

Are You Ready Pg. 218; Odds

Reading Math-Topic Sentences Pg. 219

Standards 8.2.3.2

Chapter 4 Multi-Step Equations and Inequalities

Multi-Part Lesson 1A

Properties of Mathematics

Objectives

The student should be able to:

1) Identify and use mathematical properties to simplify algebraic expressions.

Vocabulary

Property

Counterexample

Simplify

Notes

A property is a statement that is true for any number.

Key Concept

Commutative Property

The order in which numbers are added or multiplied does not change the sum or product.

Addition Multiplication
 $a + b = b + a$ $a * b = b * a$

The *associative property* allows you to regroup numbers without changing the value.

Key Concept

Associative Property

The way in which numbers are grouped when they are added or multiplied does not change the sum or product.

Addition Multiplication
 $a + (b + c) = (a + b) + c$ $a * (b * c) = (a * b) * c$

Key Concept

Property

Property	Words	Symbols
Additive Identity	When 0 is added to any number, the sum is the number	$a + 0 = a$ $0 + a = a$
Multiplicative Identity	When any number is multiplied by 1, the product is the number	$a * 1 = a$ $1 * a = a$
Multiplicative Property of 0	When any number is multiplied by 0, the product is 0	$a * 0 = 0$ $0 * a = 0$

A *counterexample* is an example that shows a conjecture is false.

Examples

Name the property shown by the statement $(3 * m) * 2 = 2 * (3 * m)$

State whether the following conjecture is true or false. If false, provide a counterexample.

Subtraction of whole numbers is associative.

In a museum garden, a decorative pool, in the shape of a box, containing fish is 2 feet deep, 17 feet long, and 5 feet wide. Use mental math to find the volume of the pool.

Check Understanding Pg. 223; 1-4

Assignment Day 1 Pg. 223-224; 9-23 odd, 29-32

Notes

To *simplify* an expression is to perform all possible operations.

Examples

Simplify each expression. Justify each step.

$6 + (d + 8)$ $(6 + 8) + d = 14 + d$
 $a * (9 * d) = a * (9 * d) = (a * 9) * d = (9a) * d = 9ad$

Check Understanding Pg. 223; 5-7

Assignment Day 2 Pg. 223-224; 8-22 even, 25, 27-28

Standards 8.2.3.2**Chapter 4 Multi-Step Equations and Inequalities****Multi-Part Lesson 1B****Properties of Mathematics-Distributive Property****Objectives**

The student should be able to:

- 1) Apply the distributive Property to rewrite algebraic expressions

Vocabulary**Equivalent Expressions****Notes****Key Concept**

Distributive Property

To multiply a sum or difference by a number, multiply each term inside the grouping symbols by the number outside the grouping symbols.

$$a(b + c) = ab + ac \quad a(b - c) = ab - ac$$

Examples

Use the distributive property to evaluate each expression.

$$7(3 + 12) = 7(3) + 7(12) = 21 + 84 = 105$$

$$(8 - 5)11 = 8(11) - 5(11) = 88 - 55 = 33$$

$$(a + 9)4 = 4(a) + 4(9) = 4a + 36$$

$$8(3 - t) = 8(3) - 8(t) = 24 - 8t$$

$$\begin{aligned} -7(x - 10) &= -7x + 70 \\ -7x - (-7)(10) &= -7x + 70 \end{aligned}$$

Fifteen students are buying T-shirts that cost \$10.60 each. Use the distributive property to find the total cost of the shirts

Check Understanding Pg. 227; 1-4, 7-12

Day 1 Assignment Pg. 227-230; 13-31 odd, 62-64

Check Understanding Pg. 227; 5-6

Day 2 Assignment Pg. 227-230; 14-32 even, 58, 59, 61, 65-69

Standards 8.2.3.2**Chapter 4 Multi-Step Equations and Inequalities****Multi-Part Lesson 1C****Properties of Mathematics-Simplifying Algebraic Expressions****Objectives**

The student should be able to:

- 1) Simplify algebraic expressions

Vocabulary

term

like terms

constant

simplest form

Notes

When addition or subtraction signs separate an algebraic expression into parts, each part is called a *term*.

Like terms contain the same variables to the same powers.

A term without a variable is called a *constant*.

Examples

Identify the terms, coefficients, and constants in the expression $3x - 5 + 2x - x$.

Notes cont.

An expression is in *simplest form* if has no like terms and no grouping symbols.

Examples

Write each expression in simplest form.

$$6n - n$$

$$8z + z - 5 - 9z + 2$$

$$4.85c + 2.90p$$

Manfred buys some boxes of cereal for \$4.85 each and the same number of pretzels for \$2.90 each. Write an expression in simplest form that represents the total amount spent.

$$4.85 + 2.90p$$

Check Understanding Pg. 233; 1-6

Day 1 Assignment Pg. 233-235; 9-23 odd, 44-47

Check Understanding Pg. 233; 7

Day 2 Assignment Pg. 233-235; 8-22 even, 40, 41, 43, 48-53

$$4.85p + 2.90p$$

$$7.75p$$

Standards 8.2.4.2**Chapter 4 Multi-Step Equations and Inequalities****Multi-Part Lesson 2B****Solve Equations with Variables on Each Side****Objectives**

The student should be able to:

- 1) Solve equations with variables on each side

Vocabulary**Notes****Examples**

Solve $7x + 4 = 9x$

Solve $3x - 2 = 8x + 13$

The measure of an angle is 8 degrees more than its complement. If x represents the measure of the angle and $90 - x$ represents the measure of its complement, what is the measure of the angle?

Check Understanding Pg. 243; 1-6

Day 1 Assignment Pg. 243-245; 9-25 odd, 40-43

Check Understanding Pg. 243; 7

Day 2 Assignment Pg. 243-245; 8-24 even, 36-37, 39, 44-58

Standards 8.2.4.2**Chapter 4 Multi-Step Equations and Inequalities****Multi-Part Lesson 2C****Solve Multi-Step Equations****Objectives**

The student should be able to:

- 1) Use properties of equality to solve multi-step equations.

Vocabulary**Notes****Examples**

Solve $2(10 + t) = 42$

The length of Philip's stride when walking is 4 inches greater than the length of Anne's stride. If it takes Philip 5 steps and Anne 6 steps to walk the same distance, what is the length of Anne's stride?

Check Understanding Pg. 247; 1-8

Day 1 Assignment Pg. 247-249; 11-23 odd, 28,29

Check Understanding Pg. 247; 9

Day 2 Assignment Pg. 247-249; 10-22 even, 25, 27, 30-36

Chapter 4 Multi-Step Equations and Inequalities

Multi-Part Lesson 2D

Solve Multi-Step Inequalities

Objectives

The student should be able to:

- 1) Use properties of inequality to solve multi-step inequalities.

Vocabulary

Notes

Examples

Solve $-4d + 2(d + 5) > 12$. Graph the solution set on a number line.

Rami can spend \$550 at most to have 3 rooms painted. A painter charges d dollars per room to paint and \$35 per room for prep work. There is a one time \$70 charge for supplies. Write and solve an inequality to find the maximum Rami can spend to paint each room.

Check Understanding Pg. 251; 1-6

Day 1 Assignment Pg. 251-253; 9-21 odd, 28-30

Check Understanding Pg. 251; 7

Day 2 Assignment Pg. 251-253; 8-20 even, 24, 25, 27, 31-47

