

MATHEMATICS • CLASS 10

CHAPTER 1

# Real Numbers

NCERT SOLUTIONS



# EXERCISE 1.1 – Q1 (i)–(iii)

**Q1.** Express each number as a product of its prime factors.

(i) 140

$$\begin{aligned}140 &= 2 \times 70 \\&= 2 \times 2 \times 35 \\&= 2 \times 2 \times 5 \times 7\end{aligned}$$

**Answer:**  $140 = 2^2 \times 5 \times 7$

(ii) 156

$$\begin{aligned}156 &= 2 \times 78 \\&= 2 \times 2 \times 39 \\&= 2 \times 2 \times 3 \times 13\end{aligned}$$

**Answer:**  $156 = 2^2 \times 3 \times 13$

(iii) 3825

$$\begin{aligned}3825 &= 5 \times 765 \\&= 5 \times 5 \times 153 \\&= 5 \times 5 \times 3 \times 51 \\&= 5 \times 5 \times 3 \times 3 \times 17\end{aligned}$$

**Answer:**  $3825 = 3^2 \times 5^2 \times 17$

**Solution method:** Divide by prime numbers until every remaining factor is prime.

## EXERCISE 1.1 – Q1 (iv) & (v)

Q1. Express each number as a product of its prime factors.

(iv) 5005

$$5005 = 5 \times 1001$$

$$1001 = 7 \times 143$$

$$143 = 11 \times 13$$

Therefore,  $5005 = 5 \times 7 \times 11 \times 13$ .

All four factors are prime.

(v) 7429

$$7429 = 17 \times 437$$

$$437 = 19 \times 23$$

Therefore,  $7429 = 17 \times 19 \times 23$ .

All three factors are prime.

Check:  $17 \times 19 \times 23 = 323 \times 23 = 7429$ .

# EXERCISE 1.1 — Q2

Find the HCF and LCM of each pair. Verify:  $\text{HCF} \times \text{LCM} = \text{product of the two numbers}$ .

(i) 26 and 91

$$26 = 2 \times 13$$

$$91 = 7 \times 13$$

$$\text{HCF} = 13$$

$$\text{LCM} = 2 \times 7 \times 13 = 182$$

$$\text{Check: } 13 \times 182 = 2366$$

$$26 \times 91 = 2366 \checkmark$$

(ii) 510 and 92

$$510 = 2 \times 3 \times 5 \times 17$$

$$92 = 2^2 \times 23$$

$$\text{HCF} = 2$$

$$\begin{aligned}\text{LCM} &= 2^2 \times 3 \times 5 \times 17 \times 23 \\ &= 23460\end{aligned}$$

$$\text{Check: } 2 \times 23460 = 46920$$

$$510 \times 92 = 46920 \checkmark$$

(iii) 336 and 54

$$336 = 2^4 \times 3 \times 7$$

$$54 = 2 \times 3^3$$

$$\text{HCF} = 2 \times 3 = 6$$

$$\text{LCM} = 2^4 \times 3^3 \times 7 = 3024$$

$$\text{Check: } 6 \times 3024 = 18144$$

$$336 \times 54 = 18144 \checkmark$$

# EXERCISE 1.1 – Q3

Find the HCF and LCM by prime factorisation.

(i) 12, 15 and 21

$$12 = 2^2 \times 3$$

$$15 = 3 \times 5$$

$$21 = 3 \times 7$$

The common prime factor is 3.

$$\text{HCF} = 3$$

$$\begin{aligned}\text{LCM} &= 2^2 \times 3 \times 5 \times 7 \\ &= 420\end{aligned}$$

(ii) 17, 23 and 29

These are three different primes.

They have no common factor except 1.

$$\text{HCF} = 1$$

$$\begin{aligned}\text{LCM} &= 17 \times 23 \times 29 \\ &= 11339\end{aligned}$$

(iii) 8, 9 and 25

$$8 = 2^3$$

$$9 = 3^2$$

$$25 = 5^2$$

There is no common prime factor.

$$\text{HCF} = 1$$

$$\begin{aligned}\text{LCM} &= 2^3 \times 3^2 \times 5^2 \\ &= 1800\end{aligned}$$



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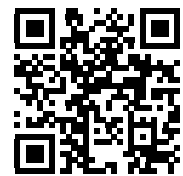


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