Study Guide Review

MODULE 4 Operations with Fractions

? ESSENTIAL QUESTION

How can you use operations with fractions to solve real-world problems?

EXAMPLE 1

Add.

$\frac{7}{9} + \frac{5}{12}$ — The GCF of 9 and 12 is 36.

$\frac{7 \times 4}{9 \times 4} + \frac{5 \times 3}{12 \times 3}$ — Use the GCF to make fractions with common denominators.

$\frac{28}{36} + \frac{15}{36} = \frac{43}{36}$ — Simplify.

$\frac{43}{36} = 1\frac{7}{36}$

Subtract.

$\frac{9}{10} - \frac{5}{6}$ — The GCF of 10 and 6 is 30.

$\frac{9 \times 3}{10 \times 3} - \frac{5 \times 5}{6 \times 5}$ — Use the GCF to make fractions with common denominators.

$\frac{27}{30} - \frac{25}{30} = \frac{2}{30}$ — Simplify.

$\frac{2}{30} = \frac{1}{15}$

EXAMPLE 2

Multiply.

A. $\frac{4}{5} \times \frac{1}{8}$

$\frac{4 \times 1}{5 \times 8} = \frac{4}{40}$ — Multiply numerators. Multiply denominators.

$\frac{4 \div 4}{40 \div 4} = \frac{1}{10}$ — Simplify by dividing by the GCF.

B. $2\frac{1}{4} \times \frac{1}{5}$

$\frac{9}{4} \times \frac{1}{5}$ — Rewrite the mixed number as a fraction greater than 1.

$\frac{9 \times 1}{4 \times 5} = \frac{9}{20}$ — Multiply numerators. Multiply denominators.

EXAMPLE 3

Divide.

A. $\frac{2}{7} \div \frac{1}{2}$

$\frac{2}{7} \times \frac{2}{1}$ — Rewrite the problem as multiplication using the reciprocal of the second fraction.

$\frac{2 \times 2}{7 \times 1} = \frac{4}{7}$ — Multiply numerators. Multiply denominators.

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

$\frac{7}{3} \div \frac{7}{4}$ — Write both mixed numbers as improper fractions.

$\frac{\overset{1}{\cancel{7}} \times 4}{3 \times \cancel{7}_1} = \frac{4}{3}$ — Multiply by the reciprocal of the second fraction.

$1\frac{1}{3}$ — Simplify: $\frac{4}{3} = 1\frac{1}{3}$

EXERCISES

Add. Write the answer in simplest form. (Lesson 4.1)

1. $\frac{3}{8} + \frac{4}{5}$ _____

2. $1\frac{9}{10} + \frac{3}{4}$ _____

3. $\frac{2}{8} + \frac{6}{12}$ _____

Subtract. Write the answer in simplest form. (Lesson 4.1)

4. $1\frac{3}{7} - \frac{4}{5}$ _____

5. $\frac{7}{8} - \frac{5}{12}$ _____

6. $3\frac{5}{10} - \frac{4}{8}$ _____

Multiply. Write the answer in simplest form. (Lesson 4.1)

7. $\frac{1}{7} \times \frac{4}{5}$ _____

8. $\frac{5}{6} \times \frac{2}{3}$ _____

9. $\frac{3}{7} \times \frac{14}{15}$ _____

10. $1\frac{1}{3} \times \frac{5}{8}$ _____

11. $1\frac{2}{9} \times 1\frac{1}{2}$ _____

12. $2\frac{1}{7} \times 3\frac{2}{3}$ _____

Divide. Write the answer in simplest form. (Lessons 4.2, 4.3)

13. $\frac{3}{7} \div \frac{2}{3}$ _____

14. $\frac{1}{8} \div \frac{3}{4}$ _____

15. $1\frac{1}{5} \div \frac{1}{4}$ _____

16. On his twelfth birthday, Ben was $4\frac{3}{4}$ feet tall. On his thirteenth birthday, Ben was $5\frac{3}{8}$ feet tall. How much did Ben grow between his twelfth and thirteenth birthdays? **(Lesson 4.1)**

_____

17. Ron had 20 apples. He used $\frac{2}{5}$ of the apples to make pies. How many apples did Ron use for pies? **(Lesson 4.4)**

_____

18. The area of a rectangular garden is $38\frac{1}{4}$ square meters. The width of the garden is $4\frac{1}{2}$ meters. Find the length of the garden. **(Lesson 4.4)**

_____

MODULE 5 # Operations with Decimals

Key Vocabulary
order of operations *(orden de las operaciones)*

? ESSENTIAL QUESTION

How can you use operations with decimals to solve real-world problems?

EXAMPLE 1

To prepare for a race, Lloyd ran every day for two weeks. He ran a total of 67,592 meters. Lloyd ran the same distance every day. He took a two-day rest and then started running again. The first day after his rest, he ran the same distance plus 1,607.87 meters more. How far did Lloyd run that day?

Step 1 Divide to see how far Lloyd ran every day during the two weeks.

$$\begin{array}{r} 4{,}828 \\ 14\overline{)67{,}592} \end{array}$$

Lloyd ran 4,828 meters a day.

Step 2 Add 1,607.87 to 4,828 to find out how far Lloyd ran the first day after his rest.

$$\begin{array}{r} 1{,}607.87 \\ + 4{,}828.00 \\ \hline 6{,}435.87 \end{array}$$

Lloyd ran 6,435.87 meters that day.

EXAMPLE 2

Rebecca bought 2.5 pounds of red apples. The apples cost $0.98 per pound. What was the total cost of Rebecca's apples?

$$
\begin{array}{r}
2.5 \quad \leftarrow \quad \text{1 decimal place} \\
\times\ .98 \quad \leftarrow\ +\text{2 decimal places} \\
\hline
200 \\
+\ 2250 \\
\hline
2.450 \quad \leftarrow \quad \text{3 decimal places}
\end{array}
$$

The apples cost $2.45.

EXAMPLE 3

Rashid spent $37.29 on gas for his car. Gas was $3.39 per gallon. How many gallons did Rashid purchase?

Step 1 The divisor has two decimal places, so multiply both the dividend and the divisor by 100 so that the divisor is a whole number:

$$3.39\overline{)37.29} \qquad 339\overline{)3729}$$

Step 2 Divide:

$$
\begin{array}{r}
11 \\
339\overline{)3729} \\
-339 \\
\hline
339 \\
-339 \\
\hline
0
\end{array}
$$

Rashid purchased 11 gallons of gas.

EXERCISES

Add. (*Lesson 5.2*)

1. $12.24 + 3.9$ _____

2. $0.986 + 0.342$ _____

3. $2.479 + 0.31$ _____

Subtract. (*Lesson 5.2*)

4. $6.19 - 3.05$ _____

5. $7.285 - 0.975$ _____

6. $14.31 - 13.41$ _____

Multiply. (*Lesson 5.3*)

7.
$$
\begin{array}{r}
12 \\
\times 0.4 \\
\hline
\end{array}
$$

8.
$$
\begin{array}{r}
0.15 \\
\times\ 9.1 \\
\hline
\end{array}
$$

9.
$$
\begin{array}{r}
3.12 \\
\times 0.25 \\
\hline
\end{array}
$$

Divide. (*Lessons 5.1, 5.4*)

10. $78{,}974 \div 21$ _____

11. $19{,}975 \div 25$ _____

12. $67{,}396 \div 123$ _____

13. $5\overline{)64.5}$ _____

14. $0.6\overline{)25.2}$ _____

15. $2.1\overline{)36.75}$ _____

16. A pound of rice crackers costs $2.88. Matthew purchased $\frac{1}{4}$ pound of crackers. How much did he pay for the crackers? (*Lesson 5.5*) _____

1. **CAREERS IN MATH** **Chef** Chef Alonso is creating a recipe called Spicy Italian Chicken with the following ingredients: $\frac{3}{4}$ pound chicken, $2\frac{1}{2}$ cups tomato sauce, 1 teaspoon oregano, and $\frac{1}{2}$ teaspoon of his special hot sauce.

   a. Chef Alonso wants each serving of the dish to include $\frac{1}{2}$ pound of chicken. How many $\frac{1}{2}$ pound servings does this recipe make?

   _____

   b. What is the number Chef Alonso should multiply the amount of chicken by so that the recipe will make 2 full servings, each with $\frac{1}{2}$ pound of chicken?

   _____

   c. Use the multiplier you found in part **b** to find the amount of all the ingredients in the new recipe.

   _____

   d. Chef Alonso only has three measuring spoons: 1 teaspoon, $\frac{1}{2}$ teaspoon, and $\frac{1}{4}$ teaspoon. Can he measure the new amounts of oregano and hot sauce exactly? Explain why or why not.

   _____

   _____

2. Amira is painting a rectangular banner $2\frac{1}{4}$ yards wide on a wall in the cafeteria. The banner will have a blue background. Amira has enough blue paint to cover $1\frac{1}{2}$ square yards of wall.

   a. Find the height of the banner if Amira uses all of the blue paint. Show your work.

   _____

   b. The school colors are blue and yellow, so Amira wants to add yellow rectangles on the left and right sides of the blue rectangle. The yellow rectangles will each be $\frac{3}{4}$ yard wide and the same height as the blue rectangle. What will be the total area of the two yellow rectangles? Explain how you found your answer.

   _____

   _____

   c. What are the dimensions of the banner plus yellow rectangles? What is the total area? Show your work.

   _____

   _____

Assessment Readiness
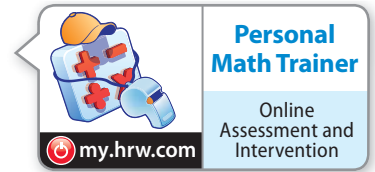
Selected Response

1. Each paper clip is $\frac{7}{8}$ of an inch long and costs $0.03. Exactly enough paper clips are laid end to end to have a total length of 56 inches. What is the total cost of these paper clips?

Ⓐ $0.49   Ⓒ $1.47

Ⓑ $0.64   Ⓓ $1.92

2. Which of these is the same as $\frac{8}{9} \div \frac{2}{3}$?

Ⓐ $\frac{8}{9} \div \frac{3}{2}$ Ⓒ $\frac{8}{9} \times \frac{2}{3}$

Ⓑ $\frac{2}{3} \div \frac{8}{9}$ Ⓓ $\frac{8}{9} \times \frac{3}{2}$

3. A rectangular tabletop has a length of $4\frac{3}{4}$ feet and an area of $11\frac{7}{8}$ square feet. What is the width of the tabletop?

Ⓐ $1\frac{1}{16}$ feet

Ⓑ $2\frac{1}{2}$ feet

Ⓒ $4\frac{1}{4}$ feet

Ⓓ $8\frac{1}{2}$ feet

4. Dorothy types 120 words per minute. How many words does Dorothy type in 1.75 minutes?

Ⓐ 150 words

Ⓑ 180 words

Ⓒ 200 words

Ⓓ 210 words

5. What is the opposite of 17?

Ⓐ -17

Ⓑ $-\frac{1}{17}$

Ⓒ $\frac{1}{17}$

Ⓓ 17

6. What is the absolute value of -36?

Ⓐ -36

Ⓑ 0

Ⓒ 6

Ⓓ 36

7. Noelle has $\frac{5}{6}$ of a yard of purple ribbon and $\frac{9}{10}$ of a yard of pink ribbon. How much ribbon does she have altogether?

Ⓐ $1\frac{11}{15}$ yards   Ⓒ $2\frac{1}{5}$ yards

Ⓑ $1\frac{4}{5}$ yards   Ⓓ $1\frac{14}{16}$ yards

8. Apples are on sale for $1.20 a pound. Logan bought $\frac{3}{4}$ of a pound. How much money did he spend on apples?

Ⓐ $0.75   Ⓒ $0.90

Ⓑ $0.80   Ⓓ $1.00

9. Samantha bought 4.5 pounds of pears. Each pound cost $1.68. How much did Samantha spend in all?

Ⓐ $7.52   Ⓒ $8.40

Ⓑ $7.56   Ⓓ $75.60

10. Gillian earns $7.50 an hour babysitting on the weekends. Last week she babysat for 2.2 hours on Saturday and 3.5 hours on Sunday. How much did Gillian earn?

Ⓐ $4.25   Ⓒ $42.75

Ⓑ $40.25   Ⓓ $427.50

11. Luis made some trail mix. He mixed $4\frac{2}{3}$ cups of popcorn, $1\frac{1}{4}$ cups of peanuts, $1\frac{1}{3}$ cups of raisins, and $\frac{3}{4}$ cup of sunflower seeds. He gave 5 of his friends an equal amount of trail mix each. How much did each friend get?

Ⓐ $1\frac{3}{5}$ cups   Ⓒ $1\frac{3}{4}$ cups

Ⓑ $1\frac{2}{3}$ cups   Ⓓ 2 cups

12. Emily cycled 20.25 miles over 4 days last week. She cycled the same amount each day. How many miles did Emily cycle each day to the nearest hundredth?

Ⓐ 5.01 miles   Ⓒ 5.60 miles

Ⓑ 5.06 miles   Ⓓ 5.65 miles

13. Landon drove 103.5 miles on Tuesday, 320.75 miles on Wednesday, and 186.30 miles on Thursday. How far did Landon drive all three days combined?

Ⓐ 61.55 miles   Ⓒ 610.55 miles

Ⓑ 610.055 miles   Ⓓ 6,105.5 miles

Mini Task

14. Carl earns \$3.25 per hour walking his neighbor's dogs. He walks them $\frac{1}{3}$ of an hour in the morning and $\frac{1}{2}$ of an hour in the afternoon.

a. How much time does Carl spend dog walking every day?

_____

b. How much time does Carl spend dog walking in a week?

_____

c. Ten minutes is equal to $\frac{1}{6}$ of an hour. How many minutes does Carl work dog walking each week?

_____

d. How much money does Carl earn each week?

_____

15. The city zoo had an equal number of visitors on Saturday and Sunday. In all, 32,096 people visited the zoo that weekend. How many visited each day?

_____

a. On Saturday, $\frac{1}{8}$ of the people who visited were senior citizens, $\frac{1}{8}$ were infants, $\frac{1}{4}$ were children, and $\frac{1}{2}$ were adults. How many of each group visited the zoo on Saturday?

Senior Citizens: _____

Infants: _____

Children: _____

Adults: _____

b. On Sunday, $\frac{1}{16}$ of the people who visited were senior citizens, $\frac{3}{16}$ were infants, $\frac{3}{8}$ were children, and $\frac{3}{8}$ were adults. How many of each group visited the zoo on Sunday?

Senior Citizens: _____

Infants: _____

Children: _____

Adults: _____

c. The chart shows how much each type of ticket costs.

Type of Ticket	Cost
Infants	Free
Children Over 2	\$4.50
Adults	\$7.25
Senior Citizens	\$5.75

d. How much money did the zoo make on Saturday? Show your work.

_____

_____

_____

_____

e. How much did the zoo make on Sunday?

_____

_____

_____

_____