



CLASS VIII: Maths
Chapter 5: Squares and Square roots

Questions and Solutions | Exercise 5.4 - NCERT Books

Q1 :

Find the square root 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

Answer :

(i) The square root of 2304 can be calculated as follows.

	48
4	$\overline{2304}$ -16
88	704 704
	0

$$\therefore \sqrt{2304} = 48$$

(ii) The square root of 4489 can be calculated as follows.

	67
6	$\overline{4489}$ -36
127	889 889
	0

$\therefore \sqrt{4489} = 67$

(iii) The square root of 3481 can be calculated as follows.

	59
5	$\overline{3481}$ -25
109	981 981
	0

Therefore, $\sqrt{3481} = 59$

(iv) The square root of 529 can be calculated as follows.

	23
2	$\overline{529}$ -4
43	129 129



	0
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$\therefore \sqrt{529} = 23$

(v) The square root of 3249 can be calculated as follows.

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

\therefore

Q2 :

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

(i) 64 (ii) 144

(iii) 4489 (iv) 27225

(v) 390625

Answer :

(i) By placing bars, we obtain

$64 = \overline{64}$

Since there is only one bar, the square root of 64 will have only one digit in it.



(ii) By placing bars, we obtain

$$144 = \overline{1\ 44}$$

Since there are two bars, the square root of 144 will have 2 digits in it.

(iii) By placing bars, we obtain

$$4489 = \overline{44\ 89}$$

Since there are two bars, the square root of 4489 will have 2 digits in it.

(iv) By placing bars, we obtain

$$27225 = \overline{27\ 22\ 5}$$

Since there are three bars, the square root of 27225 will have three digits in it.

(v) By placing the bars, we obtain

$$390625 = \overline{39\ 06\ 25}$$

Since there are three bars, the square root of 390625 will have 3 digits in it.

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

Answer :

(i) The square root of 2.56 can be calculated as follows.

	1.6
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1	$\overline{2.56}$ -1
26	156 156
	0

$\therefore \sqrt{2.56} = 1.6$

(ii) The square root of 7.29 can be calculated as follows.

	2.7
2	$\overline{7.29}$ -4
47	329 329
	0

$\therefore \sqrt{7.29} = 2.7$

(iii) The square root of 51.84 can be calculated as follows.

	7.2
7	$\overline{51.84}$ -49
142	284 284
	0

$$\therefore \sqrt{51.84} = 7.2$$

(iv) The square root of 42.25 can be calculated as follows.

	6.5
6	$\overline{42.25}$ -36
125	625 625
	0

$$\therefore \sqrt{42.25} = 6.5$$

(v) The square root of 31.36 can be calculated as follows.

	5.6
5	$\overline{31.36}$ -25
106	636 636
	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

Answer :

(i) The square root of 402 can be calculated by long division method as follows.

	20
2	$\overline{402}$ -4
40	02 00
	2

The remainder is 2. It represents that the square of 20 is less than 402 by 2. Therefore, a perfect square will be obtained by subtracting 2 from the given number 402.

Therefore, required perfect square = $402 - 2 = 400$

And, $\sqrt{400} = 20$

(ii) The square root of 1989 can be calculated by long division method as follows.

	44
4	$\overline{1989}$ -16
84	389 336
	53

The remainder is 53. It represents that the square of 44 is less than 1989 by 53. Therefore, a perfect square will be obtained by subtracting 53 from the given number 1989.

Therefore, required perfect square = $1989 - 53 = 1936$

And, $\sqrt{1936} = 44$

(iii) The square root of 3250 can be calculated by long division method as follows.

	57
5	$\overline{3250}$ -25
107	750 749
	1

The remainder is 1. It represents that the square of 57 is less than 3250 by 1. Therefore, a perfect square can be obtained by subtracting 1 from the given number 3250.

Therefore, required perfect square = $3250 - 1 = 3249$

And, $\sqrt{3249} = 57$

(iv) The square root of 825 can be calculated by long division method as follows.

	28
2	$\overline{825}$ -4
48	425 384
	41



The remainder is 41. It represents that the square of 28 is less than 825 by 41. Therefore, a perfect square can be calculated by subtracting

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

Answer :

(i) The square root of 525 can be calculated by long division method as follows.

	22
2	$\overline{525}$ -4
42	125 84
	41

The remainder is 41.

It represents that the square of 22 is less than 525.

Next number is 23 and $23^2 = 529$

Hence, number to be added to 525 = $23^2 - 525 = 529 - 525 = 4$

The required perfect square is 529 and $\sqrt{529} = 23$

(ii) The square root of 1750 can be calculated by long division method as follows.

	41
4	$\overline{1750}$ -16
81	150 81
	69

The remainder is 69.

It represents that the square of 41 is less than 1750.

The next number is 42 and $42^2 = 1764$

Hence, number to be added to 1750 = $42^2 - 1750 = 1764 - 1750 = 14$

The required perfect square is 1764 and $\sqrt{1764} = 42$

(iii) The square root of 252 can be calculated by long division method as follows.

	15
1	$\overline{252}$ -1
25	152 125
	27

The remainder is 27. It represents that the square of 15 is less than 252.

The next number is 16 and $16^2 = 256$



Hence, number to be added to $252 = 16^2 - 252 = 256 - 252 = 4$

The required perfect square is 256 and $\sqrt{256} = 16$

(iv) The square root of 1825 can be calculated by long division method as follows.

	42
4	$\overline{1825}$ -16
82	225 164
	61

The remainder is 61. It represents that the square of 42

Q6 :

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

Answer :

Let the length of the side of the square be $x \text{ m}$.

$$\text{Area of square} = (x)^2 = 441 \text{ m}^2$$

$$x = \sqrt{441}$$

The square root of 441 can be calculated as follows.

	21
2	$\overline{441}$ -4



41	041
	41
	0

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

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

Q7 :

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

- (a) If AB = 6 cm, BC = 8 cm, find AC
(b) If AC = 13 cm, BC = 5 cm, find AB

Answer :

(a) $\triangle ABC$ is right-angled at B.

Therefore, by applying Pythagoras theorem, we obtain

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

$$AC^2 = (6 \text{ cm})^2 + (8 \text{ cm})^2$$

$$AC^2 = (36 + 64) \text{ cm}^2 = 100 \text{ cm}^2$$

$$AC = (\sqrt{100}) \text{ cm} = (\sqrt{10 \times 10}) \text{ cm}$$

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

(b) $\triangle ABC$ is right-angled at B.

Therefore, by applying Pythagoras theorem, we obtain

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



$$(13 \text{ cm})^2 = (AB)^2 + (5 \text{ cm})^2$$

$$AB^2 = (13 \text{ cm})^2 - (5 \text{ cm})^2 = (169 - 25) \text{ cm}^2 = 144 \text{ cm}^2$$

$$AB = (\sqrt{144}) \text{ cm} = (\sqrt{12 \times 12}) \text{ cm}$$

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

Q8 :

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

Answer :

It is given that the gardener has 1000 plants. The number of rows and the number of columns is the same.

We have to find the number of more plants that should be there, so that when the gardener plants them, the number of rows and columns are same.

That is, the number which should be added to 1000 to make it a perfect square has to be calculated.

The square root of 1000 can be calculated by long division method as follows.

	31
3	$\overline{1000}$ - 9
61	100 61
	39

The remainder is 39. It represents that the square of 31 is less than 1000.

The next number is 32 and $32^2 = 1024$

Hence, number to be added to 1000 to make it a perfect square

$$= 32^2 - 1000 = 1024 - 1000 = 24$$

Thus, the required number of plants is 24.

Q9 :

These 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?

Answer :

It is given that there are 500 children in the school. They have to stand for a P.T. drill such that the number of rows is equal to the number of columns.

The number of children who will be left out in this arrangement has to be calculated. That is, the number which should be subtracted from 500 to make it a perfect square has to be calculated.

The square root of 500 can be calculated by long division method as follows.

	22
2	$\overline{500}$ -4
42	100 84
	16

The remainder is 16.



It shows that the square of 22 is less than 500 by 16. Therefore, if we subtract 16 from 500, we will obtain a perfect square.

Required perfect square = $500 - 16 = 484$

Thus, the number of children who will be left out is 16.

