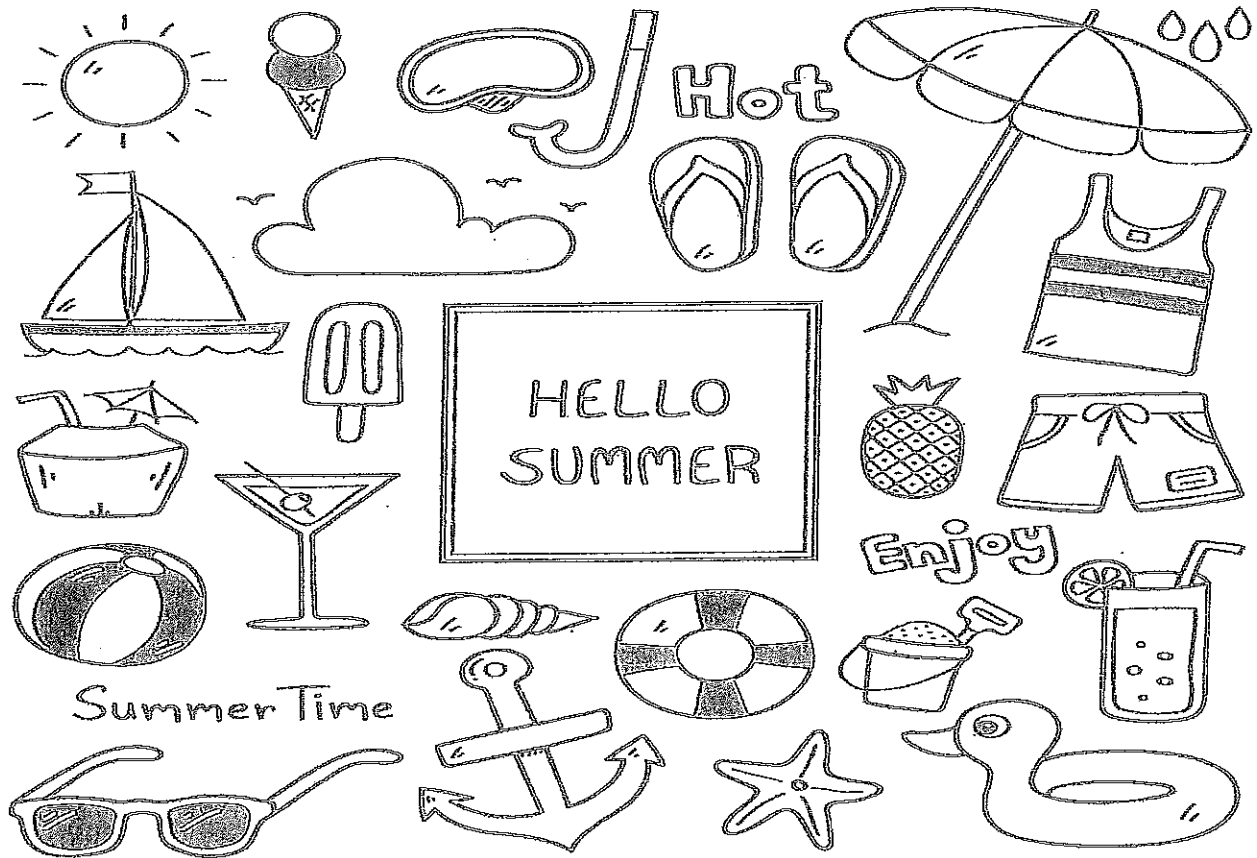


SUMMER MATH PACKET

7TH GRADE TO 8TH GRADE

Directions: Complete each page and turn in on your first day back to school. You must show your work!



LESSON
4.3

Name _____ Date _____

Study Guide

For use with pages 168–172

GOAL Write equivalent fractions.

VOCABULARY

A fraction is a number of the form $\frac{a}{b}$ ($b \neq 0$) where a is called the numerator and b is called the denominator.

Fractions that represent the same part-to-whole relationship are called equivalent fractions.

A fraction is in simplest form if its numerator and denominator have 1 as their greatest common factor.

EXAMPLE 1 Identifying Equivalent Fractions

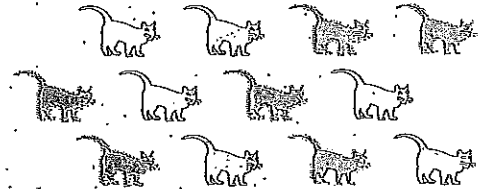
At a pet store, there are 12 kittens. Four of the kittens are gray. What fraction of the kittens at the pet store are gray?

Solution.

The kittens in the pet store are arranged in the diagram. Using the diagram, you can write two equivalent fractions.

$$\frac{\text{Number of gray kittens}}{\text{Number of kittens}} = \frac{4}{12}$$

$$\frac{\text{Number of groups of 2 gray kittens}}{\text{Number of groups of 2 kittens}} = \frac{2}{6}$$



The fractions $\frac{4}{12}$ and $\frac{2}{6}$ are equivalent fractions because they represent the same part-to-whole relationship.

Exercise for Example 1

1. What fraction of the kittens in Example 1 are white? Write two equivalent fractions.

EXAMPLE 2 Writing Equivalent Fractions

Write two fractions that are equivalent to $\frac{6}{9}$.

Multiply or divide the numerator and denominator by the same nonzero number to find an equivalent fraction.

$$\frac{6}{9} = \frac{6 \times 2}{9 \times 2} = \frac{12}{18}$$

Multiply numerator and denominator by 2.

$$\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

Divide numerator and denominator by 3, a common factor of 6 and 9.

Study Guide

For use with pages 168-172

Exercises for Example 2

Write two fractions that are equivalent to the given fraction.

2. $\frac{6}{10}$

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

4. $\frac{4}{5}$

EXAMPLE 3 Simplifying Fractions

Write the fraction in simplest form.

a. $\frac{12}{14}$

b. $\frac{9}{16}$

Solution

a. $\frac{12}{14} = \frac{6 \cdot \cancel{2}}{7 \cdot \cancel{2}}$ The GCF is 2. b. $\frac{9}{16}$ The GCF is 1.

$= \frac{6}{7}$

The fraction is in simplest form.

Exercises for Example 3

Write the fraction in simplest form.

5. $\frac{15}{18}$

6. $\frac{8}{17}$

7. $\frac{20}{25}$

EXAMPLE 4 Using Fractions in Simplest Form

You are helping with the laundry. Eight out of 10 socks are red. Write the number of red socks as a fraction in simplest form of the total number of socks. Then write the number of non-red socks as a fraction in simplest form of the total number of socks. Are the fractions equivalent?

Red Socks

$$\frac{\text{Red socks}}{\text{Total socks}} = \frac{8}{10} = \frac{4}{5}$$

Other Socks

$$\frac{\text{Non-red socks}}{\text{Total socks}} = \frac{2}{10} = \frac{1}{5}$$

Answer: No, $\frac{4}{5}$ and $\frac{1}{5}$ are not equivalent fractions.

Exercise for Example 4

8. In your math class, 12 students participate in after-school clubs. There are 21 students in your math class. Write the number of students who participate in after-school clubs as a fraction of the total number of students. Then write the number of students who do not participate in after-school clubs as a fraction of the total number of students. Write each fraction in simplest form.



Practice B

For use with pages 168-172

Match the equivalent fractions.

1. $\frac{8}{12}$

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

3. $\frac{6}{8}$

4. $\frac{4}{9}$

A. $\frac{24}{30}$

B. $\frac{24}{54}$

C. $\frac{10}{15}$

D. $\frac{42}{56}$

Write two fractions that are equivalent to the given fraction.

5. $\frac{28}{44}$

6. $\frac{42}{60}$

7. $\frac{45}{90}$

Write the fraction in simplest form.

8. $\frac{22}{66}$

9. $\frac{42}{105}$

10. $\frac{78}{90}$

11. $\frac{24}{48}$

12. $\frac{54}{60}$

13. $\frac{51}{68}$

Write the fractions in simplest form. Tell whether they are equivalent.

14. $\frac{4}{14}, \frac{10}{35}$

15. $\frac{60}{96}, \frac{35}{56}$

16. $\frac{25}{40}, \frac{60}{84}$

17. $\frac{40}{75}, \frac{36}{60}$

18. $\frac{36}{39}, \frac{72}{78}$

19. $\frac{60}{132}, \frac{48}{88}$

20. You have completed 32 problems of history homework and you have 16 problems left. What fraction of the problems have you completed? Write the fraction in simplest form.
21. You are on a road trip and make a rest stop after being on the road for 85 miles. You have another 55 miles to go until you reach your destination. What fraction of the trip have you completed? Write the fraction in simplest form.
22. A bag of 24 balloons contains 16 yellow balloons. A larger bag of 50 balloons contains 33 yellow balloons. For each bag of balloons, write a fraction in simplest form comparing the number of yellow balloons to the total number of balloons. Are the fractions equivalent?

Integer Addition and Subtraction (A)

$31 - (-17) =$

$93 - 22 =$

$(-20) + 41 =$

$20 + 62 =$

$82 + 38 =$

$(-8) + (-23) =$

$87 - (-36) =$

$34 + 62 =$

$20 - (-41) =$

$3 + (-63) =$

$(-63) - (-79) =$

$55 + 44 =$

$(-87) - (-31) =$

$84 - (-37) =$

$(-43) - 71 =$

$(-25) - 88 =$

$(-56) + 91 =$

$(-39) + 47 =$

$(-3) + (-71) =$

$52 + 23 =$

$(-61) - 26 =$

$(-3) - 33 =$

$(-29) + (-87) =$

$(-2) - (-56) =$

$24 - 50 =$

$65 + 19 =$

$46 + 46 =$

$43 - (-6) =$

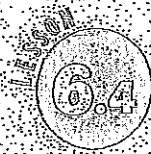
$(-20) - 37 =$

$12 + (-84) =$

$5 + (-40) =$

$75 - (-83) =$

$(-36) + (-29) =$



Name _____

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Practice A

For use with pages 272-275

Evaluate the power.

1. 3^2

2. 8^2

3. 13^2

Evaluate the expression when $a = 5$.

4. $2a$

5. $12a$

6. a^2

Tell whether the product will be positive or negative.

7. $15(-24)$

8. $-37(19)$

9. $-14(-23)$

Match the multiplication expression with its product.

10. $-9(6)$

A. -54

11. $18(3)$

B. -45

12. $15(-3)$

C. 45

13. $-9(-5)$

D. 54

Find the product.

14. $3(9)$

15. $8(-7)$

16. $-10(6)$

17. $-24(-2)$

18. $-13(4)$

19. $5(-25)$

Evaluate the expression when $m = -7$.

20. $3m$

21. $-6m$

22. m^2

23. The deepest part of the Arctic Ocean is the Eurasian Basin at -5450 meters. The deepest part of all the world's oceans, the Marianas Trench, is about 2 times deeper than the Eurasian Basin. What is the depth of the Marianas Trench?
24. The record low temperature in Arizona is -40°F . The record low temperature in Alaska is two times lower than the record low in Arizona. What is the record low temperature in Alaska?
25. A dolphin is diving downward at a speed of 5 meters per second. What integer represents the dolphin's change in position after 30 seconds?

Solving One-Step Equations I

You must show your work to get credit!! Check your answer.

Adding and Subtracting

1) $y + 6 = 20$

2) $x - 10 = 12$

3) $12 + z = 15$

4) $2 + n = 16$

5) $a + 4 = 14$

6) $m - 5 = -10$

7) $4 + b = 30$

8) $10 + c = 25$

9) $x - 60 = 20$

10) $g - 16 = 4$

11) $x - 15 = -20$

12) $w + 14 = 10$

13) $r - 18 = 27$

14) $13 + k = 25$

15) $f - 16 = 34$

16) $j + 17 = 19$

17) $r - 16 = 5$

18) $9 + t = 56$

Study Guide

For use with pages 332-337

GOAL Solve multiplication and division equations.

VOCABULARY

Division Property of Equality: Dividing each side of an equation by the same nonzero number produces an equivalent equation.

$$ax = b \quad (a \neq 0) \qquad \frac{ax}{a} = \frac{b}{a}$$

Multiplication Property of Equality: Multiplying each side of an equation by the same nonzero number produces an equivalent equation.

$$\frac{x}{a} = b \quad (a \neq 0) \qquad a \cdot \frac{x}{a} = a \cdot b$$

EXAMPLE 1 Solving a Multiplication Equation

Solve $7x = -63$.

$$7x = -63$$

Write original equation.

$$\frac{7x}{7} = \frac{-63}{7}$$

Divide each side by 7.

$$x = -9$$

Simplify.

✓ Check

$$7x = -63$$

Write original equation.

$$7 \cdot (-9) \stackrel{?}{=} -63$$

Substitute -9 for x.

$$-63 = -63 \checkmark$$

Solution checks.

Exercises for Example 1

Solve the multiplication equation. Check your solution.

1. $9a = 45$

2. $-6b = 36$

3. $7 = 2c$

EXAMPLE 2 Solving a Division Equation

Solve $\frac{x}{4} = 2.25$.

$$\frac{x}{4} = 2.25$$

Write original equation.

$$4 \cdot \frac{x}{4} = 4 \cdot 2.25$$

Multiply each side by 4.

$$x = 9$$

Simplify.



Name _____

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Study Guide

For use with pages 332-337

Exercises for Example 2

Solve the division equation. Check your solution.

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

5. $\frac{s}{3} = -15$

6. $1.5 = \frac{t}{3}$

EXAMPLE 3 Solving an Equation Using a Reciprocal

Solve $\frac{2}{7}x = 4$.

$$\frac{2}{7}x = 4$$

Write original equation.

$$\left(\frac{7}{2}\right)\frac{2}{7}x = \left(\frac{7}{2}\right)4$$

Multiply each side by $\frac{7}{2}$.

$$x = 14$$

Simplify.

Exercises for Example 3

Solve the equation. Check your solution.

7. $\frac{5}{6}x = 5$

8. $\frac{3}{4}y = -1$

9. $6 = \frac{3}{2}z$

EXAMPLE 4 Writing and Solving an Equation

A jet flies 130 miles in 20 minutes. Assuming that the jet flies at a constant speed, write and solve an equation to find the speed of the jet.

$$d = rt$$

Write formula for distance.

$$130 = r(20)$$

Substitute 130 for d and 20 for t .

$$\frac{130}{20} = \frac{20r}{20}$$

Divide each side by 20.

$$6.5 = r$$

Simplify.

Answer: The speed of the jet is 6.5 miles per minute.

Exercise for Example 4

10. In your high school marching band, there are 36 members in the brass section. This represents $\frac{3}{5}$ of the entire marching band. Write and solve an equation to find the number of members in the marching band.

Lesson 7.4

Multiplying and Dividing

19) $2x=16$

20) $15=3t$

21) $\frac{k}{2}=6$

22) $3h=27$

23) $\frac{j}{3}=4$

24) $6p=30$

25) $\frac{n}{10}=40$

26) $\frac{h}{4}=15$

27) $9s=81$

28) $14=2c$

29) $26=13d$

30) $6=\frac{m}{3}$

31) $7=\frac{p}{5}$

32) $4w=16$

33) $\frac{f}{3}=9$

34) $20=4x$

35) $3z=36$

36) $10=\frac{j}{6}$