

## Commutative Property "movement"

$$a + b = b + a$$

$$1 + 2 = 2 + 1$$

$$ab = ba$$

$$3 \cdot 5 = 5 \cdot 3$$

order of  
addends /

factors

doesn't  
matter

## Associative Property "Grouping"

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

$$4 + (5 + 1) = (4 + 5) + 1$$

Grouping of addends doesn't  
matter

## Associative Property

$$(ab)c = a(bc)$$

$$(2 \times 3)4 = 2(3 \times 4)$$

Groupings of factors  
doesn't matter

## Identity Property of Addition

$$a + 0 = a$$

Any # + 0  
is that #

$$16 + 0 = 16$$

## Identity Property of Multiplication

$$10 \times 1 = 10$$

$$a \cdot 1 = a$$

any # x 1  
is that #

## Zero Property of $\times$

$$a \cdot 0 = 0$$

$$\text{any } \# \times 0 = 0$$

$$4 \times (15 \times 25)$$

$$1: 4 \times (25 \times 15) \quad \underline{\text{Commutative of } \times}$$

$$2: (4 \times 25) \times 15 \quad \underline{\text{Associative of } \times}$$

$$3: 100 \times 15 \quad \underline{\text{Multiplied } 4 \times 25}$$

$$4: 1500 \quad \underline{\text{Multiplied } 100 \times 15}$$

L2: #1, 4, 5, 7, 8-30 evens