

MULTIPLICATION

Multiplication is a very important concept in mathematics. It's a way of adding the same number together many times.

A DEFINITIONS

Definition Multiplication

Multiplication is the process of repeated addition. When we multiply, we calculate the total by adding a number to itself a specified number of times.

Multiplication can be represented in several ways:

- Numbers:

$$4 \times 3 = 12$$

- Groups:

$$4 \text{ groups of } 3 = 12$$

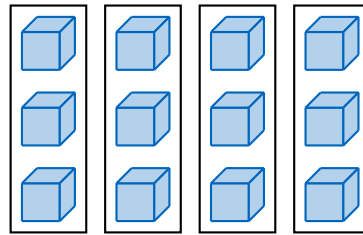
- Repeated addition:

$$3 + 3 + 3 + 3 = 12$$

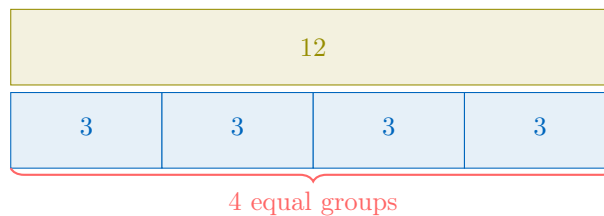
- Words:

four times three equals twelve

- Items:



- Part-whole model:



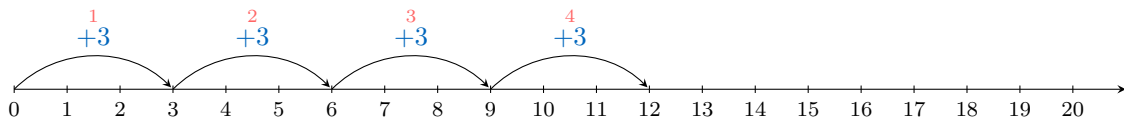
Ex: Write the repeated addition $5 + 5 + 5$ as a multiplication.

Answer: $5 + 5 + 5 = 3 \times 5$

B IN NUMBER LINE

Method Multiplication in number line

To evaluate 4×3 , we start from 0 and we move 3 ones to the right 4 times.



We end up at 12, which is the result of the multiplication 4×3 .

C REPRESENTATION OF MULTIPLICATION IN WORD PROBLEMS

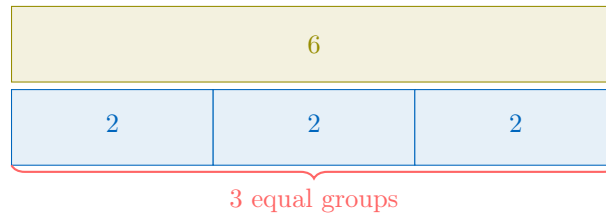
Method Groups of items

When we multiply, we often think about groups and the number of items in each group.

$$\text{number of groups} \times \text{number of items in each group} = \text{total}$$

For example, there are 3 bags, and each bag contains 2 apples. The total number of apples is:

$$\begin{aligned} 3 \times 2 &= 2 + 2 + 2 \\ &= 6 \end{aligned}$$



D COMMUTATIVE

Proposition Commutative

