

Exercise 2.4

Q.1 In which of the following expressions, Prime factorization has been done?

(i) $24 = 2 \times 3 \times 4$

(ii) $56 = 1 \times 7 \times 2 \times 2 \times 2$

(iii) $70 = 2 \times 5 \times 7$

(iv) $54 = 2 \times 3 \times 9$

Solution In part (iii) $70 = 2 \times 5 \times 7$, as 2, 5 and 7 are prime numbers.

Q.2 Determine Prime factorisation of each of the following numbers.

(i) 216

(ii) 420

(iii) 468

(iv) 945

(v) 7325

(vi) 13915

Solution (i) 216

$\therefore 216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$

2	216
2	108
2	54
3	27
3	9
3	3
	1

(ii) 420

$\therefore 420 = 2 \times 2 \times 3 \times 5 \times 7$

2	420
2	210
3	105
5	35
7	7
	1

(iii)

$$\therefore 468 = 2 \times 2 \times 3 \times 3 \times 13$$

$$\begin{array}{r|l} 2 & 468 \\ \hline 2 & 234 \\ \hline 3 & 117 \\ \hline 3 & 39 \\ \hline 13 & 13 \\ \hline & 1 \end{array}$$

(iv)

$$\begin{array}{r|l} 3 & 945 \\ \hline 3 & 315 \\ \hline 3 & 105 \\ \hline 5 & 35 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$\therefore 945 = 3 \times 3 \times 3 \times 5 \times 7$$

(v)

$$\begin{array}{r|l} 5 & 7325 \\ \hline 5 & 1465 \\ \hline 293 & 293 \\ \hline & 1 \end{array}$$

$$\therefore 7325 = 5 \times 5 \times 293$$

(vi)

$$\begin{array}{r|l} 5 & 13915 \\ \hline 11 & 2783 \\ \hline 11 & 253 \\ \hline 23 & 23 \\ \hline & 1 \end{array}$$

$$\therefore 13915 = 5 \times 11 \times 11 \times 23$$

Q.3 Write the smallest 4-digit number and express it as a product of primes.

Sol: Smallest 4-digit number = 1000

$$\therefore 1000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$$

$$\begin{array}{r|l} 2 & 1000 \\ \hline 2 & 500 \\ \hline 2 & 250 \\ \hline 5 & 125 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

Q.4 Write the largest 4 digit number and give its prime factorisation.

Sol: largest 4 digit number = 9999

also

$$\begin{array}{r|l}
 3 & 9999 \\
 \hline
 3 & 3333 \\
 \hline
 11 & 1111 \\
 \hline
 101 & 101 \\
 \hline
 & 1
 \end{array}$$

$$\therefore 9999 = 3 \times 3 \times 11 \times 101$$

Q.5 Find the Prime factors of 1729. Arrange the factors in ascending order, and find the relation between two consecutive prime factors.

Sol:

$$\begin{array}{r|l}
 7 & 1729 \\
 \hline
 13 & 247 \\
 \hline
 19 & 19 \\
 \hline
 & 1
 \end{array}$$

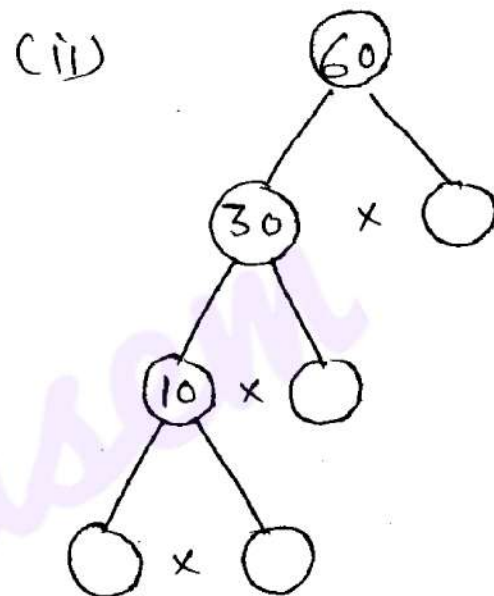
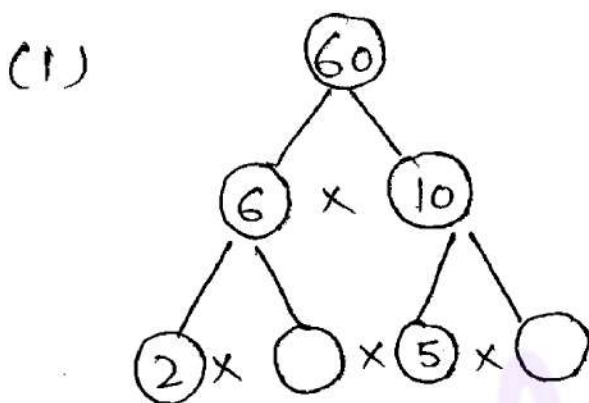
$$\text{hence } 1729 = 7 \times 13 \times 19$$

here, each prime factor is 6 More than the previous factor.

Q.6 Which factors are not included in the Prime factorisation of a composite number?

Solution 1 and Composite number.

Q.7 Here are two different factor trees for 60. Write the missing numbers.



Solution

