Cubes and Cubes Roots Ex 4.1 Q11

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 multiplied by 5, the factors can be grouped into triples of equal factors and no factor will be left over.

Thus, 675 should be multiplied by 5 to make it a perfect cube.

(ii)
On factorising 1323 into prime factors, we get:
$1323 = 3 \times 3 \times 3 \times 7 \times 7$
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 1323 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 1323 is a not perfect cube. However, if the number is multiplied by 7, the factors can be grouped into triples of equal factors and no factor will be left over.

Thus, 1323 should be multiplied by 7 to make it a perfect cube.

iii)
On factorising 2560 into prime factors, we get:
$2560 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5$
On grouping the factors in triples of equal factors, we get:
$2560 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times 5$
It is evident that the prime factors of 2560 cannot be grouped into triples of equal factors such that no factor is left over. Therefore, 2560 is a not perfect cube. However, if the number is multiplied by $5 \times 5 = 25$, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 2560 should be multiplied by 25 to make it a perfect cube.

(iv)
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 multiplied by 17, the factors can be grouped into triples of equal factors such that no factor is left over.

Thus, 7803 should be multiplied by 17 to make it a perfect cube.

(v)
On factorising 107811 into prime factors, we get:
$107811 = 3 \times 3 \times 3 \times 3 \times 11 \times 11 \times 11$
On grouping 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 multiplied by $3 \times 3 = 9$, the factors be grouped into triples of equal factors such that no factor is left over.

Thus, 107811 should be multiplied by 9 to make it a perfect cube.

(vi)
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 multiplied by 7, the factors be grouped into triples of equal factors such that no factor is left over.

Thus, 35721 should be multiplied by 7 to make it a perfect cube.

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