

SQUARE	VALUE	SQUARE	VALUE	SQUARE	VALUE	SQUARE	VALUE	SQUARE	VALUE
1^2	1	11^2	121	21^2	441	31^2	961	41^2	1681
2^2	4	12^2	144	22^2	484	32^2	1024	42^2	1764
3^2	9	13^2	169	23^2	529	33^2	1089	43^2	1849
4^2	16	14^2	196	24^2	576	34^2	1156	44^2	1936
5^2	25	15^2	225	25^2	625	35^2	1225	45^2	2025
6^2	36	16^2	256	26^2	676	36^2	1296	46^2	2116
7^2	49	17^2	289	27^2	729	37^2	1369	47^2	2209
8^2	64	18^2	324	28^2	784	38^2	1444	48^2	2304
9^2	81	19^2	361	29^2	841	39^2	1521	49^2	2401
10^2	100	20^2	400	30^2	900	40^2	1600	50^2	2500



SQUARE ROOTS



Unit digit

1^2	= 1
2^2	= 4
3^2	= 9
4^2	= 6
5^2	= 5
6^2	= 6
7^2	= 9
8^2	= 4
9^2	= 1

$\sqrt{5329}$ → 73 ✓
 74 ✗
(i) संख्या 5329 में कौन सी संख्या का **unit digit 9** है उसे Check करेंगे

$$\left. \begin{array}{l} 3^2 \\ 7^2 \end{array} \right\} \text{Unit digit 9}$$

$$53 \rightarrow 49 = 7^2$$

$$75^2 = 5625$$


$$6^2 = 36, \quad \sqrt{36} = 6$$

$$\sqrt{169} = 13$$

~~$$\sqrt{147} \approx 11.$$~~



36. Find?

ज्ञात कीजिये?

[A] $\sqrt{5329}$

[C] $\sqrt{58081}$

[B] $\sqrt{34596}$

[D] $\sqrt{205209}$

$20 \times 25 = 45^2$

45^3 ✓
 45^7 ✗

$\sqrt{34596} = 184$ ✗
 186 ✓

$3 \times 4 = 12$

$\sqrt{58081} =$

24 ✓
 249 ✗

24^2

DECIMAL BASED



$$43600 = 436 \times 10^2$$

$$4.36 = 436 \times 10^{-2}$$

$$0.41937 = 41937 \times 10^{-5}$$

$$0.011 \times 1.3 = 0.0143$$

$0.15 \times 0.008 = 0.0012$ (अगर (5×2) आये तो एक दशमलव कम हो जाता है)
 (अगर $(5^2 \times 2^2)$ आये तो दो दशमलव कम हो जाता है)

~~$$\# \frac{0.00187}{1.7} = \frac{0.00187}{1.7} = \frac{187}{170000} = 0.0011$$~~

$$\frac{0.00187}{1.7} = 0.0011$$

$$\frac{1}{a^n} = a^{-n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$2.12 \times 0.00008 = 0.0001696$$

lllll


$$\frac{11.5}{0.0023} = \frac{\cancel{11.5}000}{\cancel{.002}3} = 5000$$

वृत्त 1 4

$$\frac{11.5}{.0023} = 5000$$

$$a^n = \frac{1}{a^{-n}}$$

या

$$\frac{1}{a^n} = a^{-n}$$

$$5917000000 = 5917 \times 10^6$$

$$5.917 = \frac{5917}{1000} = \frac{5917}{10^3} = 5917 \times 10^{-3}$$

$$.0000684 = 684 \times 10^{-7}$$



$$23^2 = 529$$

$$2.3^2 = 5.29$$

$$.23^2 = .0529$$

$$.00023^2 = .0000000529$$

$$\sqrt{361} = 19$$

$$\sqrt{3.61} = 1.9$$

$$\sqrt{.000361} = .019$$

$$\sqrt{36.1} \approx 6.01674999$$

$$\sqrt{36} = 6$$

$$\sqrt{3.61} = \sqrt{\frac{361}{100}} = \frac{19}{10} = 1.9$$

$$\sqrt{36.1} = \sqrt{\frac{361}{10}} = \frac{19}{\sqrt{10}}$$

अप्रकृत नं.

lllll


$$13^3 = 2197$$


$$.13^3 = .002197$$

$$\sqrt[3]{2744} = 14$$

$$\sqrt[3]{0.000002744} = .014$$


$$.014^3 = .000002744$$

$$.0016^3 = .00000004096$$

$$16^3 = 4096$$

$$2.5^3 = 15.625$$

lllll

34. Evaluate 147^2 ?

147² का मूल्यांकन करें?

(RRB RPF SI 2024)

[A] ~~21629~~

[C] ~~21669~~

[B] ~~21639~~

[D] 21609 ✓

35. A 4-digit number of the form $aabb$ is a perfect square. What is the value of $a - b$?

4-अंकीय संख्या $aabb$ एक पूर्ण वर्ग है। $a - b$ का मान क्या है?

[A] 3

[B] 2

[C] 4

[D] 1

$$\begin{array}{c} \text{aa} \text{bb} \\ \text{77} \text{44} \end{array} = (88)^2$$

$$= 12^2$$

$$= 144$$

$$38^2$$

$$62^2$$

$$\begin{array}{c} 88^2 \\ = 76 \overline{) 144} \\ = 7744 \end{array}$$

$$112^2$$

37. The square root of which of the following is a rational number?

निम्नलिखित में से किसका वर्गमूल एक परिमेय संख्या है?

~~[A] 6250.49~~ $\rightarrow 8$

~~[B] 1250.49~~ $\rightarrow 3$

~~[C] 1354.24~~

~~[D] 5768.28~~

perfect square

①

$$\sqrt{2.89} = 1.7 \checkmark$$

$$\sqrt{441} = 21$$

$$\sqrt{326} = \text{Irrational}$$

38. The square root of which of the following is a rational number?

निम्नलिखित में से किसका वर्गमूल एक परिमेय संख्या है?

[A] 304704 $18 \rightarrow 9$

[B] 524.176 ✗

[C] 344.96 $\rightarrow 8$

[D] 19.4482 ✗

पूर्ववर्ति

39. The number of digits in the square root of a perfect square containing $2n$ digits is:

$2n$ अंकों वाले एक पूर्ण वर्ग के वर्गमूल में अंकों की संख्या है:

[A] n

[B] $n-1$

[C] $n+1$

[D] $2n$

$$\sqrt{\text{Perfect square with } 2n \text{ digits}} = n \text{ digits}$$

$$\sqrt{1024} = 32$$

40. If square of a number contains 17 digits, then how many digits will it have?

यदि किसी संख्या के वर्ग में 17 अंक हैं, तो उसके कितने अंक होंगे?

[A] 7

[B] 8

[C] 9

[D] 10

$$N^2 \rightarrow 17 \text{ digits}$$

$$N \rightarrow \left(\frac{17+1}{2} \right) \text{ digits}$$

41. How many natural numbers are there between $\sqrt{261}$ and $\sqrt{45109}$?

$\sqrt{261}$ और $\sqrt{45109}$ के बीच कितनी प्राकृतिक संख्याएँ हैं?

[A] 144

[B] 168

[C] 196

[D] 195

$\sqrt{261}$, 17, 18, 19, - - - - - 22, $\sqrt{45109}$

$$22 - 16 = 196 \text{ no}$$

$$\begin{aligned} 210^2 &= 44100 \\ 211^2 &= 44521 \\ 212^2 &= 44944 \\ 213^2 &= 45369 \end{aligned}$$

Cube	Cube Value	Cube	Cube Value	Cube	Cube Value
1³	1	11³	1331	21³	9261
2³	8	12³	1728	22³	10648
3³	27	13³	2197	23³	12167
4³	64	14³	2744	24³	13824
5³	125	15³	3375	25³	15625
6³	216	16³	4096	26³	17576
7³	343	17³	4913	27³	19683
8³	512	18³	5832	28³	21952
9³	729	19³	6859	29³	24389
10³	1000	20³	8000	30³	27000

lllll

CUBE ROOTS



**Unit
digit**

$$(\dots 1^3) = 1$$

$$(\dots 2^3) = 8$$

$$(\dots 3^3) = 7$$

$$(\dots 4^3) = 4$$

$$(\dots 5^3) = 5$$

$$(\dots 6^3) = 6$$

$$(\dots 7^3) = 3$$

$$(\dots 8^3) = 2$$

$$(\dots 9^3) = 9$$

❖ $\sqrt[3]{493039}$ (i) संख्या 493039 में कौन सी संख्या का unit digit 9 है उसे Check करेंगे

$$9^3 \rightarrow \text{Unit digit 9}$$

$$\sqrt[3]{493039} = 79 \checkmark$$

$$343 = 7^3$$

lllll

42. Find cube root?

[A] $\sqrt[3]{-17576} = -26$

[B] $\sqrt[3]{493039}$

[C] $\sqrt[3]{1771561} = 121$ ✓

[D] $\sqrt[3]{681472} = 88$ ✓

$$\sqrt{64} = 8$$

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

$$\sqrt{-64} = 8i$$

$$\sqrt[3]{-64} = -4$$

$$1728 = 12^3$$

$$512 = 8^3$$

$$\sqrt{-1} = i$$