CLASS VIII: Maths
Chapter 6: Cubes and cube roots

Questions and Solutions | Exercise 6.2 - NCERT Books

Q 1. Find the cube root of each of the following numbers by prime factorisation method.

(i) 64   (vi) 13824

(ii) 512   (vii) 110592

(iii) 10648   (viii) 46656

(iv) 27000   (ix) 175616

(v) 15625   (x) 91125

Answer :

(i) Prime factorisation of $64 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2}$

$\therefore \sqrt[3]{64} = 2 \times 2 = 4$

(ii) Prime factorisation of $512 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2}$

$\therefore \sqrt[3]{512} = 2 \times 2 \times 2 = 8$

(iii) Prime factorisation of $10648 = \underline{2 \times 2 \times 2} \times \underline{11 \times 11 \times 11}$

$\therefore \sqrt[3]{10648} = 2 \times 11 = 22$

(iv) Prime factorisation of $27000 = \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times \underline{5 \times 5 \times 5}$

$\therefore \sqrt[3]{27000} = 2 \times 3 \times 5 = 30$

(v) Prime factorisation of $15625 = \underline{5 \times 5 \times 5} \times \underline{5 \times 5 \times 5}$

$\therefore \sqrt[3]{15625} = 5 \times 5 = 25$

(vi) Prime factorisation of $13824 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3}$

$\therefore \sqrt[3]{13824} = 2 \times 2 \times 2 \times 3 = 24$

(vii) Prime factorisation of $110592 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3}$

$\therefore \sqrt[3]{110592} = 2 \times 2 \times 2 \times 2 \times 3 = 48$

(viii) Prime factorisation of $46656 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3}$

$\therefore \sqrt[3]{46656} = 2 \times 2 \times 3 \times 3 = 36$

(ix) Prime factorisation of $175616 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{7 \times 7 \times 7}$

$\therefore \sqrt[3]{175616} = 2 \times 2 \times 2 \times 7 = 56$

(x) Prime factorisation of $91125 = \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3} \times \underline{5 \times 5 \times 5}$

$\therefore \sqrt[3]{91125} = 3 \times 3 \times 5 = 45$

Q2 :

State true or false.

(i) Cube of any odd number is even.

(ii) A perfect cube does not end with two zeroes.

(iii) If square of a number ends with 5, then its cube ends with 25.

(iv) There is no perfect cube which ends with 8.

(v) The cube of a two digit number may be a three digit number.

(vi) The cube of a two digit number may have seven or more digits.

(vii) The cube of a single digit number may be a single digit number.

Answer :

For finding the cube of any number, the number is first multiplied with itself and this product is again multiplied with this number.

(i) False. When we find out the cube of an odd number, we will find an odd number as the result because the unit place digit of an odd number is odd and we are multiplying three odd numbers. Therefore, the product will be again an odd number.

For example, the cube of 3 (i.e., an odd number) is 27, which is again an odd number.

(ii) True. Perfect cube will end with a certain number of zeroes that are always a perfect multiple of 3.

Foe example, the cube of 10 is 1000 and there are 3 zeroes at the end of it.

The cube of 100 is 1000000 and there are 6 zeroes at the end of it.

(iii) False. It is not always necessary that if the square of a number ends with 5, then its cube will end with 25.

For example, the square of 25 is 625 and 625 has its unit digit as 5. The cube of 25 is 15625. However, the square of 35 is 1225 and also has its unit place digit as 5 but the cube of 35 is 42875 which does not end with 25.

(iv) False. There are many cubes which will end with 8. The cubes of all the numbers having their unit place digit as 2 will end with 8.

The cube of 12 is 1728 and the cube of 22 is 10648.

(v) False. The smallest two-digit natural number is 10, and the cube of 10 is 1000 which has 4 digits in it.

(vi) False. The largest two-digit natural number is 99, and the cube of 99 is 970299 which has 6 digits in it. Therefore, the cube of any two-digit number cannot have 7 or more digits in it.

(vii)True, as the cube of 1 and 2 are 1 and 8 respectively.