Eduzen — Global Enrichment Programme

Mathematics | CBSE | Grade 8 | Topic: Cubes and Cube Roots | **50 Marks**

Name: _____ Date: _____ Grade: **8**

General Instructions

1. All questions are compulsory. 2. Write answers clearly. Show working for subjective and story-based questions. 3. Calculators are not allowed.

Section A: Objective Type Questions (1 × 10 = 10 Marks)

Choose the correct option.

1. The cube of 9 is:

a) 81 b) 729

c) 927 d) 279

Ans: [ ]

2. Which is a perfect cube?

a) 100 b) 400

c) 125 d) 500

Ans: [ ]

3. ■216 =

a) 4 b) 6

c) 8 d) 12

Ans: [ ]

4. Unit digit of 17^3 will be:

a) 7 b) 9

c) 3 d) 1

Ans: [ ]

5. If the volume of a cube is 512 cm^3, its side is:

a) 6 cm b) 8 cm

c) 7 cm d) 9 cm

Ans: [ ]

6. Which number must be multiplied by 72 to make it a perfect cube?

a) 2 b) 3

c) 6 d) 9

Ans: [ ]

7. Cube root of –2744 is:

a) 14 b) –14

c) 12 d) –12

Ans: [ ]

8. $5^3 + 6^3$ =

a) 11^3 b) 341

c) 441 d) 331

Ans: [ ]

9. Smallest number by which 243 must be divided to get a perfect cube:

a) 3 b) 9

c) 27 d) 1

Ans: [ ]

10. ■0.008 =

a) 0.2 b) 0.02

c) 0.8 d) 2

Ans: [ ]

Section B: True or False (1 × 5 = 5 Marks)

Write T for True and F for False in the box provided.

11. Cube of an even number is always even.	**[ ]**
12. There are exactly 10 perfect cubes between 1 and 1000.	**[ ]**
13. The cube root of a negative number is negative.	**[ ]**
14. If a number ends with 2, its cube ends with 8.	**[ ]**
15. $1^3 + 2^3 + 3^3 + 4^3 = (1 + 2 + 3 + 4)^2$	**[ ]**

Section C: Subjective Questions (3 × 5 = 15 Marks)

Show full working for each question.

16. Find the cube root of 17576 by prime factorisation method.

17. Is 53240 a perfect cube? If not, find the smallest natural number by which it should be multiplied to get a perfect cube.

18. Evaluate: $\sqrt[3]{64} + \sqrt[3]{0.064} + \sqrt[3]{-1}$

19. Three numbers are in the ratio 1 : 2 : 3. The sum of their cubes is 288. Find the numbers.

20. Find the smallest number by which 2560 should be divided so that the quotient is a perfect cube. Also find the cube root of the quotient.

Section D: Story-Based & Application Questions (4 × 5 = 20 Marks)

Q21. The Cubical Tank [5 Marks]

A water tank in Eduzen School is in the shape of a cube. It can hold 15,625 litres of water. [1 m^3 = 1000 litres]

a) Find the length of its edge in metres.

b) If the school wants to paint the outer walls of the tank at ■20 per m^2, find the total cost. *(Outer walls = 4 lateral faces only.)*

Q22. Stacking Dice [5 Marks]

Riya has 400 small identical cubical dice of side 1 cm. She wants to arrange them to form one bigger solid cube.

a) Can she use all 400 dice to make a bigger cube? Why?

b) What is the largest cube she can make? How many dice will be left?

c) What will be the side of the largest cube formed?

Q23. The Farmer's Boxes [5 Marks]

A farmer packs oranges in cubical boxes. Box A has side 12 cm and Box B has side 16 cm.

a) Find the ratio of their volumes.

b) If Box A costs ■18 to make and Box B costs ■40, which box is more economical per cm^3 of volume? Show calculation.

Q24. Hardy-Ramanujan Number [5 Marks]

1729 is called the Hardy-Ramanujan number.

a) Express 1729 as the sum of two cubes in two different ways.

b) Verify that both expressions are equal to 1729.

c) Find ■1728 and ■1730. Which is a perfect cube?