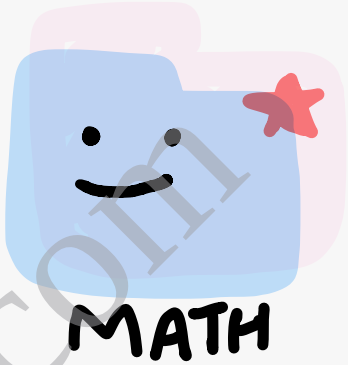
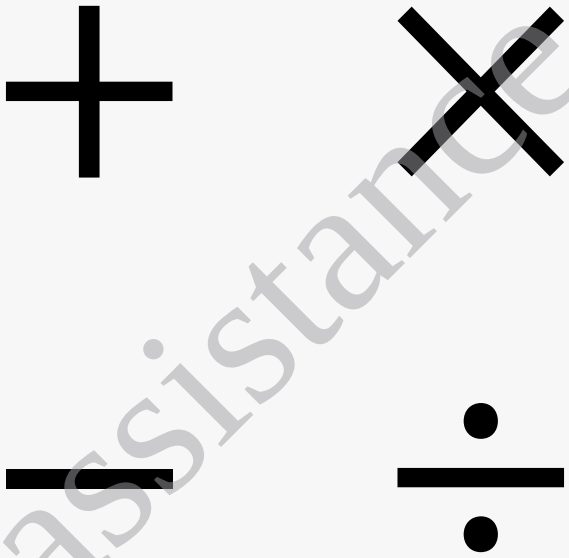
Number System
Ex. 1.6





Ex. 1.6

10 (i) $64^{\frac{1}{2}}$

$= (8^2)^{\frac{1}{2}}$

$= 8^{2 \times \frac{1}{2}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 8$

(ii) $32^{\frac{1}{5}}$

$= (2^5)^{\frac{1}{5}}$

$= 2^{5 \times \frac{1}{5}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 2$

(iii) $125^{\frac{1}{3}}$

$= (5^3)^{\frac{1}{3}}$

$= 5^{3 \times \frac{1}{3}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 5$

20 (i) $9^{\frac{3}{2}}$

$= (3^2)^{\frac{3}{2}}$

$= 3^{2 \times \frac{3}{2}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 3^3$

$= 27$

(ii) $32^{\frac{2}{5}}$

$= (2^5)^{\frac{2}{5}}$

$= 2^{5 \times \frac{2}{5}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 2^2$

$= 4$

(iii) $16^{\frac{3}{4}}$

$= (2^4)^{\frac{3}{4}}$

$= 2^{4 \times \frac{3}{4}}$ $\quad [\because (a^m)^n = a^{mn}]$

$= 2^3$

$= 8$

(iv) $125^{-\frac{1}{3}}$

$= (5^3)^{-\frac{1}{3}}$

$= 5^{3 \times \left(-\frac{1}{3}\right)}$ $\left[\because (a^m)^n = a^{mn}\right]$

$= 5^{-1}$

$= \frac{1}{5}$ $\left[\because a^{-1} = \frac{1}{a}\right]$

30 (i) $2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}}$

$= 2^{\frac{2}{3}+\frac{1}{5}}$ $\left[\because a^m \times a^n = a^{m+n}\right]$

$= 2^{\frac{10+3}{15}}$

$= 2^{\frac{13}{15}}$

(ii) $\left(\frac{1}{3^3}\right)^7$

$= \frac{1^7}{(3^3)^7}$ $\left[\because \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}\right]$

$= \frac{1}{3^{3\times 7}}$

$= \frac{1}{3^{21}}$ $\left[\because (a^m)^n = a^{mn}\right]$

(iii) $\frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}}$

$= 11^{\frac{1}{2}-\frac{1}{4}}$ $\left[\because a^m \div a^n = a^{m-n}\right]$

$= 11^{\frac{2-1}{4}}$

$= 11^{\frac{1}{4}}$

(iv) $7^{\frac{1}{2}} \cdot 8^{\frac{1}{2}}$

$= (7\times 8)^{\frac{1}{2}}$ $\left[\because a^n \times b^n = (ab)^n\right]$

$= 56^{\frac{1}{2}}$