VARIABLES AND CONSTANTS

The diameter d of a circle of radius r is given by the formula $d = 2r$.In this formula, 2 is a fixed number whereas the literal numbers d and r are not fixed because they depend upon the size of the circle.

A symbol which takes various numerical values is called a variable.

A symbol having a fixed numerical value is called a constant.

Dynos

BASIC OPERATIONS ON LITERALS AND NUMBERS
ADDITION OF LITERALS

The sum of the literal x and a number 8 is denoted by $x + 8$ and is read as 'x plus 8'.

$x + 8$ can also be read as '8 more than x or increase x by 8'.

Dynos

PROPERTIES OF ADDITION OF LITERALS

Addition of literals obey all properties of addition of numbers.

Commutative Property

For any two literals a and b, we have
$a + b = b + a$

PROPERTIES OF ADDITION OF LITERALS

Associativity Property

For any three literals a, b and c, we have
$(a + b) + c = a + (b + c)$

Additive Property

For any literal a, we have
$a + 0 = a = 0 + a$

Here , '0' is known as the Additive identity.

SUBTRACTION OF LITERALS

If b is to be subtracted from *a*, we write $a - b$. We can also read '*a minus b*' as '*b* less than *a*'.

Commutativity and Associativity of subtraction are not true for literals

MULTIPLICATION OF LITERALS

Multiplication is repeated addition.

If m is a literal, then $m + m + m + m$ is 4 times m and is written as $4 \times m$.

The product of literals x and y is written as xy

Dynos

PROPERTIES OF MULTIPLICATION OF LITERALS

Multiplication of literals obey all properties of multiplication of numbers.

Commutative property

For any two literals m and n, we have $mn = nm$
i.e., the multiplication of literals is commutative.

Dynos

PROPERTIES OF MULTIPLICATION OF LITERALS

Associative Property

For any three literals a, b and c, we have
$(ab)\ c = a\ (bc)$
i.e., the multiplication of literals is associative.

Multiplicative Property

For any literal a, we have $a \times 1 = a = 1 \times a$
Here '*1*' is known as the Multiplicative Identity.

Dynos

PROPERTIES OF MULTIPLICATION OF LITERALS

Distributive property of Multiplication over Addition:

For any three literals a, b and c, we have

(a) $a\ (b + c) = ab + ac$ [Left distributivity]

(b) $(b + c)\ a = ba + ca$. [Right distributivity]

DIVISION OF LITERALS

In the case of literal numbers also $a \div b$ read as 'a by b' means that the literal a is to be divided by the literal b and is written as

$$\frac{a}{b}$$

(a) 8 more than thrice a number x.

Ans. Thrice a number $x = 3x$

$\therefore$ 8 more than thrice a number $x = 3x + 8$.