

# Cubes and Cube Roots

## MCQ Test, Set 02

Time: 30 minutes

Maximum marks: 25

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

- There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
- Each correct answer carries 1 mark. There is no negative marking.
- The key sheet and worked solutions are at the end of this test.

- $5 \times 5 \times 5 = 5^{\square}$ . The number in the box is  
 A. 5                                      B. 2                                      C. 15                                      D. 3
- In  $t^3$ , the small 3 tells us that  
 A.  $t$  is multiplied by itself 3 times                                      B.  $t$  is multiplied by 3  
 C. 3 is added to  $t$                                       D.  $t$  is added to itself 3 times
- $m \times m \times m \times n \times n \times n$  in power form is  
 A.  $m^3 \times n^3$                                       B.  $m^2 \times n^2$                                       C.  $3m \times 3n$                                       D.  $(m \times n)^6$
- 300 lies between  
 A.  $8^3$  and  $9^3$                                       B.  $5^3$  and  $6^3$                                       C.  $7^3$  and  $8^3$                                       D.  $6^3$  and  $7^3$
- Which of these is NOT a cube?  
 A. 343                                      B. 27                                      C. 60                                      D. 125
- A carton has 9 layers. Each layer has 9 rows of 9 packets. How many packets are in the carton?  
 A. 27                                      B. 729                                      C. 90                                      D. 81
- The largest cube less than 500 is  
 A. 512                                      B. 343                                      C. 400                                      D. 216
- A big cube is built from small cubes, with 11 small cubes along each edge. How many small cubes does it have?  
 A. 121                                      B. 132                                      C. 1331                                      D. 726
- $13^3 = 169 \times \square$ . The number in the box is  
 A. 3                                      B. 13                                      C. 2                                      D. 169
- To find  $17^3$ , Rani first works out  $17 \times 17 = 289$ . What should she do next?  
 A.  $289 \times 289$                                       B.  $17 \times 3$                                       C.  $289 \times 3$                                       D.  $289 \times 17$
- $(-10)^3 = -\square$ . The number in the box is  
 A. 1331                                      B. 30                                      C. 1000                                      D. 100

|     |                                                                                                                                            |          |          |           |         |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-----------|---------|
| 12. | $(-12) \times (-12) \times (-12) =$                                                                                                        | A. -432  | B. -1728 | C. 144    | D. -36  |
| 13. | $(-30)^3 =$                                                                                                                                | A. -2700 | B. 900   | C. -27000 | D. -90  |
| 14. | Two big cubes are made of small cubes, with 3 and 4 small cubes along each edge. How many small cubes are there in the two cubes together? | A. 25    | B. 343   | C. 150    | D. 91   |
| 15. | $1^3 + 2^3 + 4^3 =$                                                                                                                        | A. 21    | B. 343   | C. 9      | D. 73   |
| 16. | The sum of the cubes of 1 and 8 is                                                                                                         | A. 729   | B. 513   | C. 27     | D. 65   |
| 17. | $(-1)^3 + 2^3 + (-3)^3 =$                                                                                                                  | A. -20   | B. 34    | C. -8     | D. 36   |
| 18. | $6^3 + (-4)^3 =$                                                                                                                           | A. 152   | B. 8     | C. 20     | D. 280  |
| 19. | $(-2)^3 + (-4)^3 =$                                                                                                                        | A. -216  | B. 56    | C. -20    | D. -72  |
| 20. | By how much is $8^3$ greater than $6^3$ ?                                                                                                  | A. 728   | B. 8     | C. 28     | D. 296  |
| 21. | One big cube has 6 small cubes along each edge and another has 5. How many more small cubes does the first one have?                       | A. 91    | B. 341   | C. 1      | D. 11   |
| 22. | Ravi says $2^3 - 7^3 = 335$ . The correct value is                                                                                         | A. -335  | B. -45   | C. -351   | D. -125 |
| 23. | $10^3 \div 2^3 =$                                                                                                                          | A. 512   | B. 992   | C. 125    | D. 5    |
| 24. | If $x = -3$ and $y = 2$ , then $x^3 + y^3 =$                                                                                               | A. -1    | B. 13    | C. -19    | D. 35   |
| 25. | $(-3)^3 - (-5)^3 =$                                                                                                                        | A. 8     | B. 98    | C. 16     | D. -152 |

## Key sheet

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|              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| <b>1. D</b>  | <b>2. A</b>  | <b>3. A</b>  | <b>4. D</b>  | <b>5. C</b>  |
| <b>6. B</b>  | <b>7. B</b>  | <b>8. C</b>  | <b>9. B</b>  | <b>10. D</b> |
| <b>11. C</b> | <b>12. B</b> | <b>13. C</b> | <b>14. D</b> | <b>15. D</b> |
| <b>16. B</b> | <b>17. A</b> | <b>18. A</b> | <b>19. D</b> | <b>20. D</b> |
| <b>21. A</b> | <b>22. A</b> | <b>23. C</b> | <b>24. C</b> | <b>25. B</b> |

## Solutions

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1.  $5 \times 5 \times 5 = 5^{\square}$ . The number in the box is

5 is multiplied by itself 3 times, so the power is 3.

$$5 \times 5 \times 5 = 5^3$$

**Ans: (D) 3**

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2. In  $t^3$ , the small 3 tells us that

$t^3 = t \times t \times t$ : three  $t$ 's are multiplied.

**Ans: (A)  $t$  is multiplied by itself 3 times**

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3.  $m \times m \times m \times n \times n \times n$  in power form is

$$m \times m \times m = m^3 \text{ and } n \times n \times n = n^3$$

So it is  $m^3 \times n^3$ .

**Ans: (A)  $m^3 \times n^3$**

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4. 300 lies between

$$6^3 = 216 \text{ and } 7^3 = 343$$

$$216 < 300 < 343$$

**Ans: (D)  $6^3$  and  $7^3$**

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5. Which of these is NOT a cube?

$$27 = 3^3, 125 = 5^3, 343 = 7^3.$$

60 is not in the table of cubes.

**Ans: (C) 60**

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6. A carton has 9 layers. Each layer has 9 rows of 9 packets. How many packets are in the carton?

$$\text{Number} = 9 \times 9 \times 9$$

$$= 9^3 = 729$$

**Ans: (B) 729**

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7. The largest cube less than 500 is

$$\text{From the table: } 7^3 = 343 \text{ and } 8^3 = 512$$

$$343 < 500 < 512, \text{ so the largest cube below 500 is 343.}$$

**Ans: (B) 343**

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8. A big cube is built from small cubes, with 11 small cubes along each edge. How many small cubes does it have?

$$\text{Number} = 11^3$$

$$11 \times 11 = 121, 121 \times 11 = 1331$$

**Ans: (C) 1331**

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9.  $13^3 = 169 \times \square$ . The number in the box is

$$13^3 = 13 \times 13 \times 13 \text{ and } 13 \times 13 = 169$$

$$\therefore 13^3 = 169 \times 13$$

Ans: (B) 13

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10. To find  $17^3$ , Rani first works out  $17 \times 17 = 289$ . What should she do next?

$17^3 = 17 \times 17 \times 17$ , so the product 289 must be multiplied by 17 once more.

$$289 \times 17 = 4913$$

Ans: (D)  $289 \times 17$

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11.  $(-10)^3 = -\square$ . The number in the box is

$$(-10)^3 = -10^3 = -1000$$

So the box is 1000.

Ans: (C) 1000

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12.  $(-12) \times (-12) \times (-12) =$

$$(-12) \times (-12) = 144$$

$$144 \times (-12) = -1728$$

Ans: (B) -1728

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13.  $(-30)^3 =$

$$(-30) \times (-30) = 900$$

$$900 \times (-30) = -27000$$

Ans: (C) -27000

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14. Two big cubes are made of small cubes, with 3 and 4 small cubes along each edge. How many small cubes are there in the two cubes together?

$$\text{Total} = 3^3 + 4^3$$

$$3^3 + 4^3 = 27 + 64$$

$$= 91$$

Ans: (D) 91

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15.  $1^3 + 2^3 + 4^3 =$

$$1^3 + 2^3 + 4^3 = 1 + 8 + 64$$

$$= 73$$

Ans: (D) 73

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16. The sum of the cubes of 1 and 8 is

$$1^3 + 8^3 = 1 + 512$$

$$= 513$$

Ans: (B) 513

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17.  $(-1)^3 + 2^3 + (-3)^3 =$   
 $(-1)^3 + 2^3 + (-3)^3 = -1 + 8 + (-27)$   
 $= -1 + 8 - 27$   
 $= -20$

Ans: (A)  $-20$

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18.  $6^3 + (-4)^3 =$   
 $6^3 + (-4)^3 = 216 + (-64)$   
 $= 216 - 64$   
 $= 152$

Ans: (A)  $152$

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19.  $(-2)^3 + (-4)^3 =$   
 $(-2)^3 + (-4)^3 = -8 + (-64)$   
 $= -8 - 64$   
 $= -72$

Ans: (D)  $-72$

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20. By how much is  $8^3$  greater than  $6^3$ ?

Difference  $= 8^3 - 6^3$   
 $8^3 - 6^3 = 512 - 216$   
 $= 296$

Ans: (D)  $296$

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21. One big cube has 6 small cubes along each edge and another has 5. How many more small cubes does the first one have?

More  $= 6^3 - 5^3$   
 $6^3 - 5^3 = 216 - 125$   
 $= 91$

Ans: (A)  $91$

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22. Ravi says  $2^3 - 7^3 = 335$ . The correct value is

$2^3 - 7^3 = 8 - 343$   
 $= -335$

Ravi took the smaller cube from the bigger one.

Ans: (A)  $-335$

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23.  $10^3 \div 2^3 =$   
 $10^3 = 1000, 2^3 = 8$   
 $1000 \div 8 = 125$

Ans: (C)  $125$

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**24.** If  $x = -3$  and  $y = 2$ , then  $x^3 + y^3 =$   
 $(-3)^3 + 2^3 = -27 + 8$   
 $= -19$   
**Ans: (C)  $-19$**

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**25.**  $(-3)^3 - (-5)^3 =$   
 $(-3)^3 - (-5)^3 = -27 - (-125)$   
 $= -27 + 125$   
 $= 98$   
**Ans: (B)  $98$**

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