Cubes and Cubes Roots Ex 4.1 Q12

Answer :

(i)

On factorising 675 into prime factors, we get:

$675 = 3 \times 3 \times 3 \times 5 \times 5$

On grouping the factors in triples of equal factors, we get:

$675 = \{3 \times 3 \times 3\} \times 5 \times 5$

It is evident that the prime factors of 675 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 675 is a not perfect cube. However, if the number is divided by $5 \times 5 = 25$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 675 should be divided by 25 to make it a perfect cube.

(ii)

On factorising 8640 into prime factors, we get:

$8640 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5$

On grouping the factors in triples of equal factors, we get:

$8640 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\} \times 5$

It is evident that the prime factors of 8640 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 8640 is a not perfect cube. However, if the number is divided by 5, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 8640 should be divided by 5 to make it a perfect cube.

(iii)

On factorising 1600 into prime factors, we get:

$1600 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 5$

On grouping the factors in triples of equal factors, we get:

$1600 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times 5 \times 5$

It is evident that the prime factors of 1600 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 1600 is a not perfect cube. However, if the number is divided by $(5 \times 5 = 25)$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 1600 should be divided by 25 to make it a perfect cube.

(iv)

On factorising 8788 into prime factors, we get:

$8788 = 2 \times 2 \times 13 \times 13 \times 13$

On grouping the factors in triples of equal factors, we get:

$8788 = 2 \times 2 \times \{13 \times 13 \times 13\}$

It is evident that the prime factors of 8788 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 8788 is a not perfect cube. However, if the number is divided by $(2 \times 2 = 4)$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 8788 should be divided by 4 to make it a perfect cube.

(v)
On factorising 7803 into prime factors, we get:
$7803 = 3 \times 3 \times 3 \times 17 \times 17$
On grouping the factors in triples of equal factors, we get:
$7803 = \{3 \times 3 \times 3\} \times 17 \times 17$
It is evident that the prime factors of 7803 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 7803 is a not perfect cube. However, if the number is divided by $(17 \times 17 = 289)$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 7803 should be divided by 289 to make it a perfect cube.

(vi)
On factorising 107811 into prime factors, we get:
$107811 = 3 \times 3 \times 3 \times 3 \times 11 \times 11 \times 11$
On group the factors in triples of equal factors, we get:
$107811 = \{3 \times 3 \times 3\} \times 3 \times \{11 \times 11 \times 11\}$
It is evident that the prime factors of 107811 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 107811 is a not perfect cube. However, if the number is divided by 3, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 107811 should be divided by 3 to make it a perfect cube.

(vii)
On factorising 35721 into prime factors, we get:
$35721 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 7 \times 7$
On grouping the factors in triples of equal factors, we get:
$35721 = \{3 \times 3 \times 3\} \times \{3 \times 3 \times 3\} \times 7 \times 7$
It is evident that the prime factors of 35721 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 35721 is a not perfect cube. However, if the number is divided by $(7 \times 7 = 49)$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 35721 should be divided by 49 to make it a perfect cube.

(viii)
On factorising 243000 into prime factors, we get:
$243000 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 5 \times 5 \times 5$
On grouping the factors in triples of equal factors, we get:
$243000 = \{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\} \times 3 \times 3 \times \{5 \times 5 \times 5\}$
It is evident that the prime factors of 243000 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 243000 is a not perfect cube. However, if the number is divided by $(3 \times 3 = 9)$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 243000 should be divided by 9 to make it a perfect cube.

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