Exercise 2E

Q9

Answer :

The given numbers are 48, 64, 72, 96 and 108.

We have:

$$
\begin{array}{r|l}
2 & 48, 64, 72, 96, 108 \\
\hline
2 & 24, 32, 36, 48, 54 \\
\hline
2 & 12, 16, 18, 24, 27 \\
\hline
2 & 6, 8, 9, 12, 27 \\
\hline
3 & 3, 4, 9, 6, 27 \\
\hline
2 & 1, 4, 3, 2, 9 \\
\hline
2 & 1, 2, 3, 1, 9 \\
\hline
3 & 1, 1, 3, 1, 9 \\
\hline
3 & 1, 1, 1, 1, 3 \\
\hline
 & 1, 1, 1, 1, 1
\end{array}
$$

$\therefore$ LCM $= 2^6 \times 3^3$

$= 1728$

Q10

Answer :

The given numbers are 117 and 221.

We have:

$$
\begin{array}{r|l}
3 & 117 \\
\hline
3 & 39 \\
\hline
13 & 13
\end{array}
\qquad
\begin{array}{r|l}
 & 221 \\
\hline
 & 17 \\
\hline
 & 1
\end{array}
$$

$$\begin{array}{r|l} 13 & 13 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 17 & 17 \\ \hline & 1 \end{array}$$

Now,

$117 = 3 \times 3 \times 13$

$221 = 13 \times 17$

$\therefore$ HCF $= 13 \times 1$

Now, LCM $= 13 \times 17 \times 3 \times 3$

$= 1989$

Q11

Answer :

The given numbers are 234 and 572.

We have:

$$\begin{array}{r|l} 2 & 234 \\ \hline 3 & 117 \\ \hline 3 & 39 \\ \hline 13 & 13 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 2 & 572 \\ \hline 2 & 286 \\ \hline 13 & 143 \\ \hline 11 & 11 \\ \hline & 1 \end{array}$$

Now, we have:

$234 = 2 \times 3 \times 3 \times 13$

$572 = 2 \times 2 \times 1\,3 \times 11$

$\therefore$ LCM $= 13 \times 2 \times 2 \times 11 \times 9$

$= 5148$

Also, HCF $= 13 \times 2 = 26$

Q12

Answer :

The given numbers are 693 and 1078.

We have:

$$\begin{array}{r|l} 3 & 693 \\ \hline 3 & 231 \\ \hline 7 & 77 \\ \hline 11 & 11 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 2 & 1078 \\ \hline 7 & 539 \\ \hline 7 & 77 \\ \hline 11 & 11 \\ \hline & 1 \end{array}$$

Now, we have:

693 = 3 × 3 ×7 × 11

1078 = 2 × 7× 7 × 11

∴ HCF = 7 × 11= 77

Also, LCM = 2 × 3 × 3 ×7 × 7 × 11 = 9702

Q13

Answer :

The given numbers are 145 and 232.

We have:

$$\begin{array}{r|l} 5 & 145 \\ \hline 29 & 29 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 2 & 232 \\ \hline 2 & 116 \\ \hline 2 & 58 \\ \hline 29 & 29 \\ \hline & 1 \end{array}$$

Now, we have:

$145 = 5 \times 29$

$232 = 2 \times 2 \times 2 \times 29$

$\therefore$ HCF = 29

Also, LCM = $29 \times 2 \times 2 \times 2 \times 5 = 1160$

Q14

Answer :

The given numbers are 861 and 1353.

We have:

$$\begin{array}{r|l} 3 & 861 \\ \hline 7 & 287 \\ \hline 41 & 41 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 3 & 1353 \\ \hline 11 & 451 \\ \hline 41 & 41 \\ \hline & 1 \end{array}$$

Now, we have:

$861 = 3 \times 41 \times 7$

$1353 = 41 \times 11 \times 3$

$\therefore$ HCF = $41 \times 3 = 123$

Also, LCM = $41 \times 3 \times 11 \times 7 = 9471$

Q15

Answer :

HCF of 2923 and 3239:

$$
\begin{array}{r}
\quad\quad 1 \\
2923\overline{)\,3239} \\
-2923 \\
\hline
316\overline{)\,2923}\,(9 \\
-2844 \\
\hline
79\overline{)\,316}\,(4 \\
-316 \\
\hline
0
\end{array}
$$

$\therefore$ HCF = 79

We know that product of two numbers = HCF × LCM

$$\Rightarrow \text{LCM} = \frac{\text{Product of two numbers}}{\text{HCF}}$$

$$\Rightarrow \text{LCM} = \frac{2923 \times 3239}{79}$$

$$\therefore \text{LCM} = 119843$$

Q16

Answer :

(i) 87 and 145

3	87
29	29
	1

5	145
29	29
	1

We have:

$87 = 3 \times 29$

$145 = 5 \times 29$

HCF = 29

LCM = $29 \times 15 \times 1 = 435$

Now, HCF × LCM = $29 \times 435 = 12615$

Product of the two numbers = $87 \times 145 = 12615$

$\therefore$ HCF × LCM = Product of the two numbers

Verified.

********** END **********