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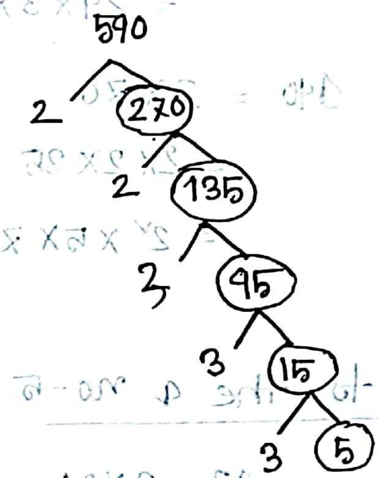
২ নং : Division method

2 | 590
2 | 270
2 | 135
2 | 95
3 | 15
5

Tree Diagram



Multiplication Me

$590 = 2\times 270$

$= 2\times 2\times 135$

$= 2^2 \times 3 \times 95$

$= 2^2 \times 3^2 \times 15$

$= 2^2 \times 3^2 \times 5$

Ans to the 4 no-3

$590 = 1\times 590$

$= 2\times 270$

$= 3\times 180$

$= 4\times 135$

$= 5\times 108$

$= 6\times 90$

$= 9\times 60$

$= 10\times 59$

$= 12\times 45$

$= 15\times 36$

$= 18\times 30$

$= 20\times 27$

$= 30\times 18$

$= 36\times 15$

The prime factors are:

(1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 30, 36, 45, 59, 60, 90, 108, 135, 180, 27 590)

Ans to the q' no - 4:

$240 = 2 \times 120$

$= 2 \times 2 \times 2 \times 30$

$= 2^4 \times 3 \times 5$

$140 = 2 \times 70$

$= 2 \times 2 \times 35$

$= 2^2 \times 5 \times 7$

$L.C.M(240, 140) = 2^4 \cdot 3 \cdot 5 \cdot 7$

$= 1680$

$G.C.D(240, 140) = 2^2 \cdot 5$

$= 4 \cdot 5 = 20$

Ans to the q no - 5

$42 = 2 \times 21 = 2 \cdot 3 \cdot 7$

$63 = 3 \times 21 = 3 \cdot 3 \cdot \times 7 = 3^2 \cdot 7$

$140 = 2 \times 70 = 2 \cdot 2 \cdot 5 \cdot 7 = 2^2 \cdot 5 \cdot 7$

$\therefore$ $LCM(42, 63, 140) = 2^2 \cdot 3^2 \cdot 5 \cdot 7 = 1260$

$HCF(42, 63, 140) = 7$

Ans to the q no - 6

$\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27}$

Calculation for number:

$2 = 2^1$

$8 = 2^3$

$16 = 2^4$

$10 = 2 \cdot 5$

$\therefore$ $LCM = 2^4 \cdot 5$

$GCD = 2$

calculation of Denominator

$3 = 3^1$

$9 = 3^2$

$81 = 3^4$

$27 = 3^3$

$LCM = 3^4$

$GCD = 3$

(5) LCM of $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27}$ $= \frac{\text{LCM of } (2,8,16,10)}{\text{GCD of } (3,9,81,27)}$

$$= \frac{2^4 \cdot 5}{3}$$ (Ans)

and, HCF of $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27}$ $= \frac{\text{GCD of } (2,8,16,10)}{\text{LCM of } (3,9,81,27)}$

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

Ans to the q no - 7

$$z = \frac{1+\sqrt{3}\,i}{1-\sqrt{3}\,i}$$

Notation $= |z|$

Rule $|z| = \sqrt{x^2+y^2}$

Suppose : $z_1 = 1+\sqrt{3}\,i$ and $z_2 = 1-\sqrt{3}\,i$

$\therefore |z_1| = \sqrt{(1)^2+(\sqrt{3})^2} = \sqrt{4} = 2$

$\therefore |z_2| = \sqrt{(1)^2+(-\sqrt{3})^2} = \sqrt{4} = 2$

$\therefore$ Modulas of $|z| = \frac{2}{2} = 1$

(Ans)

And Z_1's Aurgument is $\theta_1 = \tan^{-1}\left(\frac{y}{x}\right)$

$= \tan^{-1}\sqrt{3}$

$= 60^\circ$

Z_2's Aurgument is $\theta_2 = 360^\circ - \tan^{-1}\frac{y}{x}$

$= 360^\circ - 60^\circ$

$= 300^\circ$