



CHAPTER: 13

EXPONENT AND POWERS

NOTES:

Larger number can be written in a shorter form using exponents.

$$10,000 = 10 \times 10 \times 10 \times 10 = 10^4$$

The short notation 10^4 stands for the product $10 \times 10 \times 10 \times 10$. Here “4” the exponent. The number 10^4 is read as 10 raise to the power of 4 or simply as fourth power of 10. 10^4 is called the exponential form of 10,000.

Expressing large numbers in the standard form-

Very large numbers are not convenient to write and read. To make it convenient we use powers.

$$\begin{aligned} \text{e.g: } 59000 &= 5.9 \times 10000 \\ &= 5.9 \times 10^4 \end{aligned}$$

$$\begin{aligned} 590000 &= 5.9 \times 100000 \\ &= 5.9 \times 10^5 \end{aligned}$$

$$\begin{aligned} 5900000 &= 5.9 \times 1000000 \\ &= 5.9 \times 10^6 \end{aligned} \quad \text{and so on.....}$$

We have expressed all these numbers in the standard form. Any number can be expressed as a decimal number between 1.0 and 10.0 including 1.0 multiplied by a power of 10. Such a form of number is called its standard form.

$$5,985 = 5.985 \times 1000$$

$$= 5.985 \times 10^3 \text{ is the standard form of } 5,985$$