Exercise 2.7

Q.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) here Dividend = 450, Divisor = 300

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

∵ last divisor is 150

∴ HCF (300, 450) = 150

(ii) here, Dividend = 437, Divisor = 399

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

∵ last divisor is 19

hence HCF (399, 437) = 19

(iii) 1045, 1520

here, Dividend = 1520, Divisor = 1045

```
1045 ) 1520 ( 1
     - 1045
     -------
      475 ) 1045 ( 2
            - 950
            -----
             95 ) 475 ( 5
                  - 475
                  -----
                    0
```

here last divisor is 95

therefore HCF (1045, 1520) = 95

Q.2 Show that the following pairs are coprime:

(i) 59, 97 (ii) 875, 1859 (iii) 288, 1375

Solution (i) 59, 97, here, Dividend = 97, Divisor = 59

```
59 ) 97 ( 1
   - 59
   ----
    38 ) 59 ( 1
         - 38
         ----
          21 ) 38 ( 1
               - 21
               ----
               17 ) 21 ( 1
                    17
                    --
                     4 ) 17 ( 4
                         - 16
                         ----
                          1 ) 4 ( 4
                              - 4
                              ---
                              0
```

there last divisor is 1, hence HCF is 1

∴ 59, 97 are coprimes

(ii) 875, 1859 , here, Dividend = 1859, Divisor = 875

$$
\begin{array}{r|l}
875 & 1859 \\
-1750 & \\
\hline
109 & 875 \\
-872 & \\
\hline
3 & 109 \\
-108 & \\
\hline
1 & 3 \\
-3 & \\
\hline
0 &
\end{array}
\qquad
\begin{array}{l}
(2 \\ \\ \\ (8 \\ \\ \\ (36 \\ \\ \\ (3 \\ \\ \\
\end{array}
$$

$\therefore$ HCF of 875, 1859 is 1

therefore these are coprimes.

(iii) 288, 1375 , here Dividend = 1375, Divisor = 288

$$
\begin{array}{r|l}
288 & 1375 \\
-1152 & \\
\hline
223 & 288 \\
-223 & \\
\hline
65 & 223 \\
-195 & \\
\hline
28 & 65 \\
-56 & \\
\hline
9 & 28 \\
-27 & \\
\hline
1 & 9 \\
-9 & \\
\hline
0 &
\end{array}
\qquad
\begin{array}{l}
(4 \\ \\ \\ (1 \\ \\ \\ (3 \\ \\ \\ (2 \\ \\ \\ (3 \\ \\ \\ (9 \\ \\ \\
\end{array}
$$

$\therefore$ HCF of 288, 1375 is 1

Therefore these are coprimes.

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

Solution: HCF of two consecutive numbers is 1.

Q.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 coprime number is 1.

(iii) The HCF of an even and an odd number is 1.

(iv) The HCF of two consecutive even number is 2.

(v) The HCF of two consecutive odd number is 2.

Answer (i) True (ii) True (iii) True

(iv) True (v) False.

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