

SQUARE AND SQUARE ROOT CUBE AND CUBE ROOT

Two DIGIT NUMBERS & SQUARE

$$\bullet (42)^2$$

16+1 1764 ①

$$= 1764$$

$$\bullet (47)^2 \longrightarrow (40+7)^2$$

$$= 2209 \quad \begin{matrix} ④ \\ ⑥ \end{matrix}$$

$$a^2 + b^2 + 2ab$$

$$1600 + 49 + 2 \times 280$$

$$2209$$

$$\bullet (54)^2$$

$$= 2916 \quad \begin{matrix} ① \\ ④ \end{matrix}$$

$$\bullet (59)^2$$

$$= 3481 \quad \begin{matrix} ⑧ \\ ⑨ \end{matrix}$$

$$\bullet (63)^2$$

$$= 3969 \quad ③$$

$$\bullet (67)^2$$

$$= 4489 \quad \begin{matrix} ④ \\ ⑧ \end{matrix}$$

$$\bullet (71)^2$$

$$= 5041 \quad ①$$

$$\bullet (76)^2$$

$$= 5776 \quad \begin{matrix} ③ \\ ⑧ \end{matrix}$$

$$\bullet (82)^2$$

$$= 6724 \quad ③$$

$$\bullet (88)^2$$

$$= 7744 \quad \begin{matrix} ⑥ \\ ⑬ \end{matrix}$$

$$\bullet (91)^2$$

$$= 8281 \quad ①$$

$$(99)^2$$

$$= 9801 \quad \begin{matrix} ⑧ \\ ⑪ \\ ⑧ \end{matrix}$$

THREE DIGIT NUMBERS & SQUARE

+ Base Value +

* $100 \rightarrow 1$

* $150 \rightarrow 1.5 = \frac{3}{2}$

* $200 \rightarrow 2$

* $300 \rightarrow 3$

* $250 \rightarrow 2.5 = \frac{5}{2}$

• $(102)^2$
 $\begin{array}{r} 100 + 2 \\ \hline \end{array}$
 $= 10404$

• $(106)^2$
 $\begin{array}{r} 106 \\ +6 \\ \hline 112 \\ \hline \end{array}$
 $= 11236$

• $(112)^2$
 $\begin{array}{r} 112 \\ +12 \\ \hline 124 \\ \hline \end{array}$ 144
 $= 12544$

• $(101)^2$
 $\begin{array}{r} 101 \\ +1 \\ \hline 102 \\ \hline \end{array}$ 01
 $= 10201$

• $(107)^2$
 $\begin{array}{r} 107 \\ +7 \\ \hline 114 \\ \hline \end{array}$
 $= 11449$

• $(117)^2$
 $\begin{array}{r} 117 \\ +17 \\ \hline 134 \\ \hline \end{array}$ 289
 $= 13689$

• $(154)^2$
 $\begin{array}{r} 154 \\ +4 \\ \hline 158 \\ \hline \end{array}$ 16

$\begin{array}{r} 79 \\ 158 \times \frac{3}{2} = 237 \\ \hline \end{array}$
 $= 23716$

$$\begin{aligned}
 &\bullet (158)^2 \\
 &\quad \begin{array}{r} +8 \\ \hline 166 \end{array} \quad (64) \\
 &\quad \begin{array}{r} 83 \\ 166 \times \frac{3}{2} = 249 \\ \hline \end{array} \\
 &\quad = 24964
 \end{aligned}$$

$$\begin{aligned}
 &\bullet (146)^2 \\
 &\quad \begin{array}{r} -4 \\ \hline 142 \end{array} \quad (16) \\
 &\quad \begin{array}{r} 71 \\ 142 \times \frac{3}{2} = 213 \\ \hline \end{array} \\
 &\quad = 21316
 \end{aligned}$$

$$\begin{aligned}
 &\bullet (142)^2 \\
 &\quad \begin{array}{r} -8 \\ \hline 134 \end{array} \quad (64) \\
 &\quad \begin{array}{r} 67 \\ 134 \times \frac{3}{2} \\ \hline \end{array} \\
 &\quad = 20164
 \end{aligned}$$

$$\begin{aligned}
 &\bullet (207)^2 \\
 &\quad \begin{array}{r} +7 \\ \hline 214 \end{array} \quad (49) \\
 &\quad 214 \times 2 = 428 \\
 &\quad = 42849
 \end{aligned}$$

$$\begin{aligned}
 &\bullet (211)^2 \\
 &\quad \begin{array}{r} +11 \\ \hline 222 \end{array} \quad (121) \\
 &\quad 222 \times 2 = 444 \\
 &\quad = 44521
 \end{aligned}$$

$$\begin{aligned}
 &\bullet (213)^2 \\
 &\quad \begin{array}{r} +13 \\ \hline 226 \end{array} \quad (169) \\
 &\quad 226 \times 2 = 452 \\
 &\quad = 45369
 \end{aligned}$$

किसी भी संख्या का Square के Last two Digit
 1 से 24 तक की संख्याओं के Square के Last two Digit होंगे

Ex:- $(93)^2 = 8649$
 $7^2 = 49$

SQUARE ROOT

$$\bullet \sqrt{1849}$$

$$\begin{array}{r} 4^2 \quad 5^2 \\ 16 \quad 25 \end{array}$$

$$= 43$$

$$\begin{array}{l} (43) \checkmark \\ (47) \end{array}$$

$$\bullet \sqrt{6084}$$

$$\begin{array}{r} 7^2 \quad 8^2 \\ 49 \quad 64 \end{array}$$

$$= 78$$

$$\begin{array}{l} (72) \\ (78) \checkmark \end{array}$$

$$\begin{array}{l} \bullet 1^2 = 1 \\ \bullet 2^2 = 4 \\ \rightarrow \bullet 3^2 = 9 \\ \bullet 4^2 = 16 \\ \bullet 5^2 = 25 \\ \bullet 6^2 = 36 \\ \rightarrow \bullet 7^2 = 49 \\ \bullet 8^2 = 64 \\ \bullet 9^2 = 81 \end{array}$$

SQUARE AND SQUARE ROOT CUBE AND CUBE ROOT

1) $\sqrt{5776}$

$\begin{array}{r} 7^2 \quad 8^2 \\ 49 \quad 64 \\ \hline = 76 \end{array}$

74
(76)

2) $\sqrt{9801}$

$\begin{array}{r} 9^2 \quad 10^2 \\ 81 \quad 100 \\ \hline = 99 \end{array}$

91
(99)

3) $\sqrt{12996}$

$\begin{array}{r} 11^2 \quad 12^2 \\ 121 \quad 144 \\ \hline = 114 \end{array}$

(114)
116

Special Case

* $(25)^2 = 625$

$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \\ 25 \\ \hline 625 \end{array}$

* $(35)^2 = 1225$

$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \\ 175 \\ \hline 1225 \end{array}$

* $(45)^2 = 2025$

$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \\ 225 \\ \hline 2025 \end{array}$

* $(85)^2 = 7225$

$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \\ 725 \\ \hline 7225 \end{array}$

* $\sqrt{7225}$

$\begin{array}{r} 8 \times 9 \\ \hline 85 \end{array}$

* $\sqrt{13225}$

$\begin{array}{r} 11 \times 12 \\ \hline 115 \end{array}$

Square Root Of Non-Perfect Square No.

* $\sqrt{63}$

$$\sqrt{64-1}$$

(a) (b)

$$\sqrt{64} - \frac{1}{2\sqrt{64}}$$

$$8 - \frac{1}{2 \times 8}$$

$$8 - \frac{1}{16}$$

$$8 - 0.06$$

$$= 7.94$$

* $\sqrt{85}$

$$\sqrt{81+4}$$

(a) (b)

$$\sqrt{a} + \frac{b}{2\sqrt{a}} = 9 + \frac{4^2}{2 \times 9}$$

$$9 + \frac{2}{9}$$

$$9 + 0.22$$

$$= 9.22$$

CUBE

* $(42)^3$

$$64 \quad 96 \quad 48 \quad 08$$

$$= 74088$$

* $(34)^3$

$$\begin{array}{cccc} & & 123 & 150 \\ & \swarrow & \downarrow & \downarrow \\ 27 & 108 & 144 & 64 \end{array}$$

$$= 39304$$

$$(a+b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$$

$$\begin{array}{r}
 * (28)^3 \\
 \begin{array}{cccc}
 & \swarrow 139 & \searrow 435 & \\
 08 & 96 & 384 & 512 \\
 \hline
 & = 21952
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 * (24)^3 \\
 \begin{array}{cccc}
 & \swarrow 58 & \searrow 102 & \\
 08 & 48 & 96 & 64 \\
 \hline
 & = 13824
 \end{array}
 \end{array}$$

CUBE ROOT (घनमूल)

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

$$\begin{array}{r}
 * \sqrt[3]{2744} \\
 \begin{array}{cc}
 1^3 & 2^3 \\
 \hline
 & = 14
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 * \sqrt[3]{9261} \\
 \begin{array}{cc}
 2^3 & 3^3 \\
 \hline
 & = 21
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 * \sqrt[3]{59319} \\
 \begin{array}{cc}
 3^3 & 4^3 \\
 \hline
 & = 39
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 * \sqrt[3]{262144} \\
 \begin{array}{cc}
 6^3 & 7^3 \\
 \hline
 & = 64
 \end{array}
 \end{array}$$

$$* \sqrt[3]{551368}$$

$$\begin{array}{r} 83 \quad 93 \\ \hline = 82 \end{array}$$

CUBE ROOT OF NON PERFECT CUBE No.

$$* \sqrt[3]{67}$$

$$\sqrt[3]{64+3}$$

$$4 + \frac{3}{3 \times 16}$$

$$4 + \frac{1}{16}$$

$$\frac{65}{16} = 4.06$$

FORMULA:-

$$a \pm \frac{b}{3a^2}$$

$$* \sqrt[3]{132}$$

$$\sqrt[3]{125+7}$$

$$a + \frac{b}{3a^2} = 5 + \frac{7}{3 \times 25}$$

$$5 + \frac{7}{75}$$

$$= 5.09$$

$$* \sqrt[3]{210}$$

$$\sqrt[3]{216-6}$$

$$a - \frac{b}{3a^2} = 6 - \frac{6}{3 \times 36}$$

$$6 - \frac{1}{18}$$

$$6 - 0.05$$

$$5.95$$

$$I) (36)^2 =$$

$$(36)^2 \quad \textcircled{3}$$

$$= 1296 \quad \textcircled{3}$$

$$II) \begin{array}{cccc} 09 & 36 & 36 & 3 \\ \hline & & & \\ & & & \\ & & & \end{array}$$

$$= 1296$$

2) $42^2 + 32^2 = ?$

$$1764 + 1024$$

$$= 2788$$

3) $36^2 - 24^2 = ?$

$$(36+24)(36-24)$$

$$60 \times 12$$

$$= 720$$

$$a^2 - b^2 = (a+b)(a-b)$$

4) What is the square root of 3364?

3364 का वर्गमूल क्या है ?

$$\sqrt{3364}$$

$$\begin{array}{r} 5^2 \quad 6^2 \\ \quad \quad \downarrow \\ \quad \quad 36 \end{array}$$

$$52$$

$$\textcircled{58}$$

$$= 58$$

5) What is the square root of 5476?

5476 का वर्गमूल क्या है ?

$$\sqrt{5476}$$

$$\begin{array}{r} 7^2 \quad 8^2 \\ \quad \quad \downarrow \\ \quad \quad 64 \end{array}$$

$$74$$

$$\textcircled{74}$$

$$= 74$$

6) Find the positive square root of $(34^2 - 16^2)$

$(34^2 - 16^2)$ का धनात्मक वर्गमूल ज्ञात कीजिए ।

$$(34+16)(34-16)$$

$$50 \times 18$$

$$\sqrt{900}$$

$$= 30$$

* 98×102

$$(100-2)(100+2)$$

$$100^2 - 2^2$$

$$10000 - 4$$

$$= 9996$$

$$* 994 \times 1006$$

$$(1000-6)(1000+6)$$

$$(1000)^2 - 6^2$$

$$1000000 - 36$$

$$= 999964$$

$$7) \sqrt{0.00069169} = ?$$

$$\sqrt{\frac{69169}{10^8}}$$

$$\frac{1}{10^4} \sqrt{69169}$$

$$\begin{array}{r} 26^2 \quad 27^2 \\ 676 \quad 729 \end{array}$$

$$\begin{array}{r} \textcircled{263} \\ 267 \end{array}$$

$$\frac{1}{10000} \times 263$$

$$= 0.0263$$

1. $(42)^2 = ?$

- (a) 1764
- (b) 246
- (c) 1024
- (d) 1156

2. $28^2 + 36^2 = ?$

- (a) 2472
- (b) 2080
- (c) 2488
- (d) 12644

3. Find the positive square root of $(34^2 - 16^2)$
 $(34^2 - 16^2)$ का धनात्मक वर्गमूल ज्ञात कीजिए।

- (a) 40
- (b) 50
- (c) 60
- (d) 30

4. Find the value of $\sqrt{2025}$.
 $\sqrt{2025}$ का मान ज्ञात कीजिए।

- (a) 65
- (b) 25
- (c) 55
- (d) 45

5. The square root of 4624 is-
4624 का वर्गमूल है-

- (a) 62
- (b) 72
- (c) 78
- (d) 68

6. Find the value of $\sqrt{20^2 - 16^2}$

$\sqrt{20^2 - 16^2}$ का मान ज्ञात करें:

- (a) 14
- (b) 16
- (c) 18
- (d) 12

7. $\sqrt{0.00004761}$ equals /के बराबर होती है

- (a) 0.069
- (b) 0.0069
- (c) 0.00069
- (d) 0.0609

8. Cube root of 658503 is

658503 का घनमूल है

a. 83

b. 77

c. 87

d. 97

9. $\sqrt{324} + \sqrt[3]{1728} =$

a. 35

b. 50

c. 30

d. 45

10. The value of $\sqrt[3]{\sqrt{0.000064}}$ is

$\sqrt[3]{\sqrt{0.000064}}$ का मान है

a. 0.02

b. 0.2

c. 2.0

d. None of these

ANSWER SHEET

1	2	3	4	5	6	7	8	9	10
A	B	D	D	D	D	B	C	C	B