Thu 11/5/2021

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CH-4- Cubes And Cube-roots

Exercise-4(A)

1) i) 7

⇒ Cube of $7 = 7^3$

$= 7 \times 7 \times 7 = 343$

ii) 11

⇒ Cube of $11 = 11^3$

$= 11 \times 11 \times 11 =$ 1331

iii) 16

⇒ Cube of $16 = 16^3$

$= 16 \times 16 \times 16 = 4096$

iv) 23

⇒ Cube of $23 = 23^3$

$= 23 \times 23 \times 23 = 12167$

v) 31

⇒ Cube of $31 = 31^3$

$= 31 \times 31 \times 31 = 29791$

vi) 42

⇒ Cube of $42 = 42^3$

$= 42 \times 42 \times 42 = 74088$

xiii) 54

⇒ Cube of 54 = 54^3

$= 54 \times 54 \times 54 = 157464$

2) i) 243

⇒ $243 = 3 \times 3 \times 3 \times 3 \times 3$

$= (3 \times 3 \times 3) \times 3 \times 3$

Since, triplet of number 3 is not formed.

∴ 243 is not a perfect cube

3	243
3	81
3	27
3	9
3	3
	1

ii) 588

⇒ $588 = 2 \times 2 \times 3 \times 7 \times 7$

Since, triplet of number 2, 3, 7 is not formed.

∴ 588 is not a perfect cube.

2	588
2	294
3	147
7	49
7	7
	1

iii) 1331

⇒ $1331 = 11 \times 11 \times 11$

$= (11 \times 11 \times 11)$

$= 11^3$

∴ 1331 is a perfect cube.

11	1331
11	121
11	11
	1

iv) 24000

2	24000
2	12000
2	6000
2	3000
2	1500
2	750
3	375
5	125
5	25
5	5
	1

⇒ $24000 = 2\times2\times2\times2\times2\times2\times3\times5\times5\times5$
$= (2\times2\times2)\times(2\times2\times2)\times(5\times5\times5)\times3$
Since, triplet of number 3 is not formed.
∴ 24000 is not a perfect cube.

v) 1728

2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
	3
	1

⇒ $1728 = 2\times2\times2\times2\times2\times2\times3\times3$
$= (2\times2\times2)\times(2\times2\times2)\times(3\times3\times3)$
$= 8\times8\times8$
$= 8^3$
∴ 1728 is a perfect cube.

vi) 1938

2	1938
3	969
3	323
	1

⇒ $1938 = 2\times3\times323$
Since, triplet of 2, 3, 323 is not formed.
∴ 1938 is not a perfect cube.

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3) i) 2.1

⇒ Cube of $2.1 = 2.1^3$

$= 2.1 \times 2.1 \times 2.1 = 9.261$

ii) 0.4

⇒ Cube of $0.4 = 0.4^3$

$= 0.4 \times 0.4 \times 0.4 = 0.064$

iii) 1.6

⇒ Cube of $1.6 = 1.6^3$

$= 1.6 \times 1.6 \times 1.6 = 4.096$

iv) 2.5

⇒ Cube of $2.5 = 2.5^3$

$= 2.5 \times 2.5 \times 2.5 =$ 15.625

v) 0.12

⇒ Cube of $0.12 = 0.12^3$

$= 0.12 \times 0.12 \times 0.12 = 0.001728$

vi) 0.02

⇒ Cube of $0.02 = 0.02^3$

$= 0.02 \times 0.02 \times 0.02 = 0.000008$

vii) 0.08

⇒ Cube of $0.08 = 0.08^3$

$= 0.08 \times 0.08 \times 0.08 = 0.512$

i) $\frac{3}{7}$

⇒ Cube of $\frac{3}{7} = \left(\frac{3}{7}\right)^3$

$= \frac{3\times3\times3}{7\times7\times7} = \frac{27}{343}$

ii) $\frac{8}{9}$

⇒ Cube of $\frac{8}{9} = \left(\frac{8}{9}\right)^3$

$= \frac{8\times8\times8}{9\times9\times9} = \frac{512}{729}$

iii) $\frac{10}{13}$

⇒ Cube of $\frac{10}{13} = \left(\frac{10}{13}\right)^3$

$= \frac{10\times10\times10}{13\times13\times13} = \frac{1000}{2197}$

iv) $1\frac{2}{7}$

⇒ Cube of $1\frac{2}{7} = \left(1\frac{2}{7}\right)^3$

$= \left(\frac{9}{7}\right)^3 = \frac{9\times9\times9}{7\times7\times7} = \frac{729}{343} = 2\frac{43}{343}$

v) $2\frac{1}{2}$

⇒ Cube of $2\frac{1}{2} = \left(2\frac{1}{2}\right)^3$

$= \left(\frac{5}{2}\right)^3 = \frac{5\times5\times5}{2\times2\times2} = \frac{125}{8} = 15\frac{5}{8}$

5) i) -3

⇒ Cube of -3 = $(-3)^3$ = (-3) × (-3) × (-3) = -27

ii) -7

⇒ Cube of -7 = $(-7)^3$ = (-7) × (-7) × (-7) = -343

iii) -12

⇒ Cube of -12 = $(-12)^3$ = (-12) × (-12) × (-12) = -1728

iv) -18

⇒ Cube of -18 = $(-18)^3$ = (-18) × (-18) × (-18) = -5832

v) -25

⇒ Cube of -25 = $(-25)^3$ = (-25) × (-25) × (-25) = -15625

vi) -30

⇒ Cube of -30 = $(-30)^3$ = (-30) × (-30) × (-30) = -27000

vii) -50

⇒ Cube of -50 = $(-50)^3$ = (-50) × (-50) × (-50) = -125000