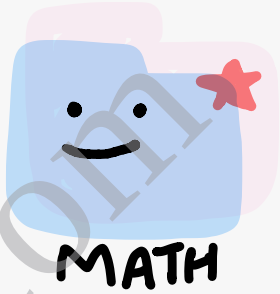
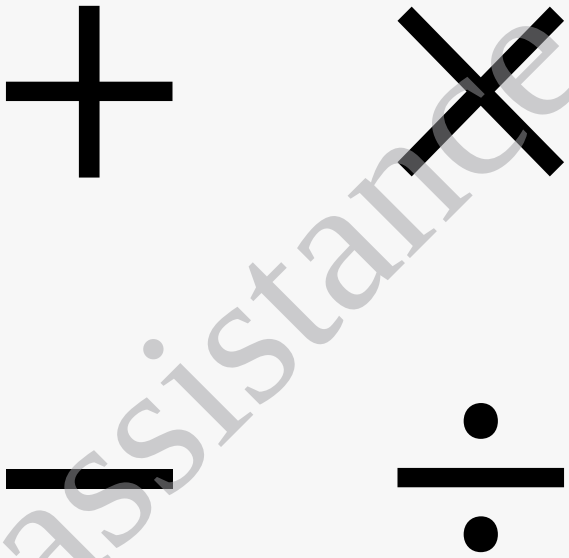
Cubes And Cube Roots
Ex. 6.1





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Ex. 6.1

1. $(-6)^3 = (-6) \times (-6) \times (-6) = -216$ (C)

2. $(40)^3 = 40 \times 40 \times 40 = 64000$ (D)

3. $\left(\frac{-5}{11}\right)^3 = \left(\frac{-5}{11}\right) \times \left(\frac{-5}{11}\right) \times \left(\frac{-5}{11}\right) = \frac{-125}{1331}$ (B)

4. $(0.3)^3 = 0.3 \times 0.3 \times 0.3 = 0.027$ (D)

5. $\left(3 - \frac{1}{3}\right)^3 = \left(\frac{9-1}{3}\right)^3 = \left(\frac{8}{3}\right)^3 = \frac{8}{3} \times \frac{8}{3} \times \frac{8}{3} = \frac{512}{27}$ (B)

6. (D) is false as cube of a number ending with zero has three zeroes at its extreme right.

7a. $(25)^3 = 25 \times 25 \times 25 = 15625$

b. $(18)^3 = 18 \times 18 \times 18 = 5832$

c. $(63)^3 = 63 \times 63 \times 63 = 250047$

d. $(133)^3 = 133 \times 133 \times 133 = 2352637$

8a. $\left(-\frac{2}{3}\right)^3 = \left(-\frac{2}{3}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{2}{3}\right) = \frac{-8}{27}$

b. $\left(\frac{6}{19}\right)^3 = \frac{6}{19} \times \frac{6}{19} \times \frac{6}{19} = \frac{216}{6859}$

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c. $\left(-\frac{7}{15}\right)^3 = \left(-\frac{7}{15}\right) \times \left(\frac{-7}{15}\right) \times \left(\frac{-7}{15}\right) = \frac{-343}{3375}$

d. $\left(\frac{12}{24}\right)^3 = \left(\frac{1}{2}\right)^3 = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

9a. $(0.1)^3 = 0.1 \times 0.1 \times 0.1 = 0.001$

b. $(0.02)^3 = 0.02 \times 0.02 \times 0.02 = 0.000008$

c. $(0.5)^3 = 0.5 \times 0.5 \times 0.5 = 0.125$

d. $(1.3)^3 = 1.3 \times 1.3 \times 1.3 = 2.197$

10a.

2	100
2	50
5	25
	5

$100 = 2 \times 2 \times 5 \times 5$

Since 2 and 5 do not occur in a triplet.

$\therefore$ 100 is not a perfect cube.

b.

2	27000
2	13500
2	6750
3	3375
3	1125
	375

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3	375
5	125
5	25
	5

$27000 = \underline{2\times2\times2} \times \underline{3\times3\times3} \times \underline{5\times5\times5}$

Since 2, 3 and 5 occur in a triplet

$\therefore$ 27000 is a perfect cube.

c.

2	4096
2	2048
2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
	2

$4096 = \underline{2\times2\times2} \times \underline{2\times2\times2} \times \underline{2\times2\times2} \times \underline{2\times2\times2}$

Since 2 occurs in a triplet

$\therefore$ 4096 is a perfect cube.

d.

2	2430
3	1215
3	405
3	135
	45

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3 | 45
3 | 15
5

$2430 = 2 \times \underline{3 \times 3 \times 3} \times 3 \times 3 \times 5$

Since 2, 3 and 5 do not occur in a triplet.

∴ 2430 is not a perfect cube.

e.

19 | 6859
19 | 361
19

$6859 = \underline{19 \times 19 \times 19}$

Since 19 occurs in a triplet

∴ 6859 is a perfect cube.

f.

5 | 15625
5 | 3125
5 | 625
5 | 125
5 | 25
5

$15625 = \underline{5 \times 5 \times 5} \times \underline{5 \times 5 \times 5}$

Since 5 occurs in a triplet

∴ 15625 is a perfect cube.

11.a.

2 | 1372
2 | 686
7 | 343
7 | 49
7

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$1372 = 2 \times 2 \times \underline{7 \times 7 \times 7}$

Since 2 does not occur in a triplet

∴ We multiply 1372 by 2 to make it a perfect cube.

∴ Required smallest number = 2

b.

2	10584
2	5292
2	2646
3	1323
3	441
3	147
7	49
	7

$10584 = \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times 7 \times 7$

Since 7 does not occur in a triplet

∴ We multiply 10584 by 7 to make it a perfect cube.

∴ Required smallest number = 7

c.

3	1125
3	375
5	125
5	25
	5

$1125 = 3 \times 3 \times \underline{5 \times 5 \times 5}$

Since 3 does not occur in a triplet

∴ We multiply 1125 by 3 to make it a perfect cube

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∴ Required smallest number = 3

12.a.

5	3125
5	625
5	125
5	25
	5

$3125 = \underline{5 \times 5 \times 5} \times 5 \times 5$

Since 5 does not occur in a triplet

∴ We divide 3125 by $5 \times 5 = 25$ to make it a perfect cube.

∴ Required smallest number = 25

b.

2	5324
2	2662
11	1331
11	121
	11

$5324 = 2 \times 2 \times \underline{11 \times 11 \times 11}$

Since 2 does not occur in a triplet

∴ We divide 5324 by $2 \times 2 = 4$ to make it a perfect cube.

∴ Required smallest number = 4

c.

2	7290
3	3645
3	1215
3	405
	135

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$$\begin{array}{r|l} 3 & 135 \\ \hline 3 & 45 \\ \hline 3 & 15 \\ \hline & 5 \end{array}$$

$7290 = 2 \times \underline{3\times3\times3} \times \underline{3\times3\times3} \times 5$

Since 2 and 5 do not occur in a triplet.

$\therefore$ We divide 7290 by $2\times5=10$ to make it a perfect cube.

$\therefore$ Required smallest number $= 10$

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