

# Square root and Cube root

$$(12)^3, (13)^3, (14)^3, (21)^3, (31)^3, \\ (22)^3, (23)^3$$

$1^3 = 1$
$2^3 = 8$
$3^3 = 27$
$4^3 = 64$
$5^3 = 125$
$6^3 = 216$
$7^3 = 343$
$8^3 = 512$
$9^3 = 729$

Case 1 :

Number starts at 1

Case 2 :

Number Ends at 1 [Eg:  $(91)^3$ ]

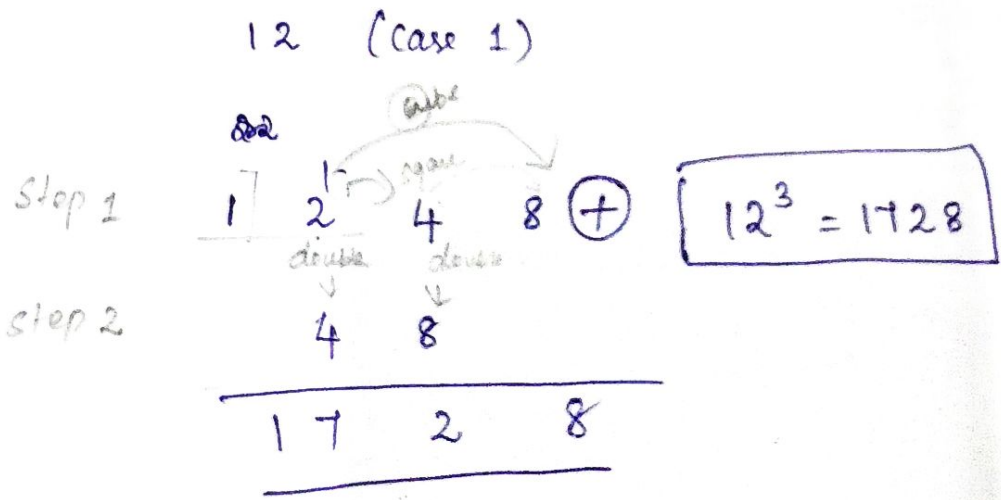
Case 3 :

Same Numbers (Eg:  $(22)^3$ )

Case 4 :

Different Numbers [Eg:  $(24)^3$ ]

(Case 1) **(CASE I)** → (left to right)  
 1)  $(12)^3$



$$2) (13)^3$$

$$\begin{array}{r} 1 \quad 2 \quad 2 \\ 13 \quad 9 \quad 27 \\ \cdot \\ 6 \quad 18 \\ \hline 2197 \end{array}$$

(27 only 7)

$$\boxed{(13)^3 = 2197}$$

$$3) (14)^3$$

$$14 \quad \overset{16}{\cancel{8}} \quad \cancel{8}4$$

$$\begin{array}{r} 15 \quad 16 \\ 14 \quad 16 \quad 64 \\ \cdot \\ 8 \quad 32 \\ \hline 2744 \end{array}$$

$$\boxed{(14)^3 = 2744}$$

(CASE II) (right to left)

$$① (21)^3$$

$$\begin{array}{r} 8 \quad 4 \quad 2 \quad 1 \\ \quad 8 \quad 4 \\ \hline 9261 \end{array}$$

$$\boxed{(21)^3 = 9261}$$

$$2) 31^3$$

8

$$\begin{array}{r} 2 \\ 27 \quad 9 \quad 3 \quad 1 \\ \quad 18 \quad 6 \\ \hline 29 \quad 7 \quad 9 \quad 1 \\ \hline \end{array}$$

$$(31)^3 = 29791$$

Case (3) Same number

$$5) (22)^3$$

Step 1

$$\begin{array}{r} 2 \quad (2) \rightarrow (3) \\ 2 \quad 2 \\ 8 \quad 8 \quad 8 \quad 8 \quad (4) \\ \quad 16 \quad 16 \\ \hline 10 \quad 6 \quad 4 \quad 8 \\ \hline \end{array}$$

$$(22)^3 = 10648$$

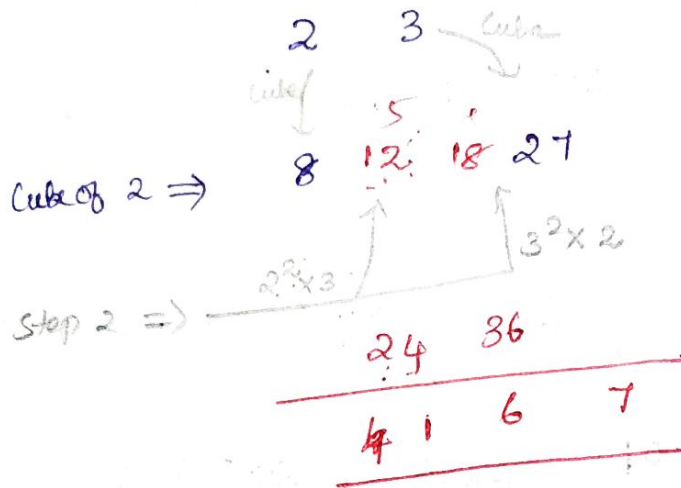
$$\begin{array}{r} 1 \\ 29 \\ 54 \\ \hline 83 \end{array}$$

$$33^3$$

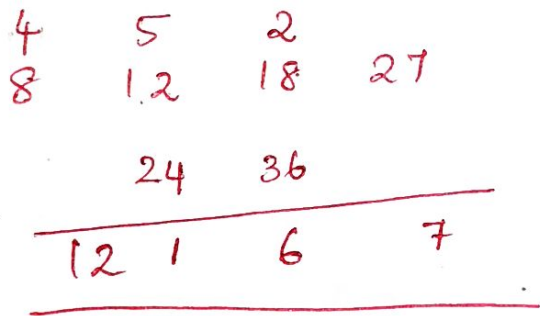
$$\begin{array}{r} 27 \quad 27 \quad 27 \\ 27 \quad 27 \quad 27 \\ \quad 54 \quad 54 \quad - \\ \hline 27 \end{array}$$

Case 4: diff.

①  $(23)^3$

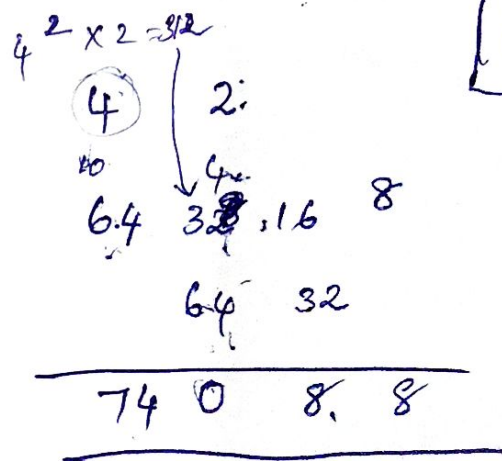


$$\frac{18 \times 2}{36} = 1$$



$$(23)^3 = 12167$$

②  $(42)^3$



$$(42)^3 = 74088$$

# Square

1 → before number (2 times)  
8 → before " 2 times

$$9^2 = 81$$

$$6^2 = 36$$

$$3^2 = 9$$

(09)  
↓

$$99^2 = 9801$$

$$66^2 = 4356$$

$$33^2 = 1089$$

$$999^2 = 998001$$

$$666^2 = 443556$$

$$333^2 = 110889$$

$$9999^2 = 99980001$$

$$6666^2 = 44435556$$

$$3333^2 =$$

11108889