Writing Equivalent Expressions Using Properties Worksheet Answer Key PDF

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Part 1: Building a Foundation

Which property states that a + b = b + a?

undefined. A) Associative Property

undefined. B) Distributative Property

undefined. C) Commutative Property ✓

undefined. D) Identity Property

The correct answer is the Commutative Property.

Which of the following are examples of the Identity Property? (Select all that apply)

undefined. A) a + 0 = a ✓

undefined. B) a * 1 = a ✓

undefined. C) a * 0 = 0

undefined. D) a + (-a) = 0

The correct answers are A) a + 0 = a and B) a * 1 = a.

Explain in your own words what it means for two expressions to be equivalent.

Two expressions are equivalent if they yield the same result for all values of their variables.

List the properties of operations used in algebra.

1. What is the Commutative Property?

The property that states a + b = b + a.

2. What is the Associative Property?

The property that states (a + b) + c = a + (b + c).

3. What is the Distributative Property?

The property that states a(b + c) = ab + ac.

4. What is the Identity Property?

The property that states a + 0 = a and a * 1 = a.

The properties include Commutative, Associative, Distributative, and Identity Properties.

Part 2: Understanding and Application

Which property is used in the expression 3(x + 4) = 3x + 12?

undefined. A) Associative Property

undefined. B) Distributative Property ✓

undefined. C) Commutative Property

undefined. D) Inverse Property

The correct answer is the Distributative Property.

Identify the properties used in the expression (a + b) + c = a + (b + c). (Select all that apply)

undefined. A) Associative Property ✓

undefined. B) Distributative Property

undefined. C) Commutative Property

undefined. D) Identity Property

The correct answer is A) Associative Property.

Apply the Distributative Property to simplify the expression 6(a + 2 b) and explain each step.

You would distribute 6 to both a and 2 b, resulting in 6a + 12 b.

If you have the expression 2(x + 5) and you want to simplify it, which property would you use?

undefined. A) Associative Property

undefined. B) Distributative Property ✓

undefined. C) Commutative Property

undefined. D) Identity Property

The correct answer is the Distributative Property.

Part 3: Analysis, Evaluation, and Creation

Which expression is equivalent to 3(x + 4) - 2x using the Distributative Property?

undefined. A) 3x + 12 - 2x ✓
undefined. B) 3x + 4 - 2x
undefined. C) x + 12
undefined. D) 3x + 12

The correct answer is A) 3x + 12 - 2x.

Analyze the expression 5(x + 3) - 2(x + 3). Which properties are used to simplify it? (Select all that apply)

undefined. A) Associative Property ✓
undefined. B) Distributative Property ✓
undefined. C) Commutative Property
undefined. D) Identity Property

The correct answers are B) Distributative Property and A) Associative Property.

Evaluate the expressions below and select those that are equivalent to 3(x + 2) + 2x. Explain your reasoning.

The equivalent expressions are A) 3x + 6 + 2x and B) 5x + 6.

Create your own expression using at least two different properties of operations. Explain the properties used and how they help in simplifying the expression.

An example could be 2(a + b) + 3a, using the Distributative and Associative Properties.