

Short tricks to calculate square roots

For this, at first, you should know the squares of numbers from 1 to 10, which is an easy task.

■ Number	Square
1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81
10	100

Now, you just have to analyze the unit digits of both the number and the square. This way you will get to know the last digit of the square root by just looking at the unit digit of the given square number.

Square Number Unit Digit	Square Root number Unit Digit
1	1
2	4
3	9
4	6
5	5
6	6
7	9
8	4
9	1
10	0

Do you find anything interesting from the above information?

Unit digit of square root numbers of the number

- ending with 1 and 9 is 1.
- ending with 3 and 7 is 9.
- ending with 4 and 6 is 6.

- ending with 5 and 0 is 5 and 0 respectively or the same as that of the number.

Now, let`s see how remembering the unit digit helps in helpful in calculating the squares.

Steps to calculate the square numbers

Step 1: Divide the number into two parts. Make sure that on the right side of the part, there must be two digits.

Step 2: Check out the unit digit of the right side and find the unit digit of square root number following the trick in the above table and write down the square root of the number smaller than or equal to the left digit.

Step 3: Now, if you got two digits at the right side, then there will be two cases:

1. If left digit X its successive digit > left part, then smaller digit will be taken on the right side.

2. If left digit X its successive digit < left part, then larger digit will be there on the right side.

Let`s take some examples to have the better understanding of all the above-written steps.

Example 1: Find the square root of **441**.

Sol. **Step 1:** Splitting it into two parts, it is 4 and 41.

$$\begin{array}{cc} 4 & 41 \\ \downarrow & \downarrow \end{array}$$

Step 2: $[(2)^2 = 4]$ 1 or 9 (See above table)

Step 3: 2 1 ($2 \times 3 > 4$, so smaller digit will be taken)

Answer: 21

Example 2: Find the square root of **1369**.

Sol. **Step 1:** Splitting it into two parts, it is 13 and 69.

$$13 \quad 69$$

↓ ↓

Step 2: $[(3)^2 < 13]$ 3 or 7 (See above table)

Step 3: **3 7 (3 x 4 < 13 , so larger digit will be taken)**

Answer: 37

Example 3: Find the square root of **11236**.

Sol. Step 1: Splitting it into two parts, it is 112 and 36.

112 36

↓ ↓

Step 2: $[(10)^2 < 112]$ 4 or 6 (See above table)

Step 3: **10 6 (10 x 11 < 112 , so larger digit will be taken)**

Answer: 106

Example 4: Find the square root of **43264**.

Sol. Step 1: Splitting it into two parts, it is 432 and 64.

432 64

↓ ↓

Step 2: $[(20)^2 < 432]$ 2 or 8 (See above table)

Step 3: **20 8 (20 x 21 < 432 , so larger digit will be taken)**

Answer: 208

Example 5: Find the square root of **50625**.

Sol. Step 1: Splitting it into two parts, it is 506 and 25.

506 25

↓ ↓

Step 2: $[(22)^2 < 506]$ 5 (See above table)

Step 3: **22 5**

Answer: 225

Example 6: Find the square root of **91204**.

Sol. **Step 1:** Splitting it into two parts, it is 912 and 04.

912	04
↓	↓

Step 2: $[(30)^2 < 912]$ 2 or 8 (See above table)

Step 3: **30** **2 (30 x 31 > 912 , so smaller digit will be taken)**

Answer: 302

In this way, you can calculate the square roots of the number easily. You don't have to write all the steps in the exam. Just calculate the steps in your mind and answer quickly.