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Tender Heart High School, Sec.-33 Bahl.

Class : VII Teacher : Deepti

Subject : Mathematics

Topic : Chapter-5 ; Exponents and power

If a number is multiplied many numbers of times, we can write it in two different form

(i) Product form $2 \times 2 \times 2 \times 2 \times 2 = 32$

(ii) exponential form or $2 \times 2 \times 2 \times 2 \times 2 = 2^5$

So, 2^5 → exponent/power/index

→ base

Laws of exponent

1. If the bases are same and there is a "multiply sign" then the powers get added up

$$a^m \times a^n = a^{m+n}$$

2. If the bases are same and there is a "divide sign" then the powers get subtracted

$$a^m \div a^n = a^{m-n}$$

3. $(a^m)^n = a^{m \times n}$

The product of powers

4. $a^0 = 1$

Any thing raise to power zero is always 1

5. $a^{-m} = \frac{1}{a^m}$ or $\frac{1}{a^{-m}} = a^m$

6. If $a^m = a^n$ (means if the bases are same, power are equal)

$\Rightarrow m = n$

7. If $\sqrt[n]{a} = (a)^{1/n}$

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Topic : Chapter-5 : Exponent

Km → hm → dam → m → dm → cm → mm

1 Km = 1000 m = 10^3 m , 1 m = 1000 mm = 10^3 mm , 1 Km = 1000000 mm = 10^6 mm

Exercise-5 A

Soln 1 (i) $7^4 = 7\times7\times7\times7 = 2401$

(ii) $\left(\frac{3}{4}\right)^5 = \frac{3\times3\times3\times3\times3}{4\times4\times4\times4\times4} = \frac{243}{1024}$

Soln 2. (i) $10000 = 10^4$

(iii) 1 million $= 10,00,000 = 10^6$

Soln 3 (ii) $\left(-\frac{8}{3}\right)\times\left(-\frac{8}{3}\right)\times\left(-\frac{8}{3}\right)\times\left(-\frac{8}{3}\right) = \left(-\frac{8}{3}\right)^4$

Soln 4 (i) $\frac{343}{512} = \frac{7^3}{8^3}$

(iv) $\frac{729}{64} = \frac{3^6}{2^6}$

Soln 6 $\left(\frac{6}{5}\right)^3\times\left(\frac{5}{2}\right)^2 = \frac{2^3\times3^3}{5^3}\times\frac{5^2}{2^2}$

$= 2^{3-2}\times3^3\times5^{2-3}$

$= 2^1\times3^3\times5^{-1}$

$= \frac{2\times3\times3\times3}{5} = \frac{54}{5}$