PSBB Learning Leadership Academy
Bangalore
Mathematics
Class 8 Cubes & Cube roots

1 a) $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$

b) $\left(2\frac{7}{9}\right)^3 = \left(\frac{25}{9}\right)^3$

$= \frac{15625}{729}$

c) $(54)^3 = 157464$

d) $(-1)^3 = -1$

e) $(4.3)^3 = 79.507$

2) a) $\sqrt[3]{6859} = 19$

b) $\sqrt[3]{24 \times 36 \times 80 \times 25} = \sqrt[3]{8 \times 3 \times 9 \times 4 \times 8 \times 5 \times 5^2 \times 2}$

$= \sqrt[3]{8^3 \times 3^3 \times 5^3}$

$= 8 \times 3 \times 5$

$= 120$

c) $\sqrt[3]{\frac{3375}{125}} = \sqrt[3]{\frac{25 \times 27 \times 5}{25 \times 5}} = 3$

d) $\sqrt[3]{1.331} = 1.1$

③

2	1944
2	972
2	486
3	243
3	81
3	27
3	9
3	3
	1

$1944 = 2^3 \times 3^3 \times 3^2$

It is not a perfect square

④

5	10985
13	2197
13	169
13	13
	1

$10985 = 5 \times 13^3$

$\frac{10985}{5} = \frac{5 \times 13^3}{5}$

$\therefore$ 10985 should be divided by 5

$\boxed{2197 = 13^3}$

⑤ $200 = 2 \times 10 \times 10$

$200 \times 2^2 \times 10 = 2 \times 2^2 \times 10$

40 should be multiplied to make it a perfect square

⑥ (a) $\sqrt[3]{4^3} \times \sqrt[3]{6^3} = 4 \times 6$

$= 24$

(b) $\sqrt[3]{1000} + \sqrt[3]{0.008} - \sqrt[3]{0.125} = 10 + 0.2 - 0.5$

$= 10.2 - 0.5$

$= 9.7$

(c) $\sqrt[3]{0.1 \times 0.1 \times 0.1} = 0.1$

(8) Area of one face = $64\ cm^2$

$s^2 = 64\ cm^2$

$s = 8\ cm$

Volume $= s^3$

$= 512\ cm^3$

(9) Example

$18^3 = 18 \times 18 \times 18$

$= 18 \times 3 \times 6 \times 18$

$= 54 \times 3 \times 18 \times 2$

$= 54 \times 54 \times 2$

multiples of 27

10 $(x^2)^3 = 729$

$(x^2)^3 = (9)^3$

$= (3^2)^3$

$\sqrt{9} = 3$

11 Let the nos be $2x, 3x, 4x$

$(2x)^3 + (3x)^3 + (4x)^3 = 33957$

$8x^3 + 27x^3 + 64x^3 = 33957$

$99x^3 = 33957$

$x^3 = \frac{33957}{99}$

$x^3 = 343$

$\therefore x = 7$

$\therefore$ nos are 14, 21, 28

12) (a) 389017

G_2 G_1

$\because G_1$ has 7 in unit place then unit digit should be 3

G_2 389 lies between 7^3 & 8^3

$\therefore \sqrt[3]{389017} = 73$

(b) $\sqrt[3]{226981} = 61$

13 Volume of Big cake $= 20^3$ cm^3

Volume of 1 small cube $= 5^3$

No. of cubes $= \frac{\text{V. of Big cake}}{\text{V. of small cube}}$

$= \frac{20 \times 20 \times 20}{5 \times 5 \times 5}$

$= 64$

14 Dimensions of matbox $= 4\text{ cm} \times 2.5 \times 1.5\text{ cm}$

Volume of big cube $= 2^2 \times 2.5 \times 1.5 \times 2 \times (2.5)^2 \times (1.5)^2$

$= 2^3 \times (2.5)^3 \times (1.5)^3$

Dimensions of new cube $= 8 \times 15.625 \times 3.375$

15) 20 cubes required to make a cube of edge 3 units