

Wednesday, September 24, 2014

Please turn your homework into the tray (p. 22 10-21, 23, 24, 28)

Today you need:

- *Notes*
- *Textbook*
- *Pencil*
- *Agenda*
- *Vocab*

Properties of Numbers

Lesson 1-5

Students will identify the properties of numbers and use the properties to solve problems.

Basic Properties of Numbers

<p style="text-align: center; color: yellow;">Commutative</p> <p style="font-size: small;">Changing the order of addends or factors does not affect the sum or product.</p> <table style="width: 100%; font-size: x-small;"> <tr> <td style="width: 50%; border-right: 1px solid black;"> $a + b = b + a$ $8 + 3 = 3 + 8$ $12 + 5 = 5 + 12$ </td> <td style="width: 50%;"> $a \times b = b \times a$ $3 \times 4 = 4 \times 3$ $7 \times 5 = 5 \times 7$ </td> </tr> </table>	$a + b = b + a$ $8 + 3 = 3 + 8$ $12 + 5 = 5 + 12$	$a \times b = b \times a$ $3 \times 4 = 4 \times 3$ $7 \times 5 = 5 \times 7$	<p style="text-align: center; color: yellow;">Associative</p> <p style="font-size: small;">The order in which numbers are grouped does not affect the sum or product.</p> <table style="width: 100%; font-size: x-small;"> <tr> <td style="width: 50%; border-right: 1px solid black;"> $(a + b) + c = a + (b + c)$ $(8 + 3) + 2 = 8 + (3 + 2)$ </td> <td style="width: 50%;"> $(a \times b) \times c = a \times (b \times c)$ $(3 \times 4) \times 2 = 3 \times (4 \times 2)$ </td> </tr> </table>	$(a + b) + c = a + (b + c)$ $(8 + 3) + 2 = 8 + (3 + 2)$	$(a \times b) \times c = a \times (b \times c)$ $(3 \times 4) \times 2 = 3 \times (4 \times 2)$
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<p style="text-align: center; color: yellow;">Distributive</p> <p style="font-size: small;">Adding two or more numbers together, then multiplying the sum by a factor is equal to multiplying each number alone by the factor first, and then adding the products.</p> $a(b + c) = (a \times b) + (a \times c)$ $6(3 + 2) = (6 \times 3) + (6 \times 2)$ $6 \times 5 + 12 = 30 + 12$ $48 + 12$	<p style="text-align: center; color: yellow;">Identity</p> <p style="font-size: small;">The additive identity is zero. If you add zero to an addend, the sum will equal that addend.</p> $a + 0 = a$ $8 + 0 = 8$ <p style="font-size: small;">The multiplicative identity is one. If you multiply a factor by one, the product will equal that factor.</p> $a \times 1 = a$ $3 \times 1 = 3$				

Commutative Properties of Addition and Multiplication

Commutative Property of Addition: Changing the order of the numbers in the problem does not change the sum.

Commutative Property of Multiplication: Changing the order of the factors does not change the product.

Basically, in an addition or multiplication problem, order does not matter!

Examples:

$$a + b = b + a$$

$$3 + 9 = 9 + 3$$

*No matter which order you add the numbers, the answer is still 12!

$$a \cdot b = b \cdot a$$

$$7 \times 12 = 12 \times 7$$

*No matter which order you multiply the numbers, the answer is still 84!

Associative Properties of Addition and Multiplication

Associative Property: the groupings of the addends/factors does not change the sum/product.
*Basically, how you group the numbers in an addition or multiplication problem does not change the answer!

Examples:

$$(a + b) + c = a + (b + c) \quad (4 + 7) + 3 = 4 + (7 + 3)$$

*No matter how you group them, the answer is still 14!

$$(a \cdot b) \cdot c = a \cdot (b \cdot c) \quad (3 \times 2) \times 5 = 3 \times (2 \times 5)$$

*No matter how you group them, the answer is still 30!

Identity Properties

Identity Property of Addition: If you add 0 to a number, the answer is just that number.

Identity Property of Multiplication: If you multiply a number by 1, the answer is just that number.

*Basically adding 0 or multiplying by 1 does not change the identity or the value!

Examples:

$$x + 0 = x$$

$$f \cdot 1 = f$$

$$205 + 0 = 205$$

$$92 \cdot 1 = 92$$

The Distributive Property

The Distributive Property: If you have a number or variable right outside parentheses (like shoved up next to it), you need to multiply that number/variable to each of the terms inside the parentheses.

You have to "distribute" it or pass it out to each term inside!

Examples:

$$a(b + c) = ab + ac$$

$$3(2 + 7) = 3 \cdot 2 + 3 \cdot 7$$

$$6 + 21$$

$$27$$

$$(n + 13)(-8) = -8n + -8 \cdot 13$$

$$-8n + (-104)$$

$$-8n - 104$$

Using the Properties to Help
with Mental Math

Use mental math to simplify each expression:

1. $65 + 23 + 35$

2. $17 + (-9) + 18 + (-11)$

3. $2 \cdot 83 \cdot (-5)$

4. $-4 \cdot 6 \cdot (-25)$

Mental Math - Splitting
Numbers to Make it Easier

1. $21 - 74$

2. $36 - 63$

The Distributive Property in Action

1. $7(t - 5)$

2. $(d + 23)(-4)$

3. $6(m + 3)$

Mental Math and the Distributive Property

1. A large supply kit costs \$8.10. What is the cost of 20 large kits?

2. $5(38)$

3. $4(7.2)$

Homework:
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