



NCERT Solutions for class 8 maths squares and square roots Ex-6.4

Q1. Find the square roots of each of the following numbers by Division method:

(i) 2304 (ii) 4489

(iii) 3481 (iv) 529

(v) 3249 (vi) 1369

(vii) 5776 (viii) 7921

(ix) 576 (x) 1024

(xi) 3136 (xii) 900

Ans: (i) 2304

Hence, the square root of 2304 is 48.

$$\begin{array}{r}
 48 \\
 4 \overline{) 23 \ 04} \\
 \underline{23 \ 04} \\
 0
 \end{array}$$

(ii) 4489

Hence, the square root of 4489 is 67.

$$\begin{array}{r}
 67 \\
 6 \overline{) 44 \ 89} \\
 \underline{44 \ 89} \\
 0
 \end{array}$$

(iii) 3481

Hence, the square root of 3481 is 59.

$$\begin{array}{r}
 59 \\
 5 \overline{) 34 \ 81} \\
 \underline{34 \ 81} \\
 0
 \end{array}$$

(iv) 529

Hence, the square root of 529 is 23.

		25
2		$\overline{5\ 29}$
		- 4
43		$\overline{129}$
		- 129
		$\overline{0}$

(v) 3249

Hence, the square root of 3249 is 57.

		57
5		$\overline{32\ 49}$
		- 25
107		$\overline{749}$
		- 749
		$\overline{0}$

(vi) 1369

Hence, the square root of 1369 is 37.

		37
3		$\overline{13\ 69}$
		- 9
67		$\overline{469}$
		- 469
		$\overline{0}$

(vii) 5776

Hence, the square root of 5776 is 76.

		76
7		$\overline{57\ 76}$
		- 49
146		$\overline{876}$
		- 876
		$\overline{0}$

(viii) 7921

Hence, the square root of 7921 is 89.

		89
8		$\overline{79\ 21}$
		- 64
169		$\overline{1521}$
		- 1521
		$\overline{0}$

$$\sqrt{\quad}$$

(ix) 576

Hence, the square root of 576 is 24.

$$\begin{array}{r} 24 \\ 2 \overline{) 576} \\ \underline{- 4} \\ 176 \\ \underline{- 176} \\ 0 \end{array}$$

(x) 1024

Hence, the square root of 1024 is 32.

$$\begin{array}{r} 32 \\ 3 \overline{) 1024} \\ \underline{- 9} \\ 124 \\ \underline{- 124} \\ 0 \end{array}$$

(xi) 3136

Hence, the square root of 3136 is 56.

$$\begin{array}{r} 56 \\ 5 \overline{) 3136} \\ \underline{- 25} \\ 636 \\ \underline{- 636} \\ 0 \end{array}$$

(xii) 900

Hence, the square root of 900 is 30.

$$\begin{array}{r} 30 \\ 3 \overline{) 900} \\ \underline{- 9} \\ 000 \\ \underline{- 000} \\ 0 \end{array}$$

Q2. Find the number of digits in the square root of each of the following numbers (without any calculation):

(i) 64

(iii) 4489

(iv) 27225

(v) 390625

Ans: (i) Here, 64 contains two digits which is even.

Therefore, number of digits in square root =

$$\frac{n}{2} = \frac{2}{2} = 1$$

(ii) Here, 144 contains three digits which is odd.

Therefore, number of digits in square root =

$$\frac{n+1}{2} = \frac{3+1}{2} = \frac{4}{2} = 2$$

(iii) Here, 4489 contains four digits which is even.

Therefore, number of digits in square root =

$$\frac{n}{2} = \frac{4}{2} = 2$$

(iv) Here, 27225 contains fivr digits which is odd.

Therefore, number of digits in square root =

$$\frac{n}{2} = \frac{5+1}{2} = 3$$

(v) Here, 390625 contains six digits which is even.

Therefore, number of digits in square root =

$$\frac{n}{2} = \frac{6}{2} = 3$$

Q3. Find the square root of the following decimal numbers:

(i) 2.56

(ii) 7.29

(iii) 51.84

(iv) 42.25

(v) 31.36

Ans: (i) 2.56

Hence, the square root of 2.56 is 1.6.

	1.6
1	$\overline{2} \cdot \overline{56}$
	- 1
26	156
	- 156
	0

(ii) 7.29

Hence, the square root of 7.29 is 2.7.

	2.7
2	$\overline{7} \cdot \overline{29}$
	- 4
47	329
	- 329
	0

(iii) 51.84

Hence, the square root of 51.84 is 7.2.

	7.2
7	$\overline{51} \cdot \overline{84}$
	- 49
142	284
	- 284
	0

(iv) 42.25

Hence, the square root of 42.25 is 6.5.

	6.5
6	$\overline{42} \cdot \overline{25}$
	- 36
125	625
	- 625
	0

(v) 31.36

Hence, the square root of 31.36 is 5.6.

		5.6
5		<hr/> 31.36
		- 25
106		<hr/> 636
		- 636
		<hr/> 0

Q4. Find the least number which must be subtracted from each of the following numbers so as to get a perfect square. Also, find the square root of the perfect square so obtained:

(i) 402

(ii) 1989

(iii) 3250

(iv) 825

(v) 4000

Ans: (i) 402

We know that, if we subtract the remainder from the number, we get a perfect square.

Here, we get remainder 2. Therefore 2 must be subtracted from 402 to get a perfect square.

		20
2		<hr/> 4 02
		- 4
40		<hr/> 02
		- 00
		<hr/> 2

$$\therefore 402 - 2 = 400$$

Hence, the square root of 400 is 20.

		20
2		<hr/> 4 00
		- 4
00		<hr/> 00
		- 00
		<hr/> 0

(ii) 1989

We know that, if we subtract the remainder from the number, we get a perfect square.

$$\begin{array}{r} 44 \\ 4 \overline{) 1989} \\ \underline{- 16} \\ 84 \\ \underline{- 336} \\ 53 \end{array}$$

Here, we get remainder 53. Therefore 53 must be subtracted from 1989 to get a perfect square.

$$\therefore 1989 - 53 = 1936$$

Hence, the square root of 1936 is 44.

$$\begin{array}{r} 44 \\ 4 \overline{) 1936} \\ \underline{- 16} \\ 84 \\ \underline{- 336} \\ 0 \end{array}$$

(iii) 3250

We know that, if we subtract the remainder from the number, we get a perfect square.

$$\begin{array}{r} 57 \\ 5 \overline{) 3250} \\ \underline{- 25} \\ 107 \\ \underline{- 749} \\ 1 \end{array}$$

Here, we get remainder 1. Therefore 1 must be subtracted from 3250 to get a perfect square.

$$\therefore 3250 - 1 = 3249$$

Hence, the square root of 3249 is 57.

$$\begin{array}{r} 57 \\ 5 \overline{) 3249} \\ \underline{- 25} \\ 107 \\ \underline{- 749} \\ 0 \end{array}$$

(iv) 825

We know that, if we subtract the remainder from the number, we get a perfect square.

		28
2		<u>8 25</u>
		- 4
48		<u>425</u>
		- 384
		<u>41</u>

Here, we get remainder 41. Therefore 41 must be subtracted from 825 to get a perfect square.

$$\therefore 825 - 41 = 784$$

Hence, the square root of 784 is 28.

		28
2		<u>7 84</u>
		- 4
48		<u>384</u>
		- 384
		<u>0</u>

(v) 4000

We know that, if we subtract the remainder from the number, we get a perfect square.

		63
6		<u>40 00</u>
		- 36
123		<u>400</u>
		- 369
		<u>31</u>

Here, we get remainder 31. Therefore 31 must be subtracted from 4000 to get a perfect square.

$$\therefore 4000 - 31 = 3969$$

Hence, the square root of 3969 is 63.

		63
6		<u>39 69</u>
		- 36
123		<u>369</u>
		- 369
		<u>0</u>

Q5. Find the least number which must be added to each of the following numbers so as to get a perfect square. Also, find the square root of the perfect square so obtained:

(i) 525

(ii) 1750

(iii) 252

(iv) 1825

(v) 6412

Ans: (i) 525

Since remainder is 41.

Therefore $22^2 < 525$

Next perfect square number $23^2 = 529$

Hence, number to be added

$$= 529 - 525 = 4$$

$$\therefore 525 + 4 = 529$$

Hence, the square root of 529 is 23.

2	$\begin{array}{r} 22 \\ 5\overline{)25} \\ -4 \\ \hline 125 \end{array}$
42	$\begin{array}{r} -84 \\ \hline 41 \end{array}$

(ii) 1750

Since remainder is 69.

Therefore $41^2 < 1750$

Next perfect square number $42^2 = 1764$

Hence, number to be added

$$= 1764 - 1750 = 14$$

$$\therefore 1750 + 14 = 1764$$

Hence, the square root of 1764 is 42.

4	$\begin{array}{r} 41 \\ 17\overline{)50} \\ -16 \\ \hline 150 \end{array}$
81	$\begin{array}{r} -81 \\ \hline \end{array}$

(iii) 252

Since remainder is 27.

Therefore $15^2 < 252$

Next perfect square number $16^2 = 256$

Hence, number to be added

$$= 256 - 252 = 4$$

$$\therefore 252 + 4 = 256$$

Hence, the square root of 256 is 16.

	15
1	<u>2 52</u>
	- 1
25	<u>152</u>
	- 125
	<u>27</u>

(iv) 1825

Since remainder is 61.

Therefore $42^2 < 1825$

Next perfect square number $43^2 = 1849$

Hence, number to be added = $1849 - 1825 = 24$

$$\therefore 1825 + 24 = 1849$$

Hence, the square root of 1849 is 43.

	42
4	<u>18 25</u>
	- 16
82	<u>225</u>
	- 164
	<u>61</u>

(v) 6412

Since remainder is 12.

Therefore $80^2 < 6412$

Next perfect square number $81^2 = 6561$

Hence, number to be added

$$= 6561 - 6412 = 149$$

$$\therefore 6412 + 149 = 6561$$

Hence, the square root of 6561 is 81.

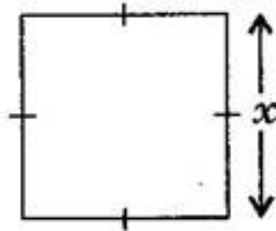
	80
8	<u>64 12</u>
	- 64
160	<u>0012</u>
	- 0000
	<u>12</u>

Q6. Find the length of the side of a square whose area is 441 m^2 ?

Ans: Let the length of side of a square be x meter.

$$\text{Area of square} = (\text{side})^2 = x^2$$

According to question,



$$x^2 = 441$$

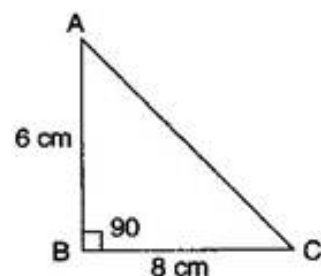
$$\Rightarrow x = \sqrt{441} = \sqrt{3 \times 3 \times 7 \times 7}$$

$$= 3 \times 7$$

$$\Rightarrow x = 21 \text{ m}$$

Hence, the length of side of a square is 21 m.

Q7. In a right triangle ABC, $\angle B = 90^\circ$.



(i) If $AB = 6 \text{ cm}$, $BC = 8 \text{ cm}$, find AC .

(ii) If $AC = 13 \text{ cm}$, $BC = 5 \text{ cm}$, find AB .

Ans: (a) Using Pythagoras theorem,

$$AC^2 = AB^2 + BC^2$$

$$\therefore AC^2 = (6)^2 + (8)^2$$

$$\Rightarrow \mu = (u) + (v)$$

$$\Rightarrow AC^2 = 36 + 84 = 100$$

$$\Rightarrow AC = 10 \text{ cm}$$

(b) Using Pythagoras theorem,

$$AC^2 = AB^2 + BC^2$$

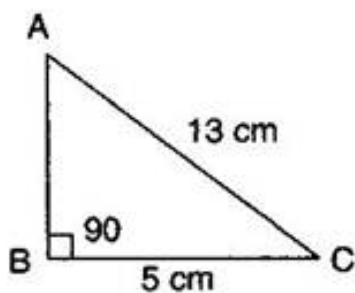
$$\Rightarrow (13)^2 = AB^2 + (5)^2$$

$$\Rightarrow 169 = AB^2 + 25$$

$$\Rightarrow AB^2 = 169 - 25$$

$$\Rightarrow AB^2 = 144$$

$$\Rightarrow AB = 12 \text{ cm}$$



Q8. A gardener has 1000 plants. He wants to plant these in such a way that the number of rows and number of columns remain same. Find the minimum number of plants he needs more for this.

Ans: Here, plants = 1000

Since remainder is 39.

Therefore $31^2 < 1000$

Next perfect square number $32^2 = 1024$

Hence, number to be added

$$= 1024 - 1000 = 24$$

$$\therefore 1000 + 24 = 1024$$

Hence, the gardener required 24 more plants.

3	31
61	<div style="border-top: 1px solid black; border-bottom: 1px solid black;"> <div style="border-bottom: 1px solid black;">10 00</div> <div style="border-bottom: 1px solid black;">- 9</div> <div style="border-bottom: 1px solid black;">100</div> <div style="border-bottom: 1px solid black;">- 61</div> <div>39</div> </div>

Q9. There are 500 children in a school. For a P.T. drill they have to stand in such a manner that the number of rows is equal to number of columns. How many children would be left out in this arrangement?

Ans: Here, Number of children = 500

By getting the square root of this number, we get,

In each row, the number of children is 22.

And left out children are 16.

$$\begin{array}{r}
 22 \\
 \hline
 2 \quad \overline{5 \ 00} \\
 \quad - 4 \\
 \hline
 42 \quad \overline{100} \\
 \quad - 84 \\
 \hline
 \quad \quad 16
 \end{array}$$

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