CHAPTER 7

CUBES AND CUBE ROOTS

- A cube root of a number "n" is that number whose cube is n.
- For two consecutive natural numbers a and b.

$$a^3 - b^3 = 1 + 3 \times a \times b$$

e.g., $9^3 - 8^3 = 1 + 3 \times 9 \times 8 = 217.$

QUESTIONS

1. Find the cube of $\left(-\frac{2}{3}\right)$.
2. How much is $\left(\frac{3}{5}\right)^3 - \left(\frac{1}{5}\right)^3$?
3. Simplify and give the answer : $(0.5)^3 + (0.2)^3$.
4. Find the volume of a cube of side 6 cm.
5. How many unit cubes can be formed by melting a copper cube of side 5cm.
6. Simplify $1 + \left(\frac{3}{5}\right)^3 =$ _____ .
7. If a number is written as $3 \times 3 \times 5 \times 3 \times 5 \times 7 \times 7$. Find the smallest number by which this is to be multiplied to form a perfect cube.
8. Find $\sqrt[3]{5 \times 7 \times 7 \times 5 \times 7 \times 5} =$ _____ .
9. $(0.3)^3 =$ _____.
10. Find the value of $\sqrt[3]{.064}$.
11. $\sqrt[3]{216}\ \sqrt[3]{125} =$ _____ .
12. Cubes of positive numbers are always _____.
13. Cube roots of positive numbers are always _____.

14. $\left(\sqrt[3]{x}\right)^3$ = _____ .

15. If volume of a cube is 216 cm^3. What is the length of side of cube.

16. Three cubes of sides 3cm, 4cm and 5 cm respectively are melted to form a new cube. What is the side of new cube?

17. What is the value of $(-0.2)^3$?

18. Find the value of $\sqrt[3]{343} - \sqrt[3]{-216}$.

19. Simplify : $\sqrt[3]{\frac{125}{1331}} - \sqrt[3]{\frac{64}{1331}}$.

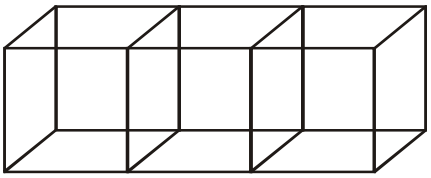
20. $\left(\frac{2}{5}\right)^3 \times \left(-\frac{5}{2}\right)^3$ = _____ .

21. Find the cube root of –1728.

22. How much is $\sqrt[3]{-0.729}$?

23. Find the smallest number by which (2 × 2 × 3 × 3 × 3) is to be multiplied so that resultant number is a perfect cube.

24. Three solid wooden cubes of different colours with sides, 30 cm are placed as shown in the figure. How much cubic cm of wood is required to make it?



25. What is the next number in the series 64, 125, 216, ____?

26. Find the value of $\sqrt[3]{125 \times 343}$.

27. How many thousands will be there is $29 \times 2^3 \times 5^3$?

28. Find the next number is the series $\sqrt[3]{(8)}, \sqrt[3]{(27)}, \sqrt[3]{(64)},$ _____ .

29. Find the value of $\left(\sqrt[3]{\frac{2}{5}}\right)^3 + \left(\sqrt[3]{\frac{3}{5}}\right)^3$.

30. Simplify : $\frac{\sqrt[3]{216} \times \sqrt[3]{512}}{\sqrt[3]{8} \times \sqrt[3]{27}}$.

31. Simplify : $\sqrt[3]{216} \times \sqrt[3]{1728}$.

32. Find $\sqrt[3]{x}$ if x = 1.331

33. What is the cube root of 0.001728?

34. $\left(\sqrt[3]{729}\right)^3$ = _____ complete it.

35. Simplify : $\left(\sqrt[3]{(1.1)^3} \times \sqrt[3]{1.331}\right)$.

36. A cubical box has a volume of 512000 cubic cm. What is the length of the side of box?

37. Find the value of $\sqrt[3]{0.729} \times \sqrt[3]{1.331}$.

38. Evaluate $\sqrt[3]{100} \times \sqrt[3]{270}$.

39. Complete it $\sqrt[3]{825} >$ _____. (whole number).

40. Simplify and give the answer in whole number $\sqrt[3]{55} \times \sqrt[3]{25} \times \sqrt[3]{121}$.

41. Find $\sqrt[3]{169} \times \sqrt[3]{25} \times \sqrt[3]{65}$.

42. What is $\sqrt[3]{400} \times \sqrt[3]{49} \times \sqrt[3]{140}$?

43. Simplify : $15^3 - 14^3$.

44. How many hundreds are there is $31 \times 2^2 \times 5^3$?

45. Simplify and give the answer $\dfrac{\sqrt[3]{216} \times \sqrt[3]{729}}{3 \times 9}$.

46. Which least number should be multiplied by $2 \times 2 \times 7 \times 7 \times 5 \times 7 \times 5 \times 5$ to get a perfect cube?

47. By which least number 250×512 should be divided to make it a perfect cube.

48. What is $11^3 - 10^3$?

49. Find $1^3 + 2^3 + 3^3$.

50. What is x if $3^x = 243$.

ANSWERS

1. $-\dfrac{8}{27}$.
2. $\dfrac{26}{125}$.
3. 0.133
4. 216 cm^3
5. 125
6. $\dfrac{152}{125}$.
7. 35
8. 35
9. 0.027
10. 0.4
11. 30
12. Positive

13. Positive
14. x
15. 6cm
16. 6cm
17. –0.008
18. 13
19. $\frac{1}{11}$.
20. –1
21. –12
22. –0.9
23. 2
24. 81000 cm^3
25. 343
26. 35
27. 29
28. $\sqrt[3]{125} = 5$
29. 1
30. 8
31. 72
32. 1.1
33. 0.12
34. 729
35. 1.21
36. 80cm
37. 0.99
38. 30
39. 9
40. 55
41. 65
42. 140
43. 631
44. 155
45. 2
46. 2
47. 2
48. 331
49. 36
50. 5

TEST YOUR KNOWLEDGE

1. What is cube of $\frac{8}{11}$?
2. What is cube root of 1728?
3. Complete it $\sqrt[3]{\frac{\boxed{?}}{3375}} = \frac{7}{15}$.
4. What is $10^3 - 9^3$?
5. By which least no 1024 should be divided to make it a perfect cube.
6. What is cube of 0.2.

7. If square of a number having digit 9 at unit's place then what will be the digit at unit's place in the cube of that numbers?

8. What is the smallest number by which 9000 can be multiplied so that it becomes a perfect cube.

9. What is the volume of a cube if the area of one face is 36 cm^2?

10. Find $\sqrt[3]{\frac{0.001}{1.331}}$ and give the answer.

ANSWERS

1. $\frac{512}{1331}$.
2. 12
3. 343
4. 271
5. 2
6. 0.008
7. 7 or 3.
8. 3
9. 216 cm^3
10. $\frac{1}{11}$.