## Exercise 2.11

### Question: 1

For each of the following pairs of numbers, verify the property:

Product of the number = Product of their H.C.F and L.C.M

### Solution:

(i) Given numbers are 25 and 65

Prime factorization of 25 = 5 × 5

Prime factorization of 65 = 5 × 13

HCF of 25 and 65 = 5

LCM of 25 and 65 = 5 × 5 × 13 = 325

Product of the given numbers = 25 × 65 = 1, 625

Product of their HCF and LCM = 5 × 325 = 1, 625

Therefore, Product of the number = Product of their HCF and LCM (Verified)

(ii) Given numbers are 117 and 221.

Prime factorization of 117 = 3 × 3 × 13

Prime factorization of 221 = 13 × 17

HCF of 117 and 221 = 13

LCM of 117 and 221 = 3 × 3 × 13 × 17 = 1, 989

Product of the given number = 117 × 221 = 12, 857

Product of their HCF and LCM = 13 × 1, 989 = 12,857

Therefore, Product of the number = Product of their HCF and LCM (verified)

(iii) Given numbers are 35 and 40.

Prime factorization of 35 = 5 × 7

Prime factorization of 40 = 2 × 2 × 2 × 5

HCF of 35 and 40 = 5

LCM of 35 and 40 = 2 × 2 × 2 × 5 × 7 = 280

Product of the given number = 35 × 40 = 1400

Product of their HCF and LCM = 5 × 280 = 1400

Therefore, Product of the number = Product of their HCF and LCM (Verified)

(iv) Given numbers are 87 and 145.

Prime factorization of 87= 3 × 29

Prime factorization of 145= 5 × 29

HCF of 87 and 145 = 29

LCM of 87 and 145 = 3 × 5 × 29 = 435

Product of the given number = 87 × 145 = 12615

Product of their HCF and LCM = 29 × 435 = 12615

Therefore, Product of the number = Product of their HCF and LCM (Verified)

(v) Given numbers are 490 and 1155.

Prime factorization of 490= 2 × 5 × 7 × 7

Prime factorization of 1155= 3 × 5 × 7 × 11

HCF of 490 and 1155 = 35

LCM of 490 and 1155 = 2 × 3 × 3 × 5 × 7 × 7 × 11 = 16710

Product of the given number = 490 × 1155 = 5, 65,950

Product of their HCF and LCM = 35 × 16, 170 = 5, 65,950

Therefore, Product of the number = Product of their HCF and LCM (Verified)

## Question: 2

**Find the H.C. F and L.C.M of the following pairs and numbers:**

## Solution:

(i) 1174 and 221

Prime factorization of 117 = 3 × 3 × 13

Prime factorization of 221 = 13 × 17

Therefore, Required HCF of 117 and 221 = 13

Therefore, Required LCM of 117 and 221 = 3 × 3 × 13 × 17 = 1989

(ii) 234 and 572.

Prime factorization of 234 = 2 × 3 × 3 × 13

Prime factorization of 572 = 2 × 2 × 11 × 13

Therefore, Required HCF of 234 and 572 = 226

Therefore, Required LCM of 117 and 221 = 2 × 2 × 3 × 3 × 11 × 13 = 5148

(iii) 145 and 232

Prime factorization of 145 = 5 × 29

Prime factorization of 232 = 2 × 2 × 2 × 29

Therefore, Required HCF of 145 and 232 = 289

Therefore, Required LCM of 145 and 232 = 2 × 2 × 2 × 5 × 29 = 1160

(v) 861 and 1353

Prime factorization of 861 = 3 × 7 × 41

Prime factorization of 1353 = 3 × 11 × 41

Therefore, Required HCF of 861 and 1353 = 123

Therefore, Required LCM of 861 and 1353 = 3 × 7 × 11 × 41 = 9471

## Question: 3

**The L.C.M and H.C.F of two numbers are 180 and 6 respectively. If one of the number is 30, find the other number.**

## Solution:

Given: HCF of two numbers = 6

LCM of two numbers = 180

One of the given number = 30

Product of the two numbers = Product of their HCF and LCM

Therefore, 30 × other number = 6 × 180

Other number = 6 × 18030 = 36

Thus, the required number is 36.

## Question: 4

The H.C.F of two numbers is 16, and their product is 3072. Find their L.C.M

## Solution:

Given: HCF of two numbers = 16

Product of these two numbers = 3,072

Product of the two numbers = Product of their HCF and LCM

Therefore, 3,072 = 16 × LCM

LCM = 307216 = 192

Thus, the required LCM is 192.

## Question: 5

**The H.C.F of two numbers is 145, their L.C.M is 2175. If one number is 725, find the other.**

## Solution:



HCF of two numbers = 145

LCM of two numbers = 2,175

One of the given numbers = 725

Product of the given two numbers = Product of their LCM and HCF

Therefore, 725 × other number = 145 × 2,175

Other number = 145 × 2175725 = 435

Thus, the required number is 435.

## Question: 6

Can two numbers have 16 as their HCF and 380 as their L.C.M? Give reasons.

## Solution:

No. We know that HCF of the given two numbers must exactly divide their LCM.

But 16 does not divide 380 exactly.

Hence, there can be no two numbers with 16 as their HCF and 380 as their LCM.