Thus the definitions given in Art. 3 may be presented in an algebraical form thus :

$$\cdot + 1 = 2,$$
$$2 + 1 = 3,$$
$$3 + 1 = 4.$$

6. Since

$2 = 1 + 1$, where unity is written *twice*,
$3 = 2 + 1 = 1 + 1 + 1$, where unity is written *three* times,
$4 = 3 + 1 = 1 + 1 + 1 + 1$ ..... *four* times,

it follows that

$a = 1 + 1 + 1$ ..... $+ 1 + 1$ with unity written a times,
$b = 1 + 1 + 1$ ..... $+ 1 + 1$ with unity written b times.

7. The process of addition in Arithmetic can be presented in a *shorter* form by the use of the sign $+$. Thus if we have to add 14, 17, and 23 together we can represent the process thus :

$$14 + 17 + 23 = 54.$$

8. When several numbers are added together, it is indifferent in what order the numbers are taken. Thus if 14, 17, and 23 be added together, their sum will be the same in whatever order they be set down in the common arithmetical process :

14	14	17	17	23	23
17	23	14	23	14	17
23	17	23	14	17	14
—	—	—	—	—	—
54	54	54	54	54	54

So also in Algebra, when any number of *symbols* are added together, the result will be the same in whatever order the symbols succeed each other. Thus if we have to add together the numbers symbolized by a and b, the result is represented by $a + b$, and this result is the same number as that which is represented by $b + a$.

Similarly the result obtained by adding together a, b, c might be expressed algebraically by

$a + b + c$, or $a + c + b$, or $b + a + c$, or $b + c + a$, or $c + a + b$, or $c + b + a$.

9. When a number denoted by a is added to itself the result is represented algebraically by $a + a$. This result is for