

= Addition =

Addition (often signified by the plus symbol " + ") is one of the four basic operations of arithmetic , with the others being subtraction , multiplication and division . The addition of two whole numbers is the total amount of those quantities combined . For example , in the picture on the right , there is a combination of three apples and two apples together , making a total of five apples . This observation is equivalent to the mathematical expression " $3 + 2 = 5$ " i.e. , " 3 add 2 is equal to 5 " .

Besides counting fruits , addition can also represent combining other physical objects . Using systematic generalizations , addition can also be defined on more abstract quantities , such as integers , rational numbers , real numbers and complex numbers and other abstract objects such as vectors and matrices .

In arithmetic , rules for addition involving fractions and negative numbers have been devised amongst others . In algebra , addition is studied more abstractly .

Addition has several important properties . It is commutative , meaning that order does not matter , and it is associative , meaning that when one adds more than two numbers , the order in which addition is performed does not matter (see Summation) . Repeated addition of 1 is the same as counting ; addition of 0 does not change a number . Addition also obeys predictable rules concerning related operations such as subtraction and multiplication .

Performing addition is one of the simplest numerical tasks . Addition of very small numbers is accessible to toddlers ; the most basic task , $1 + 1$, can be performed by infants as young as five months and even some non @-@ human animals . In primary education , students are taught to add numbers in the decimal system , starting with single digits and progressively tackling more difficult problems . Mechanical aids range from the ancient abacus to the modern computer , where research on the most efficient implementations of addition continues to this day .

= = Notation and terminology = =

Addition is written using the plus sign " + " between the terms ; that is , in infix notation . The result is expressed with an equals sign . For example ,

<formula> (" one plus one equals two ")

<formula> (" two plus two equals four ")

<formula> (" three plus three equals six ")

<formula> (see " associativity " below)

<formula> (see " multiplication " below)

There are also situations where addition is " understood " even though no symbol appears :

A column of numbers , with the last number in the column underlined , usually indicates that the numbers in the column are to be added , with the sum written below the underlined number .

A whole number followed immediately by a fraction indicates the sum of the two , called a mixed number . For example ,