

# Associative Property

## Addition and Multiplication

### Associative property of Addition

The associative property tells us we can change the grouping of a problem and answer will stay the same

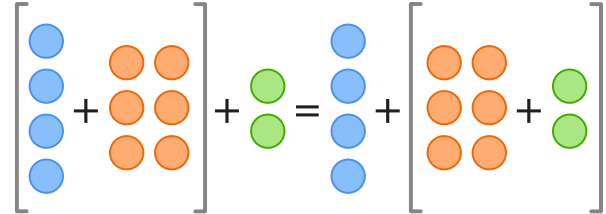


$$a + b = b + a$$

In other words the order does not matter, but it only works for addition and multiplication

We use parenthesis ( ) to group numbers in mathematics

### Example



$$(4 + 6) + 2 = 4 + (6 + 2)$$

$$10 + 2 = 4 + 8$$

$$12 = 12$$

Do you see how we get same answer. Even though we change the grouping?

### Associative property of Multiplication

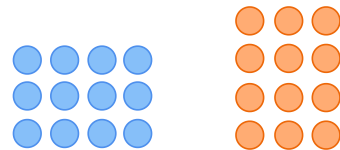
We have take a look at the associative property of addition now let's look at the associative property of multiplication.



$$a \times b \cdot c = a \cdot b \times c$$

Again by moving the parenthesis around we can re-group to simplify a problem or even make it easier to solve.

### Example



$$3 \text{ rows of } 4 = 4 \text{ rows of } 3$$

$$3 \times 4 = 4 \times 3$$

$$12 = 12$$

$$\begin{aligned} (5 \times 4) \times 2 &= 5 \times (4 \times 2) \\ = 20 \times 2 &= 5 \times 8 \\ = 40 &= 40 \end{aligned}$$

## Assignment

Re-group and simplify. Make sure you show your work

1  $(5+7)+12$

2  $7 + (10 + 7)$

3  $8 \times (3 \times 6)$

4  $3+(5+8)$

5  $6k + (2w + 3k)$

6  $9 \times (2 \times 5)$

7  $(13 + 7) + 3$

8  $(2d + c) + (d + 3c)$

9  $(4 \times 5) \times (25 \times 5)$

10  $25 + (2 + 8)$

11  $(7f + 5b) + (4b + 3f)$

12  $9k \times (2 \times 5)$