Cube and Cube Roots

<div style="background:red;color:white;text-align:center;font-weight:bold">QUESTIONS</div>

1. **Find the unit digit in the cube of the number 3331.**

   (a) 1   (b) 8   (c) 4   (d) 9

2. **The smallest number by which 2560 must be multiplied so that the product will be a perfect cube.**

   (a) 35   (b) 2.5   (c) 8   (d) 5

3. **The smallest number by which we must divide 4624 so that is becomes a perfect cube.**

   (a) 2   (b) 169   (c) 4   (d) 13

4. **Find the value of $\left[\left(5^2+12^2\right)\right]$ is given by**

   (a) 2197   (b) 169   (c) 1693   (d) 289

5. **Find the cube root of 42875.**

   (a) 35   (b) 25   (c) 15   (d) 20

6. **Find the least number by which 3087 must be multiplied to make it a perfect cube.**

   (a) 3   (b) 4   (c) 9   (d) 7

7. **Find the cube root of $\dfrac{-2197}{1331}$**

   (a) $\dfrac{-13}{11}$ (b) $\dfrac{13}{11}$ (c) $-\dfrac{13}{21}$ (d) $-\dfrac{17}{21}$

8. **Find the value of $\sqrt[3]{\dfrac{0.027}{0.008}}-\sqrt{\dfrac{0.09}{0.04}}-1$**

   (a) 1   (b) −1   (c) 0   (d) $\dfrac{3}{2}$

9. **Which one of the following is a perfect cube?**

   (a) 1525   (b) 1728   (c) 1458   (d) 3993

10. **Which one of the following numbers is not a perfect cube?**

    (a) 2197   (b) 512   (c) 2916   (d) 343

11. **What is the least number by which 1565109 must be multiplied so that me product becomes a prefect cube?**

    (a) 11   (b) 12   (c) 13   (d) 14

12. **If $y=\sqrt[3]{2\dfrac{93}{125}}$, then find the value of y.**

    (a) $\dfrac{7}{5}$ **(b)** $\dfrac{5}{7}$ (c) $\dfrac{33}{7}$ (d) $\dfrac{13}{7}$

13. **Find the value of $\sqrt[3]{-\dfrac{1728}{274}}=$**

    (a) $-\dfrac{6}{11}$ (b) $-\dfrac{6}{7}$ (c) $-\dfrac{3}{4}$ (d) $-\dfrac{3}{7}$

14. Simplify : $\sqrt[3]{64 \times 729} =$

(a) 72   (b) 18   (c) 36   (d) 27

15. Find the smallest number by which 128625 must be divided so that the quotient will be a perfect cube.

(a) 2   (b) 3   (c) 5   (d) 6

16. Evaluate $\sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064}$

(a) 6.3   (b) 3.64   (c) 6.36   (d) 3.6

17. Three numbers are in the ratio to one another 2:3:4 and the sum of their cubes is 33957. What are the numbers?

(a) 21, 14, 28   (b) 14, 21, 28   (c) 28, 14, 21   (d) 27, 15, 14

18. Find the volume of cube whose surface area 216 m².

(a) $216 m^3$ (b) $200 m^3$ (c) $210 m^3$ (d) $262 m^3$

19. Find the value of $\sqrt[3]{3.375}$

(a) 1.5   (b) 2.5   (c) 2   (d) 3.5

20. Find the value of A if $\sqrt[3]{500.A} = 10$

(a) 1   (b) 2   (c) 3   (d) 4

21. There are two numbers such that the sum of the numbers is 28 and their difference is 4. Find the difference of their cubes.

(a) 2368   (b) 1529   (c) 2068   (d) 1638

22. If you subtract a number, x from 17 times that number, and then take the cube of the difference, what will be the result?

(a) $1728 x^3$ (b) $4913 x^3$ (c) $4096 x^3$ (d) $5832 x^3$

23. Solve, $\sqrt[3]{27} + \sqrt[3]{125}$

(a) 8   (b) 9   (c) 10   (d) 12

24. A number n is called a perfect cube if there exists.

(a) a natural number m such that n $= m \times m$

(b) a natural number m such that $m = n \times m \times n$

(c) a natural number m such that $n = m \times m \times m$

(d) a natural number m such that $m = n + m + n$

25. What is the value of $\sqrt[3]{\dfrac{-56}{875}}$

(a) $-\dfrac{7}{2}$ (b) $-\dfrac{7}{5}$ (c) $-\dfrac{2}{5}$ (d) $-\dfrac{2}{7}$

26. A cubical box has all sides of 26 m. Its volume will be

(a) $14626 m^3$ (b) $19726 m^3$ (c) $12645 m^3$ (d) $17576 m^3$

27. Some Bananas are packed into a box in stacks. Each stack has the same number of bananas in each row as the number of rows. The number of stacks is also the same as the number of rows. If there are 58 stacks of bananas in the box and no of stacks = no of bananas in each row. What is the total number of bananas in the box?

(a) 196687   (b) 194817   (c) 195112   (d) 195437

28. If you have a container in the shape of a cube that has a volume of $68921m^3$, then the area of each of the faces of the cube is

(a) 1931   (b) 1681   (c) 1729   (d) 1487

29. Find the value of $\sqrt[3]{-9261}$

(a) -21   (b) -31   (c) -11   (d) -41

30. Find the value of $\sqrt[3]{(-125)\times(-3375)}$

(a) 75   (b) 72   (c) 77   (d) 79

ANSWER - KEY									
1. (a)	**2.** (b)	**3.** (c)	**4.** (a)	**5.** (a)	**6.** (a)	**7.** (a)	**8.** (b)	**9.** (b)	**10.** (c)
11. (c)	**12.** (a)	**13.** (b)	**14.** (c)	**15.** (b)	**16.** (d)	**17.** (b)	**18.** (a)	**19.** (a)	**20.** (b)
21. (a)	**22.** (c)	**23.** (a)	**24.** (c)	**25.** (c)	**26.** (d)	**27.** (c)	**28.** (b)	**29.** (a)	**30.** (a)

Answers and Solutions

1. (a): Unit digit will be 1 as $1(\text{in }3331) \times 1 \times 1 = 1$

2. (b): $2560 \div 4 = 640$

$640 \times 10 = 6400$ (perfect cube)

$\Rightarrow 2560 \times 10 / 4 = 6400$

$\therefore \dfrac{10}{4} = 2.5$

3. (c): $4624 \div 4 = 1156\,b$

$\sqrt{1156} = 34$

4. (a): $(5^2 + 12^2)^{\frac{1}{2}} = 13$

$13^3 = 169 \times 13 = 2197.$

5. (a): $\sqrt[3]{42875} = 35$

6. (a) $3087 = 3 \times 1029$

$= 3 \times 3 \times 343$

$= 3 \times 3 \times 7^3$

If we multiplying by 3,

We have $3^3 \times 7^3$ perfect cube.

Ans = 3.

7. (a) $\sqrt[3]{\dfrac{-2197}{1331}} = \sqrt[3]{\dfrac{(-13)^3}{(11)^3}}$

$= \dfrac{-13}{11}$

8. (b): $27 = 3^3$

$8 = 2^3$

Expression is $\dfrac{\left(27 \times 10^{-3}\right)^{1/3}}{\left(8 \times 10^{-3}\right)^{1/3}} - \dfrac{0.3}{0.2} - 1$

$$= \frac{0.3}{0.2} - \frac{0.3}{0.2} - 1 \qquad = -1$$

9. (b): $12^3 = 1728$

10. (c): $2197 = 13^3$

$512 = 8^3$

$343 = 7^3$

But 2916 (not perfect cube).

11. (c): $1565109 = 9 \times 173901$

$= 9 \times 3 \times 57967$

$= 9 \times 3 \times 13 \times 4459$

$= 27 \times 13^2 \times 7^3$

= To make a cube, we need to multiply by 13.

12. (a) $y = \sqrt[3]{\dfrac{343}{125}} = \dfrac{7}{5}$

13. (b) $\sqrt[3]{\dfrac{-1728}{2744}}$ but $1728 = 12^3$, $2744 = 14^3$.

14. (c): $\sqrt[3]{64 \times 729} = \sqrt[3]{4^3 \times 9^3}$

$= 4 \times 9 = 36$.

15. (b): $128625 = 3 \times 42875$

$= 3 \times 7 \times 6125$

$= 3 \times 7 \times 49 \times 125$

$= 3 \times 7^3 \times 5^3$

We divide by 3.

16. (d): $\sqrt[3]{27} = 3$

$\sqrt[3]{.008} = 0.2$

$\sqrt[3]{.064} = 0.4$

$\therefore$ Sum $= 3.6$.

17. **(b): Let nos be** $2x, 3x, 4x$

$$(2x)^3 + (3x)^3 + (4x)^3$$

$$= (8 + 27 + 64)x^3$$

$$= 99x^3$$

Also, $99x^3 = 33957$

$$x^3 = 343 \qquad x = 7$$

Nos are $2 \times 7, 3 \times 7, 4 \times 7$.

18. (a): $S.A = 216 = 6a^2$.

$$\Rightarrow a = 6$$

$$a^3 = 6^3 = 216.$$

19. (a): $\sqrt[3]{3.375} = (2.25 \times 1.5)^{\frac{1}{3}}$

$$= (1.5 \times 1.5 \times 1.5)^{\frac{1}{3}}$$

$$= 1.5.$$

20. (a): Cubing $500A = 1000$

$$\Rightarrow A = 2$$

21. (a): $x + y = 28$.

$$x - y = 4$$

$$\Rightarrow x = 16, y = 12$$

$$x^3 - y^3 = 16^3 - 12^3$$

$$= 4096 - 1728 = 2368.$$

22. (c): $17x - x = 16x$

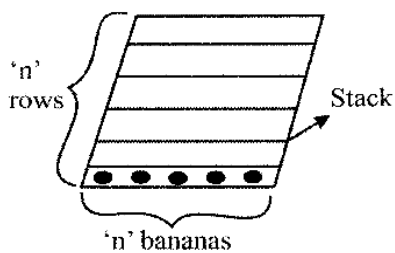Then cube it

$$\Rightarrow (16x)^3 = 4096x^3.$$

23. (a): $(27)^{\frac{1}{3}} + (125)^{\frac{1}{3}} = 3 + 5 = 8.$

24. (c): Not Available

25. (c) $\left[\dfrac{-56}{875}\right]^{\frac{1}{3}} = \left(\dfrac{-8}{125}\right)^{\frac{1}{3}} = \dfrac{-2}{5}$.

26. (d): VOL $a^3 = (26)^3$

$$= (25+1)^3$$

$$= 25^3 + 3 \times 25 \times 1(25+1) + 1^3$$

$$= 15625 + 1875 + 1 = 17576.$$

27. **(c):**

Bananas in a stack $= n^2$.

No. of stacks = no. of bananas in each row.

$= 58 = n$

total bananas $= 58 \times (58)^2 = 195112$.

28. (b): V = 68921

$$a^3 = V$$

$$\Rightarrow a = (68921)^{\frac{1}{3}} = 41$$

Area efface $= a^2 = (41)^2 = 1681$.

29. (a): $\sqrt[3]{-9261}$

$$= \sqrt[3]{(-21)^3} = -21.$$

30. (a): $\sqrt[3]{(-125) \times (-3375)}$

$$\sqrt[3]{(-5)^3 \times (-15)^3}$$

$$= (-5) \times (-15) = 75.$$