

HCF

Highest Common factor

$$12 = \underline{1}, \underline{2}, 3, \underline{4}, 6, 12$$

$$16 = \underline{1}, \underline{2}, \underline{4}, 8, 16$$

$$= \text{HCF}(12, 16)$$

4

Definition

HCF of x, y, z is the largest no. which can divide

x, y, z exactly

Divisor

How To Find HCF

- ① Prime Factorisation ② Division Method

$$12 = 2 \times 2 \times 3$$
$$16 = 2 \times 2 \times 2 \times 2$$

$$\text{HCF}(12, 16) = \underline{2 \times 2} = 4$$

$$\begin{array}{r} 12 \overline{) 16} \quad 1 \\ \underline{12} \\ 4 \end{array}$$

HCF (Final Divisor) \rightarrow 4

$$\underline{4, 2}$$

- ③ Real Method

$$\frac{a}{a-b} \quad \frac{b}{a-b}$$

HCF \leq Difference of two no. a & b

$$\begin{array}{cc} 12 & 16 \\ \swarrow & \searrow \\ & 4 \end{array}$$

$$\boxed{\text{HCF} \leq 4}$$

4

Q1) Octagon field

2100, 2945, 3000, 3250, 3365, 2950, 3995, 4665

HCF
Req

55

$S = \text{HCF}$

1045 670
└─ 365 ─┘

eg 2

306 340 187
└─ 34 ─┘
2 17

HCF

34
~~2~~
17

Question

- ① Find the largest no. which can divide x, y, z resp.
- ② Find the largest number which can divide x, y, z & leaves remainder are r in each case.
- ③ Find the largest no. which can divide x, y, z & leaves remainder a, b, c .

Answer

HCF of x, y, z

If 'r' known

HCF of $(x-r), (y-r), (z-r)$

or

'r' not known

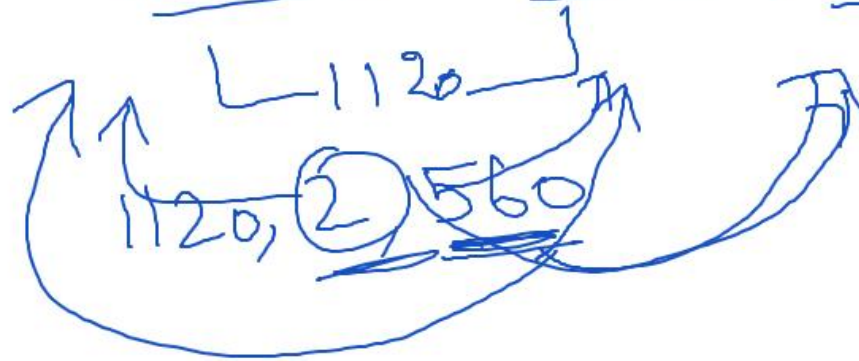
HCF of $|x-y|, |y-z|, |z-x|$

HCF of $(x-a), (y-b), (z-c)$

Q) Find the largest number which can divide $\underline{1305}$, $\underline{4665}$ & $\underline{6905}$ & leaves remainder equal in each case?

Ans HCF of $(x-y)$, $(y-z)$, $(z-x)$
 HCF of $(4665-1305)$, $(6905-4665)$, $(6905-1305)$

3360, 2240, 5600

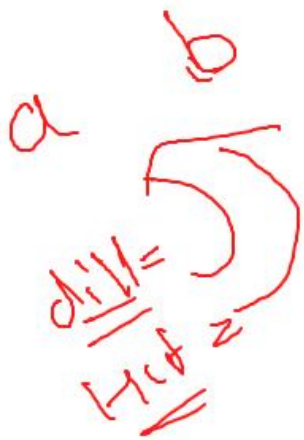


1120 = Ans

2 1120
 2 560
 2 280
 2 140
 2 70

Note

If two no's are divided by their difference or factor of difference then leaves same remainder



$$\frac{29}{2} \quad 1$$

$$\frac{39}{2} \quad 1$$

$$\frac{29}{5} \quad 4$$

$$\frac{39}{5} \quad 4$$

$$\frac{29}{10} \quad 9$$

$$\frac{39}{10} \quad 9$$

Q) Two no 225 & 147 are divided by a two digit no.
 & leaves some remainder in each case. How many two
digit no. are possible?

Ans = 4

$$\begin{array}{r} 225 \\ 78 \end{array}$$

$$\begin{array}{r} 147 \\ 78 \end{array}$$
 same rem

$$\begin{array}{r} 225 \\ 78 \end{array}$$

$$\begin{array}{r} 147 \\ 78 \end{array}$$

$$\left. \begin{array}{l} 39 \\ 13 \\ 26 \\ 78 \end{array} \right\}$$

 (225) (147)