Find HCF of 384 and 26 and verify HCF is linear combination of 384, 26.

Let $a = 384$, $b = 26$

$$\begin{array}{r|l} 26 & 384 \;(14 \\ & 364 \\ \hline & 20 \end{array}$$

$$\begin{array}{r|l} 20 & 26 \;(1 \\ & 20 \\ \hline & 6 \end{array}$$

$$\begin{array}{r|l} 6 & 20 \;(3 \\ & 18 \\ \hline & 2 \end{array}$$

$$\begin{array}{r|l} 2 & 6 \;(3 \\ & 6 \\ \hline & 0 \end{array}$$

applying euclids div. lemma

$384 = 26 \times 14 + 20 \quad \cdots (i)$

$\because r \neq 0$

$26 = 20 \times 1 + 6 \quad \cdots (ii)$

$\because r \neq 0$

$20 = 6 \times 3 + 2 \quad \cdots (iii)$

$\because r \neq 0$

$6 = 2 \times 3 + 0$

$\because r = 0$

$\therefore$ HCF of 384 and 26 $= 2$

using (i) $a = 14b + 20 \Rightarrow 20 = a - 14b \quad \cdots (iv)$

using (ii) $6 = 26 - 20 \Rightarrow 6 = b - (a - 14b)$ using (iv)

$\Rightarrow 6 = 15b - a \quad \cdots (v)$

using (iii) $2 = 20 - 6 \times 3$

$= (a - 14) - (15b - a)3$ [using (iv) and (v)]

$\Rightarrow 2 = 4a - 59b$

$\Rightarrow 2 = 4 \times a + (59)b$

$\Rightarrow d = ma + mb$

where $d = HCF = 2$, $n = 4$, $m = -59$

CBSE HOTS Solutions X by Dev Anoop (Bathinda)