new drawing is 8 inches long, how wide will it be?

   _____

3. 9 in × 12 in ; ? × 8 in

$\frac{9}{12} = \frac{}{8}$ ÷1.5 ÷1.5

8⟌12 → 1.5 ; 1.5⟌9 → 6

Name _____ Date _____ Class _____

LESSON 7-2

Solving Problems with Proportions

Practice and Problem Solving: A/B

Find the unknown value in each proportion. Round to the nearest tenth if needed.

1. $\frac{4}{5} = \frac{\quad}{20}$

2. $\frac{3}{7} = \frac{\quad}{35}$

3. $\frac{4}{3} = \frac{12}{\quad}$

4. $\frac{13}{15} = \frac{52}{\quad}$

Solve using equivalent ratios.

5. Wayne has a recipe on a 3-inch-by-5-inch index card that he wants to enlarge to 15 inches long. How wide will the enlargement be?

_____

6. Sharon is decreasing the size of a diagram of a leaf that is 30 centimeters long by 10 centimeters wide. If the reduced diagram is 4 centimeters wide, how long will it be?

_____

Solve using unit rates. Round to the nearest hundredth if needed.

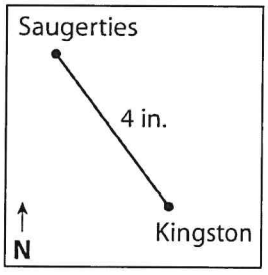
7. A wood stove burns 4 same-sized logs in 2 hours. How many logs does the stove burn in 8 hours? _____

8. In 2012, five U.S. postal stamps cost $2.20. How much did seven stamps cost? _____

9. a. What is the actual distance between Saugerties and Kingston? _____

   b. Catskill is 15 miles from Saugerties. What would the distance on the map be? _____

   c. On another map, the distance between Saugerties and Kingston is 2 inches. What would the distance from Saugerties to Catskill be on this map? _____



Scale: 1 in. = 2.5 mi.

10. The scale of a map is 1 in. : 250 miles. City A is 378 miles from City B. To the nearest tenth, how far is its distance on the map?

_____

7-2 Answer Sheet

Reteach

1. $3.06
2. $4.47
3. 6 in.

Practice and Problem Solving: A/B

1. 16
2. 15
3. 9
4. 60
5. 9 in.
6. 12 cm
7. 16
8. $3.08
9. a. 10 mi
   b. 6 in.
   c. 3 in.
10. 1.5 in.

Name _____ Date _____ Class _____

LESSON 8-2

Percents, Fractions, and Decimals

Reteach

To change a decimal to a percent:

- move the decimal point two places to the right: 0.07 = .07. = 7%
- write the % symbol after the number.

Write each decimal as a percent.

1. 0.34 — 34%
2. 0.06 — 6%
3. 0.93 — 93%
4. 0.57 — _____
5. 0.8 — 80%
6. 0.734 — 73.4%
7. 0.082 — 8.2%
8. 0.225 — 22.5%
9. 0.604 — 60.4%
10. 0.09 — 9%
11. 0.518 — 51.8%
12. 1.03 — 103%

To change a fraction to a percent:

- Find an equivalent fraction with a denominator of 100.
- Use the numerator of the equivalent fraction as the percent.

$$\frac{8}{25} = \frac{x}{100}$$
$$\frac{8 \cdot 4}{25 \cdot 4} = \frac{32}{100}$$
$$\frac{8}{25} = \frac{32}{100} = 32\%$$

Think: 100 ÷ 25 = 4. So, multiply the numerator and denominator by 4.

Write each fraction as a percent.

13. $\frac{3 \cdot 10}{10 \cdot 10} = \frac{}{100}$ — 30%
14. $\frac{2 \cdot 2}{50 \cdot 2} = \frac{}{100}$ — 4%
15. $\frac{7 \cdot 5}{20 \cdot 5} = \frac{}{100}$ — 35%
16. $\frac{1 \cdot 20}{5 \cdot 20} = \frac{}{100}$ — 20%
17. $\frac{1}{8}$ — .125 — 12.5%
18. $\frac{3 \cdot 4}{25 \cdot 4} =$ — 12%
19. $\frac{3 \cdot 25}{4 \cdot 25} = \frac{}{100}$ — 75%
20. $\frac{23 \cdot 2}{50 \cdot 2} = \frac{}{100}$ — 46%

TIBO

8 | 1.000

- 8
- 20
- 16
- 40
- 40
- 0

Name _____ Date _____ Class _____

LESSON 8-2

Percents, Fractions, and Decimals

Practice and Problem Solving: A/B

Write each decimal as a percent.

1. 0.17 _____
2. 0.56 _____
3. 0.04 _____
4. 0.7 _____
5. 0.025 _____
6. 0.803 _____
7. 1.3 _____
8. 2.10 _____

Write each fraction as a percent.

9. $\frac{13}{50}$ _____
10. $\frac{3}{5}$ _____
11. $\frac{3}{20}$ _____
12. $\frac{127}{100}$ _____
13. $\frac{5}{8}$ _____
14. $\frac{45}{90}$ _____
15. $\frac{7}{5}$ _____
16. $\frac{19}{25}$ _____

Order the numbers from least to greatest.

17. 0.3, $\frac{19}{50}$, 22% _____
18. 11%, $\frac{1}{8}$, $\frac{2}{25}$ _____
19. $\frac{5}{8}$, 0.675, 5% _____
20. 1.25, 0.51, 250% _____
21. $\frac{350}{100}$, 0.351, 27% _____
22. $\frac{4}{8}$, 0.05, 51% _____

23. The police use a speed gun to monitor one part of a highway. During one hour, 6 out of 25 cars were traveling above the speed limit. What percent of the cars were traveling above the speed limit?

_____

24. At Oaknoll School, 90 out of 270 students own computers. What percent of students at Oaknoll School do not own computers? Round to the nearest tenth of a percent.

_____

8-2 Answer Sheet

Reteach

1. 34%
2. 6%
3. 93%
4. 57%
5. 80%
6. 73.4%
7. 8.2%
8. 22.5%
9. 60.4%
10. 9%
11. 51.8%
12. 103%
13. 30%
14. 4%
15. 35%
16. 20%
17. 12.5%
18. 12%
19. 75%
20. 46%
21. 55%
22. 86%
23. 96%
24. 87.5%

Practice and Problem Solving: A/B

1. 17%
2. 56%
3. 4%
4. 70%
5. 2.5%
6. 80.3%
7. 130%
8. 210%
9. 26%
10. 60%
11. 15%
12. 127%
13. 62.5%
14. 33%
15. 140%
16. 76%
17. 22%, 0.3, $\frac{19}{50}$
18. $\frac{2}{25}$, 11%, $\frac{1}{8}$
19. 5%, $\frac{5}{8}$, 0.675
20. 0.51, 1.25, 250%
21. 27%, 0.351, $\frac{350}{100}$
22. 0.05, $\frac{4}{8}$, 51%
23. 24%
24. 66.7%