

If the HCF of 657 and 963 is expressible in the form  $657x + 963 \times (-15)$ , find  $x$ .

**Solution:**

By Euclid's Division Algorithm

$$963 = 657 \times 1 + 306$$

$$657 = 306 \times 2 + 45$$

$$306 = 45 \times 6 + 36$$

$$45 = 36 \times 1 + 9$$

$$36 = 9 \times 4 + 0$$

$$\text{HCF} = 9$$

$$\text{HCF} = 657x + 963 \times (-15)$$

$$9 = 657x - 14445$$

$$9 + 14445 = 657x$$

$$14454 = 657x$$

$$x = 22$$