Dear 7th graders,

This is the summer packet if you are entering 7th grade. There are 15 pages in the packet. Please do your very best work. The packet will count as a grade in the first trimester. It is due on the first day of school.

If you have trouble working the problems, look at online resources or ask a friend or parent for help. Good websites for help on these topics are: purplemath.com, mathisfun.com, khanacademy.com.

SHOW ALL WORK!! I will not give credit for answers that require more than 2 steps if you have not shown all your work. All long division problems must show all work.

In addition to these worksheets, practice your long division and math facts- a MUST!!!

Blessings for a wonderful summer,

Mrs. Colello

Rising 7th grade Summer math packet- mini tutorials

1. **Rates:**

Rates are a way of comparing two different quantities. Examples are: miles per hour, gallons per minute, feet per second, $ per pound, words per minute, number of people per square mile. We use rates to predict a greater or smaller quantity, using the rate that we are given.

Rates are written as 25 miles in one hour, 25 miles per hour, or 25miles/hour. They all mean the same thing.

For example, if we know that a car travels at 25 miles per hour, how many miles in one minute?

So, every hour the car travels 25 miles. If we were to calculate its rate per minute, we would have to divide the rate of hours by the number of minutes in one hour.

25 miles/hour means a rate per minute that will be very much less than 25!! If the car travels 25 miles in 60 minutes (60 min = 1 hour), then how many miles will it travel in 1 minute?

So the first thing you do is recognize the rate that you have, and the rate that you are converting to.

In this case, miles per hour, to miles per minute.

25 miles/1 hour = 25 miles/ 60 minutes. Then you do the division:

(Remember: per is another way of saying divided by)

25 ÷ 60 = .41667. so the answer is .41667 miles per minute.

If we know that a car travels 25 miles per hour, how many miles will it travel in 3 hours?

Now, we know in one hour it travels 25 miles, so EVERY HOUR it travels 25 miles. In the first hour, it travels 25 miles, in the the second hour, it travels another 25 miles, so the total AFTER 2 hours is 50 miles. By the end of 3 hours, it has traveled 75 miles.

25 miles/hour x 3 hours = 75 miles.

Another example of rates:

$15 for 3 lb of cherries = $15 / 3 lb = $5/ lb, or you pay $5 for every pound of cherries that you buy.

The whole idea with rates problems is to find a rate per unit item: whether it's tickets per dollar, or miles per gallon, or $$ per gallon: if youi are given a rate, it is really a fraction, and you need to simplify it to get a rate!

if you are given 20 tickets for $200, how many tickets can you buy for $50?

20 tix/$200 , or , 1 ticket per $10. (All I did was simplify the fraction to 1/20)

Once you have a unit rate in the numerator OR the denominator, you can find the equiavalent quantity or price for any size!! 20 tickets, for $200, is 1 ticket for $10. So when I ask , how much for 18 tickets, then you can calculate (18 tickets) ($10), or $180 for 18 tickets.

If the gas station charged $ 3.50 for a gallon of gas, that means you pay $3.50 per gallon, or $3.50/ 1gallon. For every gallon of gas that you buy, you have to pay $3.50. So if I ask , how much will you spend if you buy 15 gallons? Then you know, every time I buy one gallon, I spend $3.50. So if I buy 15 gallons, I have to spend $3.50 (15 gallons) = $52.50.

20 lb of cherries for $30. This is a little more difficult, because it reduces to 2/3, or 2 lb of cherries for $3.00. But you can easily calculate how much you would pay for 1 lb of cherries- $1.50.

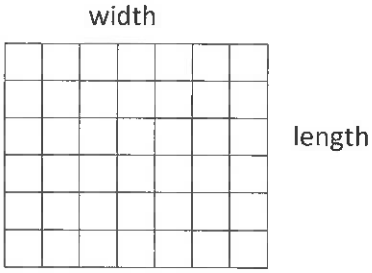
Conversions:

1 kilometer = 1000 m 60 minutes = 1 hour 60 seconds - 1 minute

2. **Geometry**

- An acute triangle is a triangle where all 3 angles are acute.
- An obtuse triangle is a triangle where one of the angles is obtuse.
- An isosceles triangle is a triangle where 2 of the sides are congruent.
- A right triangle is a triangle where one of it s angles is a right angle (90°).
- An equilateral triangle is a triangle where all three sides are congruent.

The area of a shape is really the number of units of space that a shape occupies. Area means a length in one direction (length) mujltiplied by a length in another direction (width). So if you had a rectangle that looks like this:



Each square represents one unit of space, or length = width = 1. We would say the length of this rectangle measures 6 units , and on the width it measures 7 units.

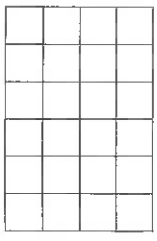
If we wanted to know the area of this rectangle in square feet, each square inside the rectangle represents an area of 1 ft by 1 ft. Since there are 6 rows of squares and 7 columns of squares, the total number of squares is 6 x 7 or 42 squares. So then we say the area is length times width, in this case, 6 square units times 7 square units, or 42 square units. Since we are given that we want to know the area in square feet, the area of this rectangle is

7 ft x 6 ft = 42 square feet, or 42 ft^2. (notice how dimensions perform like numbers: 5 x 5 = 5 squared = 5^2;

and feet x feet = feet squared or ft^2. The units for area are ALWAYS in square dimensions- ft^2, in^2, cm^2, m^2, etc.

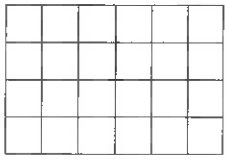
If we wanted to know the area in square inches, it is the same calculation but this time in inches!! Each square represents one square that measures 1 inch by 1 inch; since there are 7 columns x 5 rows, the area is 7 x 5 = 35 square inches, or 35 in^2. We calculate the area of any rectangle using the formula length times width = area.

Width = w =4



Length = l = 6

length = l = 6



Width = 4

Does it matter which side is labeled width or length?? No!! Because width x length = length x width. If w = 6 and l=4, then area = 6 x 4 = 24. If width = 4 and length = 6, the area = 6 x 4 = 24. SAME ANSWER!!

Perimeter: the perimeter of a shape is the length you would measure if you were to add up each side of a shape. So for the rectangle in the above example, the perimeter would be 4 + 6 + 4 + 6, since there are 4 sides of the shape. This can be written in a formula, for the perimeter of any rectangle, the formula is : $P = 2w + 2l$. If you look at the addition equation, 4+ 6+4 + 6 is really 2 (4) + 2(6) , or 8 + 12 = 20. So the perimeter of the rectangle = 20.

SUMMER MATH PACKET

For Students Entering

7^{th} Grade Math

(15 pages)

Name _____ Date _____

Rounding Decimals

Rounding Decimals

Round 8.135 to the nearest tenth.

$8.1\underline{3}5 \rightarrow 8.1$

less than 5

Round 32.56713 to the nearest hundredth.

$32.56\underline{7}13 \rightarrow 32.57$

greater than 5

Round to the nearest whole number.

1. 41.803 =
2. 119.63 =
3. 20.05 =
4. 3.45 =
5. 79.531 =
6. 8.437 =
7. 29.37 =
8. 109.96 =

Round to the nearest tenth.

9. 33.335 =
10. 1.861 =
11. 99.96 =
12. 103.103 =
13. 16.031 =
14. 281.05 =
15. 8.741 =
16. 27.773 =

Round to the nearest hundredth.

17. 69.713 =
18. 5.569 =
19. 609.906 =
20. 247.898 =
21. 5.535 =
22. 67.1951 =
23. 14.0305 =
24. 6.9372 =

0-7424-1787-5 Pre-Algebra

Name _____ Date _____

Multiplying and Dividing by 10, 100, etc.

When multiplying by a power of 10, move the decimal to the right:

34.61 x 10 → move 1 place → 346.1

6.77 x 100 → move 2 places → 677

When dividing by a power of 10, move the decimal to the left:

7.39 ÷ 100 → move 2 place → 0.0739

105.61 ÷ 1000 → move 3 places → 0.10561

1. 4.81 x 100 =
2. 37.68 ÷ 10 =
3. 0.46 x 1,000 =
4. 7.12 ÷ 10,000 =
5. 5.4 x 10 =
6. 27,500 ÷ 1,000 =
7. 4.395 x 100,000 =
8. 0.0075 ÷ 100 =
9. 2.274 x 10 =
10. 90,000 ÷ 100 =
11. 0.000618 x 1,000 =
12. 39.006 ÷ 1,000 =
13. 16 x 100 =
14. 28.889 ÷ 10,000 =
15. 36.89 x 10,000 =
16. 0.091 ÷ 100 =
17. 0.0336 x 100,000 =
18. 1,672 ÷ 100,000 =

0-7424-1787-5 Pre-Algebra

NAME _____ DATE _____ PERIOD _____

1-2 Study Guide and Intervention

Powers and Exponents

Exponent

$3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$

Base — common factors

The **exponent** tells you how many times to use the **base** as a factor.

EXAMPLE 1 **Write 6^3 as a product of the same factor.**

The base is 6. The exponent 3 means that 6 is used as a factor 3 times.

$6^3 = 6 \cdot 6 \cdot 6$

EXAMPLE 2 **Evaluate 5^4.**

$5^4 = 5 \cdot 5 \cdot 5 \cdot 5$

$= 625$

EXAMPLE 3 **Write $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$ in exponential form.**

The base is 4. It is used as a factor 5 times, so the exponent is 5.

$4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 4^5$

EXERCISES

Write each power as a product of the same factor.

1. 7^3
2. 2^7
3. 9^2
4. 15^4

Evaluate each expression.

5. 3^5
6. 7^3
7. 8^4
8. 5^3

Write each product in exponential form.

9. $2 \cdot 2 \cdot 2 \cdot 2$
10. $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$
11. $10 \cdot 10 \cdot 10$
12. $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$
13. $12 \cdot 12 \cdot 12$
14. $5 \cdot 5 \cdot 5 \cdot 5$
15. $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$
16. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

1-3 Study Guide and Intervention

Order of Operations

Use the **order of operations** to evaluate numerical expressions.

1. Do all operations within grouping symbols first.
2. Evaluate all powers before other operations.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

EXAMPLE 1 **Evaluate $(10 - 2) - 4 \cdot 2$.**

$(10 - 2) - 4 \cdot 2 = 8 - 4 \cdot 2$ Subtract first since $10 - 2$ is in parentheses.
$= 8 - 8$ Multiply 4 and 2.
$= 0$ Subtract 8 from 8.

EXAMPLE 2 **Evaluate $8 + (1 + 5)^2 \div 4$.**

$8 + (1 + 5)^2 \div 4 = 8 + 6^2 \div 4$ First, add 1 and 5 inside the parentheses.
$= 8 + 36 \div 4$ Find the value of 6^2.
$= 8 + 9$ Divide 36 by 4.
$= 17$ Add 8 and 9.

EXERCISES

Evaluate each expression.

1. $(1 + 7) \times 3$
2. $28 - 4 \cdot 7$
3. $5 + 4 \cdot 3$
4. $(40 \div 5) - 7 + 2$
5. $35 \div 7(2)$
6. 3×10^3
7. $45 \div 5 + 36 \div 4$
8. $42 \div 6 \times 2 - 9$
9. $2 \times 8 - 3^2 + 2$
10. $5 \times 2^2 + 32 \div 8$
11. $3 \times 6 - (9 - 8)^3$
12. 3.5×10^2

Lesson 1–3

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

1-4 Study Guide and Intervention

Adding Integers

To add integers with the same sign, add their absolute values. Give the result the same sign as the integers.

EXAMPLE 1 **Find $-3 + (-4)$.**

$-3 + (-4) = -7$ Add $|-3| + |-4|$. Both numbers are negative, so the sum is negative.

To add integers with different signs, subtract their absolute values. Give the result the same sign as the integer with the greater absolute value.

EXAMPLE 2 **Find $-16 + 12$.**

$-16 + 12 = -4$ Subtract $|12|$ from $|-16|$. The sum is negative because $|-16| > |12|$.

EXERCISES

Add.

1. $9 + 16$
2. $-10 + (-10)$
3. $18 + (-26)$
4. $-23 + (-15)$
5. $-45 + 35$
6. $39 + (-38)$
7. $-55 + 81$
8. $-61 + (-39)$
9. $-74 + 36$
10. $5 + (-4) + 8$
11. $-3 + 10 + (-6)$
12. $-13 + (-8) + (-12)$
13. $3 + (-10) + (-16) + 11$
14. $-17 + 31 + (-14) + 26$

Evaluate each expression if $x = 4$ and $y = -3$.

15. $11 + y$
16. $x + (-6)$
17. $y + 2$
18. $|x + y|$
19. $|x| + y$
20. $x + |y|$

NAME _____ DATE _____ PERIOD ____

1-5 Study Guide and Intervention

Subtracting Integers

To subtract an integer, add its opposite or additive inverse.

EXAMPLE 1 **Find 8 − 15.**

$8 - 15 = 8 + (-15)$ To subtract 15, add −15.
$= -7$ Add.

EXAMPLE 2 **Find 13 − (−22).**

$13 - (-22) = 13 + 22$ To subtract −22, add 22.
$= 35$ Add.

EXERCISES

Subtract.

1. $-3 - 4$
2. $5 - (-2)$
3. $-10 - 8$
4. $-15 - (-12)$
5. $-23 - (-28)$
6. $16 - 9$
7. $9 - 16$
8. $-21 - 16$
9. $28 - 37$
10. $-34 - (-46)$
11. $65 - (-6)$
12. $19 - |29|$

Evaluate each expression if $a = -7$, $b = -3$, and $c = 5$.

13. $a - 8$
14. $20 - b$
15. $a - c$
16. $c - b$
17. $b - a - c$
18. $c - b - a$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD _____

1-6 Study Guide and Intervention

Multiplying and Dividing Integers

Use the following rules to determine whether the product or quotient of two integers is positive or negative.

- The product of two integers with different signs is negative.
- The product of two integers with the same sign is positive.
- The quotient of two integers with different signs is negative.
- The quotient of two integers with the same sign is positive.

EXAMPLE 1 **Find $7(-4)$.**

$7(-4) = -28$ The factors have different signs. The product is negative.

EXAMPLE 2 **Find $-5(-6)$.**

$-5(-6) = 30$ The factors have the same sign. The product is positive.

EXAMPLE 3 **Find $15 \div (-3)$.**

$15 \div (-3) = -5$ The dividend and divisor have different signs. The quotient is negative.

EXAMPLE 4 **Find $-54 \div (-6)$.**

$-54 \div (-6) = 9$ The dividend and divisor have the same sign. The quotient is positive.

EXERCISES

Multiply or divide.

1. $8(-8)$
2. $-3(-7)$
3. $-9(4)$
4. $12(8)$
5. $33 \div (-3)$
6. $-25 \div 5$
7. $48 \div 4$
8. $-63 \div (-7)$
9. $(-4)^2$
10. $\frac{-75}{15}$
11. $-6(3)(-5)$
12. $\frac{-143}{-13}$

Evaluate each expression if $a = -1$, $b = 4$, and $c = -7$.

13. $3c + b$
14. $a(b + c)$
15. $c^2 - 5b$
16. $\frac{a - 6}{c}$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD _____

2-3 Study Guide and Intervention

Multiplying Rational Numbers

To multiply fractions, multiply the numerators and multiply the denominators.

EXAMPLE 1 **Find $\frac{3}{8} \cdot \frac{4}{11}$. Write in simplest form.**

$\frac{3}{8} \cdot \frac{4}{11} = \frac{3}{\cancel{8}_{2}} \cdot \frac{\overset{1}{\cancel{4}}}{11}$ Divide 8 and 4 by their GCF, 4.

$= \frac{3 \cdot 1}{2 \cdot 11}$ Multiply the numerators and denominators.

$= \frac{3}{22}$ Simplify.

To multiply mixed numbers, first rewrite them as improper fractions.

EXAMPLE 2 **Find $-2\frac{1}{3} \cdot 3\frac{3}{5}$. Write in simplest form.**

$-2\frac{1}{3} \cdot 3\frac{3}{5} = -\frac{7}{3} \cdot \frac{18}{5}$ $-2\frac{1}{3} = -\frac{7}{3}$, $3\frac{3}{5} = \frac{18}{5}$

$= -\frac{7}{\cancel{3}_{1}} \cdot \frac{\overset{6}{\cancel{18}}}{5}$ Divide 18 and 3 by their GCF, 3.

$= -\frac{7 \cdot 6}{1 \cdot 5}$ Multiply the numerators and denominators.

$= -\frac{42}{5}$ Simplify.

$= -8\frac{2}{5}$ Write the result as a mixed number.

EXERCISES

Multiply. Write in simplest form.

1. $\frac{2}{3} \cdot \frac{3}{5}$
2. $\frac{4}{7} \cdot \frac{3}{4}$
3. $-\frac{1}{2} \cdot \frac{7}{9}$
4. $\frac{9}{10} \cdot \frac{2}{3}$
5. $\frac{5}{8} \cdot \left(-\frac{4}{9}\right)$
6. $-\frac{4}{7} \cdot \left(-\frac{2}{3}\right)$
7. $2\frac{2}{5} \cdot \frac{1}{6}$
8. $-3\frac{1}{3} \cdot 1\frac{1}{2}$
9. $3\frac{3}{7} \cdot 2\frac{5}{8}$
10. $-1\frac{7}{8} \cdot \left(-2\frac{2}{5}\right)$
11. $-1\frac{3}{4} \cdot 2\frac{1}{5}$
12. $2\frac{2}{3} \cdot 2\frac{3}{7}$

Lesson 2-3

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

2-4 Study Guide and Intervention

Dividing Rational Numbers

Two numbers whose product is 1 are **multiplicative inverses**, or **reciprocals**, of each other.

EXAMPLE 1 **Write the multiplicative inverse of $-2\frac{3}{4}$.**

$-2\frac{3}{4} = -\frac{11}{4}$ Write $-2\frac{3}{4}$ as an improper fraction.

Since $-\frac{11}{4}\left(-\frac{4}{11}\right) = 1$, the multiplicative inverse of $-2\frac{3}{4}$ is $-\frac{4}{11}$.

To divide by a fraction or mixed number, multiply by its multiplicative inverse.

EXAMPLE 2 **Find $\frac{3}{8} \div \frac{6}{7}$. Write in simplest form.**

$\frac{3}{8} \div \frac{6}{7} = \frac{3}{8} \cdot \frac{7}{6}$ Multiply by the multiplicative inverse of $\frac{6}{7}$, which is $\frac{7}{6}$.

$= \frac{\overset{1}{\cancel{3}}}{8} \cdot \frac{7}{\underset{2}{\cancel{6}}}$ Divide 6 and 3 by their GCF, 3.

$= \frac{7}{16}$ Simplify.

EXERCISES

Write the multiplicative inverse of each number.

1. $\frac{3}{5}$
2. $-\frac{8}{9}$
3. $\frac{1}{10}$
4. $-\frac{1}{6}$
5. $2\frac{3}{5}$
6. $-1\frac{2}{3}$
7. $-5\frac{2}{5}$
8. $7\frac{1}{4}$

Divide. Write in simplest form.

9. $\frac{1}{3} \div \frac{1}{6}$
10. $\frac{2}{5} \div \frac{4}{7}$
11. $-\frac{5}{6} \div \frac{3}{4}$
12. $1\frac{1}{5} \div 2\frac{1}{4}$
13. $3\frac{1}{7} \div \left(-3\frac{2}{3}\right)$
14. $-\frac{4}{9} \div 2$
15. $\frac{6}{11} \div (-4)$
16. $5 \div 2\frac{1}{3}$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD _____

2-6 Study Guide and Intervention

Adding and Subtracting Unlike Fractions

Fractions that have different denominators are called **unlike fractions**. To add or subtract unlike fractions, first rewrite the fractions with a common denominator. Then add or subtract and simplify, if necessary.

EXAMPLE 1 **Find $\frac{3}{5} + \frac{2}{3}$. Write in simplest form.**

$\frac{3}{5} + \frac{2}{3} = \frac{3}{5} \cdot \frac{3}{3} + \frac{2}{3} \cdot \frac{5}{5}$ The LCD is 5 · 3 or 15.

$= \frac{9}{15} + \frac{10}{15}$ Rename each fraction using the LCD.

$= \frac{9 + 10}{15}$ Add the numerators. The denominators are the same.

$= \frac{19}{15}$ or $1\frac{4}{15}$ Simplify.

EXAMPLE 2 **Find $-3\frac{1}{2} - 1\frac{5}{6}$. Write in simplest form.**

$-3\frac{1}{2} - 1\frac{5}{6} = -\frac{7}{2} - \frac{11}{6}$ Write the mixed numbers as improper fractions.

$= -\frac{7}{2} \cdot \frac{3}{3} - \frac{11}{6}$ The LCD is 2 · 3 or 6.

$= -\frac{21}{6} - \frac{11}{6}$ Rename $\frac{7}{2}$ using the LCD.

$= \frac{-21 - 11}{6}$ Subtract the numerators.

$= -\frac{32}{6}$ or $-\frac{16}{3}$ or $-5\frac{1}{3}$ Simplify.

EXERCISES

Add or subtract. Write in simplest form.

1. $\frac{2}{5} + \frac{3}{10}$
2. $\frac{1}{3} + \frac{2}{9}$
3. $\frac{5}{9} + \left(-\frac{1}{6}\right)$
4. $-\frac{3}{4} - \frac{5}{6}$
5. $\frac{4}{5} - \left(-\frac{1}{3}\right)$
6. $1\frac{2}{3} - \left(-\frac{4}{9}\right)$
7. $-\frac{7}{10} - \left(-\frac{1}{2}\right)$
8. $2\frac{1}{4} + 1\frac{3}{8}$
9. $3\frac{3}{4} - 1\frac{1}{3}$
10. $-1\frac{1}{5} - 2\frac{1}{4}$
11. $-2\frac{4}{9} - \left(-1\frac{1}{3}\right)$
12. $3\frac{3}{5} - 2\frac{2}{3}$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

1-8 Study Guide and Intervention

Solving Addition and Subtraction Equations

You can use the following properties to solve addition and subtraction equations.

- *Addition Property of Equality* - If you add the same number to each side of an equation, the two sides remain equal.
- *Subtraction Property of Equality* - If you subtract the same number from each side of an equation, the two sides remain equal.

EXAMPLE 1 **Solve $w + 19 = 45$. Check your solution.**

	$w + 19 = 45$	Write the equation.
	$w + 19 - 19 = 45 - 19$	Subtract 19 from each side.
	$w = 26$	$19 - 19 = 0$ and $45 - 19 = 26$. w is by itself.
Check	$w + 19 = 45$	Write the original equation.
	$26 + 19 \stackrel{?}{=} 45$	Replace w with 26. Is this sentence true?
	$45 = 45$ ✓	$26 + 19 = 45$

EXAMPLE 2 **Solve $h - 25 = -76$. Check your solution.**

	$h - 25 = -76$	Write the equation.
	$h - 25 + 25 = -76 + 25$	Add 25 to each side.
	$h = -51$	$-25 + 25 = 0$ and $-76 + 25 = -51$. h is by itself.
Check	$h - 25 = -76$	Write the original equation.
	$-51 - 25 \stackrel{?}{=} -76$	Replace h with -51. Is this sentence true?
	$-76 = -76$ ✓	$-51 - 25 = -51 + (-25)$ or -76

EXERCISES

Solve each equation. Check your solution.

1. $s - 4 = 12$
2. $d + 2 = 21$
3. $h + 6 = 15$
4. $x + 5 = -8$
5. $b - 10 = -34$
6. $f - 22 = -6$
7. $17 + c = 41$
8. $v - 36 = 25$
9. $y - 29 = -51$
10. $19 = z - 32$
11. $13 + t = -29$
12. $55 = 39 + k$
13. $62 + b = 45$
14. $x - 39 = -65$
15. $-56 = -47 + n$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

1-9 Study Guide and Intervention

Solving Multiplication and Division Equations

You can use the following properties to solve multiplication and division equations.

- *Multiplication Property of Equality* - If you multiply each side of an equation by the same number, the two sides remain equal.
- *Division Property of Equality* - If you divide each side of an equation by the same nonzero number, the two sides remain equal.

EXAMPLE 1 **Solve $19w = 104$. Check your solution.**

$19w = 114$ Write the equation.

$\frac{19w}{19} = \frac{114}{19}$ Divide each side of the equation by 19.

$1w = 6$ $19 \div 19 = 1$ and $114 \div 19 = 6$.

$w = 6$ Identity Property; $1w = w$

Check

$19w = 114$ Write the original equation.

$19(6) \stackrel{?}{=} 114$ Replace w with 6.

$114 = 114$ ✓ This sentence is true.

EXAMPLE 2 **Solve $\frac{d}{15} = -9$. Check your solution.**

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

$\frac{d}{15}(15) = -9(15)$ Multiply each side of the equation by 15.

$d = -135$

Check

$\frac{d}{15} = -9$ Write the original equation.

$\frac{-135}{15} \stackrel{?}{=} -9$ Replace d with -135.

$-9 = -9$ ✓ $-135 \div 15 = -9$

EXERCISES

Solve each equation. Check your solution.

1. $\frac{r}{5} = 6$
2. $2d = 12$
3. $7h = -21$
4. $-8x = 40$
5. $\frac{f}{8} = -6$
6. $\frac{x}{-10} = -7$
7. $17c = -68$
8. $\frac{h}{-11} = 12$
9. $29t = -145$
10. $125 = 5z$
11. $13t = -182$
12. $117 = -39k$

Lesson 1–9

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

2-7 Study Guide and Intervention

Solving Equations with Rational Numbers

The Addition, Subtraction, Multiplication, and Division Properties of Equality can be used to solve equations with rational numbers.

EXAMPLE 1 **Solve $x - 2.73 = 1.31$. Check your solution.**

	$x - 2.73 = 1.31$	Write the equation.
	$x - 2.73 + 2.73 = 1.31 + 2.73$	Add 2.73 to each side.
	$x = 4.04$	Simplify.
Check	$x - 2.73 = 1.31$	Write the original equation.
	$4.04 - 2.73 \stackrel{?}{=} 1.31$	Replace x with 4.04.
	$1.31 = 1.31$ ✓	Simplify.

EXAMPLE 2 **Solve $\frac{4}{5}y = \frac{2}{3}$. Check your solution.**

	$\frac{4}{5}y = \frac{2}{3}$	Write the equation.
	$\frac{5}{4}\left(\frac{4}{5}y\right) = \frac{5}{4} \cdot \frac{2}{3}$	Multiply each side by $\frac{5}{4}$.
	$y = \frac{5}{6}$	Simplify.
Check	$\frac{4}{5}y = \frac{2}{3}$	Write the original equation.
	$\frac{4}{5}\left(\frac{5}{6}\right) \stackrel{?}{=} \frac{2}{3}$	Replace y with $\frac{5}{6}$.
	$\frac{2}{3} = \frac{2}{3}$ ✓	Simplify.

Lesson 2–7

EXERCISES

Solve each equation. Check your solution.

1. $t + 1.32 = 3.48$
2. $b - 4.22 = 7.08$
3. $-8.07 = r - 4.48$
4. $h + \frac{4}{9} = \frac{7}{9}$
5. $-\frac{5}{8} = x - \frac{1}{4}$
6. $-\frac{2}{3} + f = \frac{3}{5}$
7. $3.2c = 9.6$
8. $-5.04 = 1.26d$
9. $\frac{3}{5}x = 6$
10. $-\frac{2}{3} = \frac{3}{4}t$
11. $\frac{w}{2.5} = 4.2$
12. $1\frac{3}{4}r = 3\frac{5}{8}$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

4-4 Study Guide and Intervention

Solving Proportions

A **proportion** is an equation that states that two ratios are equivalent. To determine whether a pair of ratios forms a proportion, use cross products. You can also use cross products to solve proportions.

EXAMPLE 1 **Determine whether the pair of ratios $\frac{20}{24}$ and $\frac{12}{18}$ forms a proportion.**

Find the cross products.

$20 \cdot 12 = 24 \cdot 12 = 288$

$24 \cdot 18 = 20 \cdot 18 = 360$

Since the cross products are not equal, the ratios do not form a proportion.

EXAMPLE 2 **Solve $\frac{12}{30} = \frac{k}{70}$.**

$\frac{12}{30} = \frac{k}{70}$	Write the equation.
$12 \cdot 70 = 30 \cdot k$	Find the cross products.
$840 = 30k$	Multiply.
$\frac{840}{30} = \frac{30k}{30}$	Divide each side by 30.
$28 = k$	Simplify.

The solution is 28.

EXERCISES

Determine whether each pair of ratios forms a proportion.

1. $\frac{17}{10}, \frac{12}{5}$
2. $\frac{6}{9}, \frac{12}{18}$
3. $\frac{8}{12}, \frac{10}{15}$
4. $\frac{7}{15}, \frac{13}{32}$
5. $\frac{7}{9}, \frac{49}{63}$
6. $\frac{8}{24}, \frac{12}{28}$
7. $\frac{4}{7}, \frac{12}{71}$
8. $\frac{20}{35}, \frac{30}{45}$
9. $\frac{18}{24}, \frac{3}{4}$

Solve each proportion.

10. $\frac{x}{5} = \frac{15}{25}$
11. $\frac{3}{4} = \frac{12}{c}$
12. $\frac{6}{9} = \frac{10}{r}$
13. $\frac{16}{24} = \frac{z}{15}$
14. $\frac{5}{8} = \frac{s}{12}$
15. $\frac{14}{t} = \frac{10}{11}$
16. $\frac{w}{6} = \frac{2.8}{7}$
17. $\frac{5}{y} = \frac{7}{16.8}$
18. $\frac{x}{18} = \frac{7}{36}$

© Glencoe/McGraw-Hill

NAME _____ DATE _____ PERIOD ____

7-1 Study Guide and Intervention

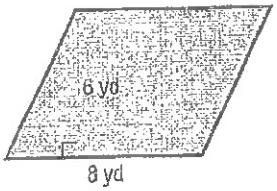
Area of Parallelograms, Triangles, and Trapezoids

The area A of a parallelogram is the product of any base b and its height h, or $A = bh$.

The area A of a triangle is half the product of any base b and its height h, or $A = \frac{1}{2}bh$.

The area A of a trapezoid is half the product of the height h and the sum of the bases, b_1 and b_2, or $A = \frac{1}{2}h(b_1 + b_2)$.

EXAMPLES **Find the area of each figure.**

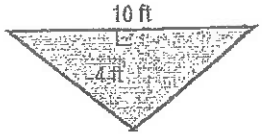


1. The base is 8 yards. The height is 6 yards.

$A = bh$ Area of a parallelogram

$A = 8 \cdot 6$ or 48 Replace b with 8 and h with 6. Multiply.

The area is 48 square yards.

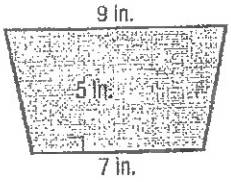


2. The base is 10 feet. The height is 4 feet.

$A = \frac{1}{2}bh$ Area of a triangle

$A = \frac{1}{2} \cdot 10 \cdot 4$ or 20 Replace b with 10 and h with 4. Multiply.

The area is 20 square feet.



3. The height is 5 inches. The lengths of the bases are 9 inches and 7 inches.

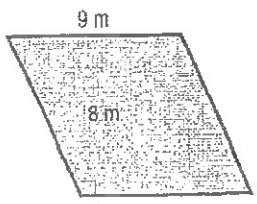
$A = \frac{1}{2}h(b_1 + b_2)$ Area of a trapezoid

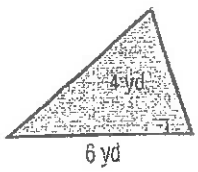
$A = \frac{1}{2} \cdot 5 \cdot (9 + 7)$ or 40 Replace h with 5, b_1 with 9, and b_2 with 7. Simplify.

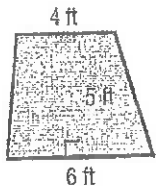
The area is 40 square inches.

EXERCISES

Find the area of each figure.

1. 

2. 

3. 

4. parallelogram: base, 11 cm; height, 12 cm

5. triangle: base, 8 mi; height, 13 mi

6. trapezoid: height, 7 km; bases, 8 km and 12 km

Lesson 7–1

© Glencoe/McGraw-Hill