



MATHS

BOOKS - NAND LAL PUBLICATION

CUBES AND CUBE ROOTS

Try These

1. Hardy- Ramanujan Number 1729 is the smallest Hardy Ramanujan Number.



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2. How many cubes of side 1 cm will make a cube of side 2cm.



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3. How many cubes of side 1cm will make a cube of side 3cm



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4. The following are the cubes of numbers 1 to 10

Number	Cube
1	$1^3 = 1$
2	$2^3 = 8$
3	$3^3 = 27$
4	$4^3 = 64$
5	$5^3 =$
6	$6^3 =$
7	$7^3 =$
8	$8^3 =$
9	$9^3 =$
10	$10^3 =$



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5. There are only ten perfect cubes from 1 to 1000. (Check this). How many perfect cubes are there from 1 to 100?



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6. There are 4 perfect cubes from 1 to 100



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7. Observe the cube of even numbers. Are they all even? What you can say about the cubes of odd numbers?



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8. Consider a few numbers having 1 as the one's digit (or unit's). Find the cube each of them. What can you say about the one's digit of the cube of a number having 1 as the one's

digit? Similarly, explore the one's digit of cubes of numbers ending in 2, 3, 4,.....



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9. Find the one's digit of the cube of each of the following numbers

3331



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10. Find the one's digit of the cube of each of the following numbers

8888



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11. Find the one's digit of the cube of each of the following numbers

149



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12. Find the one's digit of the cube of each of the following numbers.

1005



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13. Find the one's digit of the cube of each of the following numbers.

1024



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14. Find the one's digit of the cube of each of the following numbers.

77



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15. Find the one's digit of the cube of each of the following numbers.

5022



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16. Find the one's digit of the cube of each of the following numbers.

53



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17. Observe the following pattern of sums of odd numbers

$$1 = 1 = 1^3$$

$$3 + 5 = 8 = 2^3$$

$$7 + 9 + 11 = 27 = 3^3$$

$$13 + 15 + 17 + 19 = 64 = 4^3$$

$$21 + 23 + 25 + 27 + 29 = 125 = 5^3$$

Is it not interesting? How many consecutive odd numbers will be needed to obtain the sum as 10^3 ?



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18. Express the following numbers as the sum of odd numbers using the above pattern.

$$6^3$$



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19. Express the following numbers as the sum of odd numbers using the above pattern.

$$8^3$$



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20. Express the following numbers as the sum of odd numbers using the above pattern.

$$7^3.$$



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21. Using the above pattern, find the value of the following

$$7^3 - 6^3$$



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22. find the value of the following

$$12^3 - 11^3$$



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23. Using the above pattern, find the value of the following

$$20^3 - 19^3$$



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24. Using the above pattern, find the value of the following

$$51^3 - 50^3$$



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25. Which of the following are perfect cubes :

400



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26. Which of the following are perfect cubes :

3375



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27. Which of the following are perfect cubes :

8000



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28. Which of the following are perfect cubes :

15625



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29. Which of the following are perfect cubes :

9000



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30. Which of the following are perfect cubes :

6859



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31. Which of the following are perfect cubes :

2025



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32. Which of the following are perfect cubes :

10648



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Think Discuss And Write

1. Check which of the following are perfect cubes :

2700



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2. Check which of the following are perfect cubes :

16000



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3. Check which of the following are perfect cubes :

64000



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4. Check which of the following are perfect cubes :

900



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5. Check which of the following are perfect cubes :

125000



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6. Check which of the following are perfect cubes :

36000



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7. Check which of the following are perfect cubes :

21600



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8. Check which of the following are perfect cubes :

10000



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9. Check which of the following are perfect cubes :

27000



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10. Check which of the following are perfect cubes :

1000



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11. Check which of the following are perfect cubes :

2700



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12. State true or false,for any integers m ,
 $m^2, < m^3$,why?



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1. Which of the following numbers are not perfect cubes : 216



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2. Which of the following numbers are not perfect cubes : 128



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3. Which of the following numbers are not perfect cubes : 1000



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4. Which of the following numbers are not perfect cubes : 100



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5. Which of the following numbers are not perfect cubes : 46656



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6. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube : 243



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7. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube : 256



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8. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube : 72



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9. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube : 675



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10. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube : 100



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11. Find the smallest number by which each of the following numbers must be multiplied to obtain perfect cube.

81



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12. Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube: 128



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13. Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube: 135



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14. Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube: 192



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15. Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube: 704



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16. Parikshit makes a cuboid of plasticine of sides 5 cm, 2 cm, 5 cm. How many such cuboids will he need to form a cube?



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Exercise 2

1. Find the cube root of each of the following numbers by prime factorisation method : 64



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2. Find the cube root of each of the following numbers by prime factorisation method : 512



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3. Find the cube root of each of the following numbers by prime factorisation method :

10648



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4. Find the cube root of each of the following numbers by prime factorisation method :

27000



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5. Find the cube root of each of the following numbers by prime factorisation method :

15625



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6. Find the cube root of each of the following numbers by prime factorisation method :

13824



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7. Find the cube root of each of the following numbers by prime factorisation method :

110592



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8. Find the cube root of each of the following numbers by prime factorisation method :

46656



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9. Find the cube root of each of the following numbers by prime factorisation method :

175616



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10. Find the cube root of each of the following numbers by prime factorisation method :

91125



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11. You are told that 1,331 is a perfect cube. Can you guess without factorization what is its cube root? Similarly, guess the cube roots of 4913, 12167, 32768.



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12. You are told that 1,331 is a perfect cube. Can you guess without factorization what is its cube root? Similarly, guess the cube roots of 4913, 12167, 32768.





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14. You are told that 1,331 is a perfect cube. Can you guess without factorization what is

its cube root? Similarly, guess the cube roots of 4913, 12167, 32768.



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Exercise 2 True Or False

1. State true or false : Cube of any odd number is even.



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2. State true or false : A perfect cube does not end with two zeros.



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3. State true or false : If square of a number ends with 5, then its cube ends with 25.



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4. State true or false : There is no perfect cube which ends with 8 .



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5. State true or false : The cube of a two digit number may be a three digit number.



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6. Cube of a 2-digit number may have seven or more digits



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7. State true or false : The cube of a single digit number may be a single digit number.



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Additional Questions For Practice Objective Type Questions

1. Cube of 0.2 is

A. 0.8

B. 0.08

C. 0.008

D. none of these

Answer: C



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2. Cube of any multiple of 2 is always divisible by

A. 8

B. 12

C. 16

D. none of these

Answer: A



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3. Sum of the cubes of first three natural numbers is

A. 36

B. 14

C. 6

D. none of these

Answer: A



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4. The number which is not a perfect cube is

A. 0.000343

B. 3.43

C. 0.343

D. none of these

Answer: B



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5. Which of the following is a cube of even natural number

A. 1331

B. 512

C. 729

D. none of these

Answer: B



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6. $\sqrt{\frac{-125}{343}}$ is equal to

A. $\frac{-5}{7}$

B. $\frac{5}{7}$

C. none

D. none of the above

Answer: A



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Additional Questions For Practice Fill In The Blanks

1. The digits at the ones place of the cube of numbers ending in _____ remain the same.



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2. If prime factor of a number can be grouped into _____ of equal factors, then, it is a perfect cube.



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3. Cube root of 0.001 is ____



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4. $\sqrt{327} \times \sqrt{364}$ is equal to ____



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5. $\sqrt[3]{0.1 \times 0.1 \times 0.1 \times 13 \times 13 \times 13}$ is ____



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6. Maximum number of digits in the cube of a 2 digit number is ____ -



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Additional Questions For Practice True Or False

1. Perfect cube may end with one zero



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2. State true or false : The cube of a two digit number may be a three digit number.



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3. Cube of a number ending in 0 will have three zeroes at its extreme right



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4. Smallest number by which 1024 must be divided so that the quotient is a perfect cube is 2.



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5. side of the cube whose volume is 216cm^3 is 6m^3



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6. Number of whole numbers lying between 0 and 100 are



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Additional Questions For Practice Short Answer Type Questions

1. Volume of the cube is 1331cm^3 . What is the area of its one face?



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2. A palindrome number reads the same when read from left to right or right to left. Find two numbers whose cube is a palindrome.



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3. Express the following as the sum of consecutive odd numbers

$$7^3$$



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4. Express the following as the sum of consecutive odd numbers

$$9^3$$



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5. Express the following as the sum of consecutive odd numbers

$$15^3$$



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6. Area of one face of the cube is 144cm^2 . Find its volume



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7. How many cuboids of sides $6\text{cm} \times 3\text{cm} \times 6\text{cm}$ will be needed to form a cube



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**Additional Questions For Practice Long Answer
Type Questions**

1. Three numbers are in the ratio $1:2:3$. If the sum of their cubes is 7776. Find the numbers.



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2. Difference of two perfect cube numbers is 218. If the cube root of greater number is 7. Find the cube root of smaller numbers.



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3. A rectangular cuboidal piece of metal of dimension $3\text{cm} \times 4\text{cm} \times 5\text{cm}$ is melted. Some more metal is added and the resulting metal is cast into a cube. What is the minimum amount of metal that is added and what will be the new size of the cube?



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Hots High Order Thinking Skill

1. The smallest Ramanujans numbers is 1729 which can be expressed as the sum of two cubes in two different ways.

$$1729 = 9^3 + 10^3 \text{ and } 1729 = 1^3 + 12^3$$

Similarly, express the number 4104 and 13832 are the sum of cubes in two different ways.



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[Sample Paper For Practice](#)

1. Cube of a natural number 5 will end with the digit

A. 5

B. 1

C. 3

D. none of these

Answer: A



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2. If m is positive integer then $-m^3$ will be a

A. positive integers

B. negative integer

C. natural numbers

D. none of these

Answer: B



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3. 125 is a perfect cube, then its cube root is

A. 1

B. 2

C. 5

D. none of these

Answer: C



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4. Square and cube of which natural number are same

A. 9

B. 1

C. 4

D. none of these

Answer: B



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5. Cube of negative integer is a positive integer



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6. Cube of an even integer is an even number

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7. State True or False: Cube of a number ending in 3 ends in 9

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8. Smallest number by which 180 must be multiplied to make it a perfect square is



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9. Each prime factor of a number appears _____ in the prime factorization of its cube



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10. Cube of 63 is an _____ number



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11. The sum of _____ consecutive odd numbers gives the number 1331 which is the cube of 11.



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12. Number of digits in the cube roots of 1,40,608 is 3



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13. Find the digit at the ones place of the cubes of the following numbers

(i) 3332

(ii) 8888



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14. Volume of the cube is $0.027m^3$ find the sides of the cube





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15. Three numbers are in the ratio $1:2:3$. If their product is 162. Find the numbers.



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16. Two numbers are in the ratio $3:4$. If the difference of their cubes is 37 find the numbers.



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17. A rectangular cuboidal piece of metal of dimension $2\text{cm} \times 3\text{cm} \times 5\text{cm}$ is melted. Some metal is removed and the resulting metal is cast into a cube. What is the minimum amount of metal that is removed and what will be the new size of the cube?



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18. Express 13^3 in the form $3n + 1$ and 17^3 in the form $3n + 2$





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