MATHS

BOOKS - SWAN PUBLICATION

CUBES AND CUBE ROOTS

Question

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 cub of side 2 cm How many cubes of side 1 cm will make a cube of side 3 cm

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3. The following are the cubes of number 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	$10^3 =$ ____

Complete it.

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

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

6. Consider a frew 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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Try These

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

3331

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

8888

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

149

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

1005

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

1024

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

77

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

5022

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

53

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9. Obserbe the following pattern of sums of odd numbers.

$$1 = 1 = 1^3$$
$$3 + 5 = 8 = 2^3$$
$$7 + 9 + 11 = 27 = 3^3$$
$$13 + 15 + 17 + 19 = 64 = 4^3$$
$$21 + 23 + 25 + 27 + 29 = 125 = 5^3$$

Express the number as the sum odd number bers using the above pattern.

6^3

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10. Obserbe the following pattern of sums of odd numbers.

$$1 = 1 = 1^3$$
$$3 + 5 = 8 = 2^3$$
$$7 + 9 + 11 = 27 = 3^3$$
$$13 + 15 + 17 + 19 = 64 = 4^3$$
$$21 + 23 + 25 + 27 + 29 = 125 = 5^3$$

Express the number as the sum odd number bers using the above pattern.

8^3

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11. Obserbe the following pattern of sums of odd numbers.

$$1 = 1 = 1^3$$
$$3 + 5 = 8 = 2^3$$
$$7 + 9 + 11 = 27 = 3^3$$
$$13 + 15 + 17 + 19 = 64 = 4^3$$
$$21 + 23 + 25 + 27 + 29 = 125 = 5^3$$

Express the number as the sum odd number bers using the above pattern.

7^3

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

$51^3 - 50^3$

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13. Which of the following are perfect cubes :

400

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14. Which of the following are perfect cubes :

3375

15. Which of the following are perfect cubes :

8000

16. Which of the following are perfect cubes :

15625

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17. Which of the following are perfect cubes :

9000

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18. Which of the following are perfect cubes :

6859

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19. Which of the following are perfect cubes :

2025

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20. 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 are perfect cubes.

2,70,000

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10. Check which of the following are perfect cubes :

1000

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

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Exercise 7 1

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 divided to obtain a 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

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

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 7 2

1. Find the cube root of each of the following numbers by prime factorisation method : 175616

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

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

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

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

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

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

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

9. 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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