Lesson I.I Number Properties

There are certain rules or properties of math that are always true.

The Commutative Properties of addition and multiplication state that the order in which numbers are added or multiplied does not change the result.

$$a + b = b + a$$
 and $a \times b = b \times a$
 $2 + 3 = 5$ $5 \times 2 = 10$
 $3 + 2 = 5$ $2 \times 5 = 10$

The Associative Properties of addition and multiplication state that the way in which addends or factors are grouped does not change the result.

$$(a + b) + c = a + (b + c)$$
 and $(a \times b) \times c = a \times (b \times c)$
 $(2 + 3) + 4 = 2 + (3 + 4)$ $(2 \times 4) \times 5 = 2 \times (4 \times 5)$
 $5 + 4 = 2 + 7$ $8 \times 5 = 2 \times 20$
 $9 = 9$ $40 = 40$

The **Identity Property of Addition** states that the sum of an addend and 0 is the addend. 5-0=5

The **Identity Property of Multiplication** states that the product of a factor and 1 is that factor, $4 \times 1 = 4$

The Properties of Zero state that the product of a factor and 0 is 0. $5 \times 0 = 0$

The properties of zero also state that the quotient of zero and any non-zero divisor is $0.0 \div 5 = 0$

Name the property shown by each statement.

Rewrite each expression using the property indicated.

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Thomas Richards

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