= a . In the 12th century , Bhaskara wrote , " In the addition of cipher , or subtraction of it , the quantity , positive or negative , remains the same " , corresponding to the unary statement a + 0 = a .

= = = Successor = = =

In the context of integers , addition of one also plays a special role : for any integer a , the integer (a + 1) is the least integer greater than a , also known as the successor of a . For instance , 3 is the successor of 2 and 7 is the successor of 6 . Because of this succession , the value of a + b can also be seen as the <formula> successor of a , making addition iterated succession . For examples , 6 + 2 is 8 , because 8 is the successor of 7 , which is the successor of 6 , making 8 the 2nd successor of 6 .

= = = Units = = =

To numerically add physical quantities with units , they must be expressed with common units . For example , adding 50 millilitres to 150 millilitres gives 200 millilitres . However , if a measure of 5 feet is extended by 2 inches , the sum is 62 inches , since 60 inches is synonymous with 5 feet . On the other hand , it is usually meaningless to try to add 3 meters and 4 square meters , since those units are incomparable ; this sort of consideration is fundamental in dimensional analysis .

= = Performing addition = =

= = = Innate ability = = =

Studies on mathematical development starting around the 1980s have exploited the phenomenon of habituation : infants look longer at situations that are unexpected . A seminal experiment by Karen Wynn in 1992 involving Mickey Mouse dolls manipulated behind a screen demonstrated that five @-@ month @-@ old infants expect 1 + 1 to be 2 , and they are comparatively surprised when a physical situation seems to imply that 1 + 1 is either 1 or 3 . This finding has since been affirmed by a variety of laboratories using different methodologies . Another 1992 experiment with older toddlers , between 18 and 35 months , exploited their development of motor control by allowing them to retrieve ping @-@ pong balls from a box ; the youngest responded well for small numbers , while older subjects were able to compute sums up to 5 .

Even some nonhuman animals show a limited ability to add , particularly primates . In a 1995 experiment imitating Wynn 's 1992 result (but using eggplants instead of dolls) , rhesus macaque and cottontop tamarin monkeys performed similarly to human infants . More dramatically , after being taught the meanings of the Arabic numerals 0 through 4 , one chimpanzee was able to compute the sum of two numerals without further training . More recently , Asian elephants have demonstrated an ability to perform basic arithmetic .

= = = Learning addition as children = = =

Typically , children first master counting . When given a problem that requires that two items and three items be combined , young children model the situation with physical objects , often fingers or a drawing , and then count the total . As they gain experience , they learn or discover the strategy of " counting @-@ on " : asked to find two plus three , children count three past two , saying " three , four , five " (usually ticking off fingers) , and arriving at five . This strategy seems almost universal ; children can easily pick it up from peers or teachers . Most discover it independently . With additional experience , children learn to add more quickly by exploiting the commutativity of addition by counting up from the larger number , in this case starting with three and counting " four , five . " Eventually children begin to recall certain addition facts (" number bonds ") , either through

experience or rote memorization . Once some facts are committed to memory , children begin to derive unknown facts from known ones . For example , a child asked to add six and seven may know that 6 + 6 = 12 and then reason that 6 + 7 is one more , or 13 . Such derived facts can be found very quickly and most elementary school students eventually rely on a mixture of memorized and derived facts to add fluently .

Different nations introduce whole numbers and arithmetic at different ages , with many countries teaching addition in pre @-@ school . However , throughout the world , addition is taught by the end of the first year of elementary school .

= = = = Addition table = = = =

Children are often presented with the addition table of pairs of numbers from 1 to 10 to memorize . Knowing this , one can perform any addition .

= = = Decimal system = = =

The prerequisite to addition in the decimal system is the fluent recall or derivation of the 100 single @-@ digit " addition facts " . One could memorize all the facts by rote , but pattern @-@ based strategies are more enlightening and , for most people , more efficient :