Cubes and Cubes Roots Ex 4.1 Q8

Answer :

(i)

On factorising 64 into prime factors, we get

$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Group the factors in triples of equal factors as:

$64 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\}$

It is evident that the prime factors of 64 can be grouped into triples of equal factors and no factor is left over. Therefore, 64 is a perfect cube.

(ii)

On factorising 216 into prime factors, we get:

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

Group the factors in triples of equal factors as:

$216 = \{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\}$

It is evident that the prime factors of 216 can be grouped into triples of equal factors and no factor is left over. Therefore, 216 is a perfect cube.

(iii)

On factorising 243 into prime factors, we get:

$243 = 3 \times 3 \times 3 \times 3 \times 3$

Group the factors in triples of equal factors as:

$243 = \{3 \times 3 \times 3\} \times 3 \times 3$

It is evident that the prime factors of 243 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 243 is a not perfect cube.

(iv)

On factorising 1000 into prime factors, we get:

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

Group the factors in triples of equal factors as:

$1000 = \{2 \times 2 \times 2\} \times \{5 \times 5 \times 5\}$

It is evident that the prime factors of 1000 can be grouped into triples of equal factors and no factor is left over. Therefore, 1000 is a perfect cube.

(v)

On factorising 1728 into prime factors, we get:

$1728 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

Group the factors in triples of equal factors as:

$1728 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\}$

It is evident that the prime factors of 1728 can be grouped into triples of equal factors and no factor is left over. Therefore, 1728 is a perfect cube.

(vi)
On factorising 3087 into prime factors, we get:
$3087 = 3 \times 3 \times 7 \times 7 \times 7$
Group the factors in triples of equal factors as:
$3087 = 3 \times 3 \times \{7 \times 7 \times 7\}$
It is evident that the prime factors of 3087 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 243 is a not perfect cube.

(vii)
On factorising 4608 into prime factors, we get:
$4608 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$
Group the factors in triples of equal factors as:
$4608 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times 3 \times 3$
It is evident that the prime factors of 4608 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 4608 is a not perfect cube.

(viii)
On factorising 106480 into prime factors, we get:
$106480 = 2 \times 2 \times 2 \times 2 \times 5 \times 11 \times 11 \times 11$
Group the factors in triples of equal factors as:
$106480 = \{2 \times 2 \times 2\} \times 2 \times 5 \times \{11 \times 11 \times 11\}$
It is evident that the prime factors of 106480 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 106480 is a not perfect cube.

(ix)
On factorising 166375 into prime factors, we get:
$166375 = 5 \times 5 \times 5 \times 11 \times 11 \times 11$
Group the factors in triples of equal factors as:
$166375 = \{5 \times 5 \times 5\} \times \{11 \times 11 \times 11\}$
It is evident that the prime factors of 166375 can be grouped into triples of equal factors and no factor is left over. Therefore, 166375 is a perfect cube.

(x)
On factorising 456533 into prime factors, we get:
$456533 = 7 \times 7 \times 7 \times 11 \times 11 \times 11$
Group the factors in triples of equal factors as:
$456533 = \{7 \times 7 \times 7\} \times \{11 \times 11 \times 11\}$
It is evident that the prime factors of 456533 can be grouped into triples of equal factors and no factor is left over. Therefore, 456533 is a perfect cube.

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