Basic Properties of Multiplication

1. The product of two numbers does not change even if we change the order of the numbers.

For example: $7 \times 8 = 56$ and $\qquad 8 \times 7 = 56$

So, $7 \times 8 = 8 \times 7$

Similarly, $9 \times 7 = 63$ $\qquad$ and $\qquad 7 \times 9 = 63$

So, $9 \times 7 = 7 \times 9$

2. The product of three numbers does not change even if we change the groupings of the numbers.

For example: $(7 \times 8) \times 5 = 56 \times 5 = 280$

$\qquad (8 \times 5) \times 7 = 40 \times 7 = 280$

Therefore, $(7 \times 8) \times 5 = (8 \times 5) \times 7$

3. The product of a number and 1 is the number itself.

For example: $17 \times 1 = 17$

$\qquad 28 \times 1 = 28$

4. The product of any number and 0 is zero.

For example: $25 \times 0 = 0$

$\qquad 0 \times 211 = 0$

Multiplication by 1000, 2000, ..., 9000.

➡️ **Look at the following pattern carefully:**

$3 \times 1 \quad = 3$ $\qquad\qquad$ $22 \times 1 \quad = 22$

$3 \times 10 \quad = 30$ $\qquad\qquad$ $22 \times 10 \quad = 220$

$3 \times 100 \quad = 300$ $\qquad\qquad$ $22 \times 100 \quad = 2200$

Similarly, we get

$3 \times 1000 \quad = 3000$ $\qquad\qquad$ $22 \times 1000 = 22000$

➡️ Thus, we observe that to multiply a number by 1000, 2000, 3000,....., 9000, we multiply the number by 1, 2 ,3,.....9 and put three zeros on the right of the product.

Example: multiply 19 and 26 by 3000

Solution: $19 \times 3000 = (19 \times 3) \times 1000 = 57 \times 1000 = 57000$

$\qquad\qquad\quad 26 \times 3000 = (26 \times 3) \times 1000 = 78 \times 1000 = 78000$