

## EXERCISE 2.7

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1. Determine the HCF of the following numbers by using Euclid's algorithm (i – x):

(i) 300, 450

(ii) 399, 437

(iii) 1045, 1520

**Solution:**

(i) 300, 450

Taking 450 as dividend and 300 as divisor

$$\begin{array}{r|l}
 450 & 300 \\
 \hline
 300 & 1 \\
 \hline
 150 & 2 \\
 \hline
 300 & \\
 \hline
 0 & 
 \end{array}$$

We know that the last divisor is 150

Therefore, HCF of 300, 450 is 150.

(ii) 399, 437

Taking 437 as dividend and 399 as divisor

$$\begin{array}{r|l}
 437 & 399 \\
 \hline
 399 & 1 \\
 \hline
 38 & 10 \\
 \hline
 380 & \\
 \hline
 19 & 2 \\
 \hline
 38 & \\
 \hline
 0 & 
 \end{array}$$

We know that the last divisor is 19

Therefore, HCF of 399, 437 is 19.

(iii) 1045, 1520

Taking 1520 as dividend and 1045 as divisor

$$\begin{array}{r|l}
 1520 & 1045 \\
 \hline
 1045 & 1 \\
 \hline
 475 & 2 \\
 \hline
 950 & \\
 \hline
 95 & 5 \\
 \hline
 475 & \\
 \hline
 0 & 
 \end{array}$$

We know that the last divisor is 95

Therefore, HCF of 1045, 1520 is 95.

2. Show that the following pairs are co-prime:

(i) 59, 97

(ii) 875, 1859

(iii) 288, 1375

**Solution:**

(i) 59, 97

Taking 97 as dividend and 59 as divisor

$$\begin{array}{r}
 59 \overline{) 97} \quad 1 \\
 \underline{59} \phantom{00} \\
 38 \phantom{00} \quad 59 \phantom{00} \quad 1 \\
 \underline{38} \phantom{000} \\
 21 \phantom{00} \quad 38 \phantom{00} \quad 1 \\
 \underline{21} \phantom{000} \\
 17 \phantom{00} \quad 21 \phantom{00} \quad 1 \\
 \underline{17} \phantom{000} \\
 4 \phantom{00} \quad 17 \phantom{00} \quad 4 \\
 \underline{16} \phantom{000} \\
 1 \phantom{00} \quad 4 \phantom{00} \quad 4 \\
 \underline{4} \phantom{000} \\
 0
 \end{array}$$

We know that the last divisor is 1.

Therefore, the numbers 59, 97 are co-prime.

(ii) 875, 1859

Taking 1859 as dividend and 875 as divisor

$$\begin{array}{r}
 875 \overline{) 1859} \quad 2 \\
 \underline{1750} \phantom{00} \\
 109 \phantom{00} \quad 875 \phantom{00} \quad 8 \\
 \underline{872} \phantom{000} \\
 3 \phantom{00} \quad 109 \phantom{00} \quad 36 \\
 \underline{9} \phantom{000} \\
 19 \phantom{00} \\
 \underline{18} \phantom{000} \\
 1 \phantom{00} \quad 3 \phantom{00} \quad 3 \\
 \underline{3} \phantom{000} \\
 0
 \end{array}$$

We know that the last divisor is 1.

Therefore, the numbers 875, 1859 are co-prime.

(iii) 288, 1375

Taking 1375 as dividend and 288 as divisor

$$\begin{array}{r}
 288 \overline{) 1375} \quad 4 \\
 \underline{1152} \\
 223 \overline{) 288} \quad 1 \\
 \underline{223} \\
 65 \overline{) 223} \quad 3 \\
 \underline{195} \\
 28 \overline{) 65} \quad 2 \\
 \underline{56} \\
 9 \overline{) 28} \quad 3 \\
 \underline{27} \\
 1 \overline{) 9} \quad 9 \\
 \underline{9} \\
 0
 \end{array}$$

We know that the last divisor is 1.

Therefore, the numbers 288, 1375 are co-prime.

### 3. What is the HCF of two consecutive numbers?

**Solution:**

We know that the HCF of two consecutive numbers is 1.

For example consider 4 and 5 as two consecutive numbers

Taking 5 as dividend and 4 as divisor

$$\begin{array}{r}
 4 \overline{) 5} \quad 1 \\
 \underline{4} \\
 1 \overline{) 4} \quad 4 \\
 \underline{4} \\
 0
 \end{array}$$

We know that the last divisor is 1.

Therefore, HCF of 4 and 5 is 1.

### 4. Write true (T) or false (F) for each of the following statements:

- (i) The HCF of two distinct prime numbers is 1.
- (ii) The HCF of two co-prime number is 1.
- (iii) The HCF of an even and an odd number is 1.
- (iv) The HCF of two consecutive even numbers is 2.
- (v) The HCF of two consecutive odd numbers is 2.

**Solution:**

(i) True.

(ii) True.

(iii) False. The HCF of even number 6 and odd number 9 is 3.

(iv) True.

(v) False. The HCF of numbers 25 and 27 is 1.

