

10. Each of the letters composing a term is called a **dimension** of the term, and the number of letters involved is called the **degree** of the term. Thus the product abc is said to be *of three dimensions*, or *of the third degree*; and ax^4 is said to be *of five dimensions*, or *of the fifth degree*.

A numerical coefficient is not counted. Thus $8a^2b^5$ and a^2b^5 are each of *seven dimensions*.

11. But it is sometimes useful to speak of the dimensions of an expression with regard to any one of the letters it involves. For instance, the expression $8a^3b^4c$, which is of eight dimensions, may be said to be of three dimensions in a , of four dimensions in b , and of one dimension in c .

12. A compound expression is said to be **homogeneous** when all its terms are of the same dimensions. Thus $8a^6 - a^4b^2 + 9ab^5$ is a *homogeneous expression of six dimensions*.

13. In dealing with Algebraical expressions, where the letters denote numerical quantities, we may make use of the principles with which the student is familiar in Arithmetic. Thus ab and ba each denote the product of the two quantities represented by the letters a and b , and have therefore the same value. Again, the expressions abc , acb , bac , bca , cab , cba have the same value, each denoting the product of the three quantities a , b , c . It is immaterial in what order the factors of a product are written; it is usual, however, to arrange them in alphabetical order.

Example 1. If $x = 5$, $y = 3$, find the value of $4x^2y^3$.

$$\begin{aligned} 4x^2y^3 &= 4 \times 5^2 \times 3^3, \\ &= 4 \times 25 \times 27, \\ &= 2700. \end{aligned}$$

Example 2. If $a = 4$, $b = 9$, $x = 6$, find the value of $\frac{8bx^2}{27a^3}$.

$$\begin{aligned} \frac{8bx^2}{27a^3} &= \frac{8 \times 9 \times 6^2}{27 \times 4^3}, \\ &= \frac{8 \times 9 \times 36}{27 \times 64}, \\ &= \frac{3}{2}, \\ &= 1\frac{1}{2}. \end{aligned}$$

14. If one factor of a product is equal to 0, the whole product must be equal to 0, *whatever values the other factors may have*. A factor 0 is sometimes called a “zero factor.”