Class - 7th

Exercise - 7.1

Q) which of the following numbers are not perfect cube

(i) $216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$

216 is perfect cube

2	216
2	108
2	54
3	27
3	9
3	3
	1

(ii) $128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times (2)$

2 is left

∴ 128 is not a perfect cube

2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

(iii) $1000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$

1000 is a perfect cube

2	1000
2	500
2	250
5	125
5	25
5	5
	1

(iv) $100 = 2 \times 2 \times 5 \times 5$

2	100
2	50
5	25
5	5
	1

To make pair of 3 we need one 2 and one 5

So 100 is not perfect cube

(v) $46656 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3}$

2	46656
2	23328
2	11664
2	5832
2	2916
2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1

∴ 46656 is a perfect cube

Q2 Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube.

(i) $243 = \underline{3 \times 3 \times 3} \times 3 \times 3$

3	243
3	81
3	27
3	9
3	3
	1

To make it perfect cube we need one more 3

So we multiply by 3

$243 \times 3 = \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3}$

$\sqrt[3]{729} = \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3}$

$= 3 \times 3$

$= 9$

(II) $256 = \underline{2\times2\times2}\times\underline{2\times2\times2}\times\underline{2\times2\times2}$

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

To make it perfect cube we need one more 2

∴ we multiply by 2

$256\times2 = \underline{2\times2\times2}\times\underline{2\times2\times2}\times\underline{2\times2\times2}$

$\sqrt[3]{512} = 2\times2\times2$

$= 8$

(III) $72 = \underline{2\times2\times2}\times\underline{3\times3}$

2	72
2	36
2	18
3	9
3	3
	1

To make it perfect cube we need one more 3

∴ we multiply by 3

$72\times3 = \underline{2\times2\times2}\times\underline{3\times3\times3}$

$\sqrt[3]{216} = 2\times3 = 6$

(IV) $675 = \underline{3\times3\times3}\times5\times5$

3	675
3	225
3	75
5	25
5	5
	1

To make it perfect cube we need one more 5

∴ we multiply by 5

$675\times5 = \underline{3\times3\times3}\times\underline{5\times5\times5}$

$\sqrt[3]{3375} = 3\times5 = 15$

(v) $100 = 2 \times 2 \times 5 \times 5$

2	100
2	50
5	25
5	5
	1

To make it perfect cube we need one 2 and one 5

∴ we multiply by 2×5

$100 \times 2 \times 5 = \underline{2 \times 2} \times \underline{2 \times 5 \times 5} \times 5$

$\sqrt[3]{1000} = 2 \times 5 = 10$

Q3- Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube.

(i) $81 = \underline{3 \times 3 \times 3} \times (3)$

3	81
3	27
3	9
3	3
	1

3 left alone

∴ we divide with 3

$81 \div 3 = \frac{3 \times 3 \times 3 \times \cancel{3}}{\cancel{3}}$

$\sqrt[3]{27} = \underline{3 \times 3 \times 3}$

$= 3$

(ii) $128 = \underline{2 \times 2 \times 2 \times 2 \times 2 \times 2} \times (2)$

2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

2 left alone

∴ we divide with 2

$128 \div 2 = \frac{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times \cancel{2}}{\cancel{2}}$

$64 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2}$

$\sqrt[3]{64} = 2 \times 2 = 4$

(III) $135 = \underline{3 \times 3 \times 3} \times (5)$

5 left alone

∴ we divide with 5

$135 \div 5 = \frac{3 \times 3 \times 3 \times \cancel{5}}{\cancel{5}}$

$27 = \underline{3 \times 3 \times 3}$

$\sqrt[3]{27} = 3$

3	135
3	45
3	15
5	5
	1

(IV) $192 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times (3)$

3 left alone

∴ we divide with 3

$192 \div 3 = \frac{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times \cancel{3}}{\cancel{3}}$

$64 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2}$

$\sqrt[3]{64} = 2 \times 2 = 4$

2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

(V) $704 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times (11)$

11 left alone

∴ we divide by 11

$704 \div 6 = \frac{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times \cancel{11}}{\cancel{11}}$

$64 = \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2}$

$\sqrt[3]{64} = 2 \times 2 = 4$

2	704
2	352
2	176
2	88
2	44
2	22
11	11
	1

Q4

Sides of cuboid = 5cm, 2cm and 5cm

volume of cuboid = 5 x 2 x 5

or 5 x 5 x 2

to make cube we need one 5 and two 2

∴ 5 x 2 x 2 = 20 is required number