

3.3 Properties Worksheet DAY ONE

Name: _____

Properties of Operations	Define in your own words	Example of the Property
<p><u>Commutative Property of Addition</u> When adding, changing the order of the numbers does not change the sum.</p>	Flipping the numbers when adding still works	$30 + 29 = 29 + 30$
<p><u>Commutative Property of Multiplication</u> When multiplying, changing the order of the numbers does not change the product.</p>	Flipping the numbers when multiplying works	$9 \cdot 5 = 5 \cdot 9$
<p><u>Associative Property of Addition</u> When adding more than two numbers, the grouping of the numbers does not change the sum.</p>	When adding, you can add in any order (if all adding)	$3 + (2 + 1) = (3 + 2) + 1$
<p><u>Associative Property of Multiplication</u> When multiplying more than two numbers, the grouping of the numbers does not change the product.</p>	When multiplying, you can multiply in any order (if all multiplying)	$4 \cdot (7 \cdot 9) = (4 \cdot 7) \cdot 9$
<p><u>Distributive Property</u> Multiplying a number by a sum or difference is the same as multiplying by each number in the sum of difference and then adding or subtracting.</p>	Multiply the outside number by every number inside parentheses	$6(4+2) = (6 \cdot 4) + (6 \cdot 2)$ or $6(30) = 6(30+6) = 6 \cdot 30 + 6 \cdot 6$
<p><u>Identity Property of Addition</u> <u>(Addition Property of Zero)</u> Adding zero to a number does not change its value.</p>	A number stays the same if you add 0	$28 + 0 = 28$
<p><u>Identity Property of Multiplication</u> <u>(Multiplication Property of One)</u> Multiplying a number by ones does not change its value.</p>	A number stays the same if you multiply by 1	$72 \cdot 1 = 72$

3.3 Properties Notes

Name: NOTES

Hour: _____

Tell which property the statement illustrates.

1. $5 \cdot 12 = 12 \cdot 5$ commutative prop of multiplication
2. $1 + (2 + 4) = (1 + 2) + 4$ associative prop of addition
3. $14 + 2 = 2 + 14$ commutative prop of addition
4. $5(7 + 10) = 5 \cdot 7 + 5 \cdot 10$ Distributive Property
5. $3 \cdot 1 = 3$ identity property of multiplication
6. $74 + 0 = 74$ identity prop of addition
7. $8 \cdot (10 \cdot 7) = (8 \cdot 10) \cdot 7$ associative prop of multiplication

Complete the statement using the specified property.

Commutative Property of Addition: $h + 11 = \underline{11 + h}$

Commutative Property of Multiplication: $12 \cdot k = \underline{k \cdot 12}$

Associative Property of Addition: $21 + (9 + 8) = \underline{(21 + 9) + 8}$

Associative Property of Multiplication: $12 \cdot (5 \cdot 4) = \underline{(12 \cdot 5) \cdot 4}$

Identity Property of Addition: $26 + c + 0 = \underline{26 + c}$

Identity Property of Multiplication: $18 \cdot w \cdot 1 = \underline{18 \cdot w}$

Distributive Property: $6 \cdot (10 + 2) = \underline{(6 \cdot 10) + (6 \cdot 2)}$

Simplify the expressions. Tell which property justifies each step.

$$\begin{array}{r} (13 \cdot 5) \cdot 2 \\ \underline{13 \cdot (5 \cdot 2)} \\ \underline{13 \cdot 10} \\ \underline{130} \end{array} \quad \underline{\text{associative prop. of multiplication}}$$

$$8(96)$$

$$8(90 + 6)$$

$$(8 \cdot 90) + (8 \cdot 6) \quad \underline{\text{Distributive Property}}$$

$$720 + 48$$

$$768$$

3.3 Properties Notes

Name: _____

Hour: _____

Tell which property the statement illustrates.

- $5 \cdot p = p \cdot 5$ commutative prop of multiplication
- $2 + (12 + r) = (2 + 12) + r$ associative prop of addition
- $4 \cdot (x \cdot 10) = (4 \cdot x) \cdot 10$ associative prop of multiplication
- $(c + 2) + 0 = c + 2$ identity prop. of addition
- $3 \cdot (7 + 2) = 3 \cdot 7 + 3 \cdot 2$ Distributive prop
- $a \cdot 1 = a$ identity prop of multiplication

Simplify the expressions to create equivalent expressions. Tell which property justifies each step.

$$\begin{array}{l} 6 + (5 + x) \\ \underline{(6+5) + x} \\ \underline{11 + x} \end{array}$$

associative prop. of addition

$$\begin{array}{l} 9 \cdot c \cdot 4 \\ \underline{9 \cdot 4 \cdot c} \\ \underline{36 \cdot c} \end{array}$$

commutative prop of multiplication

$$\begin{array}{l} (14 + y) + 3 \\ (y + 14) + 3 \\ y + (14 + 3) \\ y + 17 \end{array}$$

commutative prop of addition
associative prop. of addition

$$\begin{array}{l} (0 + a) + 8 \\ a + 8 \end{array}$$

identity prop of addition