CBSE NCERT Solutions for Class 8 mathematics Chapter 6

Exercise

Q.1. Find the square root of the following number by division method.
2304
48

Solution: The square root of 2304 can be calculated as follows. 1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

	48
4	$\overline{23}\,\overline{04}$
	−16
88	704
	704
	0

$\therefore 2304=48.$

Q.2. Find the square root of the following number by division method.
4489

67

Solution: The square root of 4489 can be calculated as follows. 1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

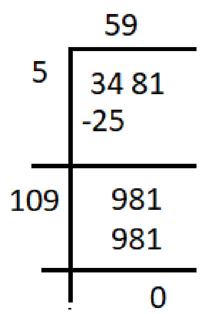
	67
6	$\overline{44}\,\overline{89}$
	−36
127	889
	−889
	0

$\therefore 4489=67$

Q.3. Find the square root of the following number by division method.
3481
59

Solution: The square root of 3481 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.



Therefore, 3481=59

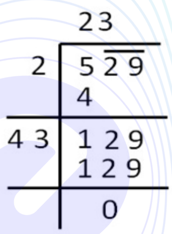
Q.4. Find the square root of the following number by division method.
529

23

Solution: The square root of 529 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.

2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

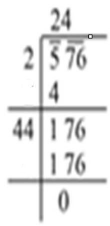


$\therefore$ 529=23

Q.5. Find the square root of the following number by division method.
576

24

Solution: The square root of 576 can be calculated as follows. 1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.



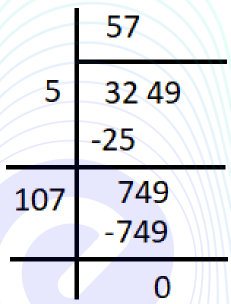
∴576=24

Q.6. Find the square root of the following number by division method.
3249

57

Solution: The square root of 3249 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.



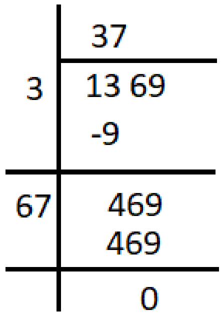
∴3249=57

Q.7. Find the square root the following number by division method.
1369

37

Solution: The square root of 1369 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

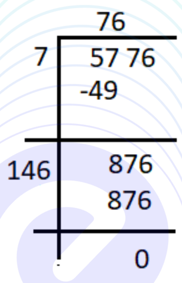


$\therefore 1369=37$

Q.8. Find the square root the following number by division method.
5776
76

Solution: The square root of 5776 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.



$\therefore 5776=76$

Q.9. Find the square root of the following number by division method.
7921
89

Solution: The square root of 7921 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess the largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

```
        89
     ------
  8 | 79 21
    | -64
    ------
169 | 1521
    | 1521
    ------
    |    0
```

∴ 7921=89

Q.10. Find the square root of the following number by division method.
1024
32

Solution: The square root of 1024 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess a largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

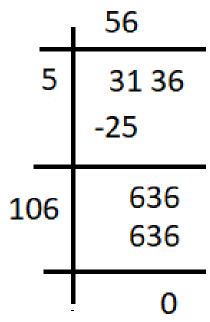
```
       32
    ------
 3 | 10 24
   |  9
   ------
62 |  124
   |  124
   ------
   |    0
```

∴ 1024=32

Q.11. Find the square root of the following number by division method.
3136
56

Solution: The square root of 3136 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess a largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.

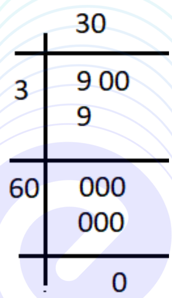


∴ 3136=56.

Q.12. Find the square root of the following number by division method.
900
30

Solution: The square root of 900 can be calculated as follows.

1. Place a bar over every pair of digits starting from the one's digit.
2. Find the largest number whose square is less than or equal to the number under the left-most bar. Take this number as the divisor and the number under the left-most bar as the dividend. Divide and get the remainder.
3. Bring down the number under the next bar to the right of the remainder.
4. Double the quotient and enter it with a blank on its right.
5. Guess a largest possible digit to fill the blank which also becomes the new digit in the quotient such that when the new digit is multiplied to the new quotient the product is less than or equal to the dividend.



∴ 900=30

Q.13. Find the number of digits in the square root of the following number (without any calculation).
64

Solution: Given, 64.

By placing bars, we obtain
64=64-

The number of digits of square root = The number of bars in the given number.
Since there is only one bar, the square root of 64 will have only one digit in it. Hence, there will be only one digit in the square root of 64.

Q.14. Find the number of digits in the square root of the following number (without any calculation).
144

Solution: By placing bars, we obtain

144=1¯ 44¯

The number of digits of square root = The number of bars in the given number.
Since there are two bars, the square root of 144 will have two digits in it. Hence, the square root of 144 will have 2 digits in it.

Q.15. Find the number of digits in the square root of the following number (without any calculation).

4489

Solution: By placing bars, we obtain
4489=44- 89-

The number of digits of square root = The number of bars in the given number.
Since there are two bars, the square root of 4489 will have two digits in it.

Hence, the square root of 4489 will have 2 digits in it.

Q.16. Find the number of digits in the square root of the following number (without any calculation).
27225

Solution: Given, 27225.

By placing bars, we obtain
27225=2- 72- 25-

The number of digits of square root = The number of bars in the given number.
Since there are three bars, the square root of 27225 will have three digits in it. Hence, the square root of 27225 will have three digits in it.

Q.17. Find the number of digits in the square root of the following number (without any calculation).
390625

Solution: Given, 390625.

To find the square root of this number, place a bar over every pair of the digit of the number starting from the rightmost side.

By placing the bars, we obtain
390625=39- 06- 25- The number of digits of square root = The number of bars in the given number.
Since there are three bars, the square root of 64 will have three digits in it. Hence, the square root of 390625 will have 3 digits in it.

Q.18. Find the square root of the following decimal number.
2.56

1.6

Solution: The square root of 2.56 can be calculated as follows.

1. To find the square root of a decimal number, we put bars on the integral part of the number in usual manner. And place bars on the decimal point on every pair of digits beginning with the first decimal place. Proceed as usual.

2. Take the number having the left most bar as divisor and the number under the left most bar as the dividend. Divide and get the remainder. 3. If the remainder is not zero, write the number under the next bar to the right of this remainder. 4. Double the divisor and enter it with a blank on its right.Put a decimal point in the quotient accordingly. 5. Continue the process until we get the remainder as zero.

	1.6
1	**2.56** **1**
26	**156** **156**
	0

∴2.56=1.6

Q.19. Find the square root of the following decimal numbers.

7.29

2.7

Solution: The square root of 7.29 can be calculated as follows.

	2.7
2	7-. 29- -4
47	329 -329
	0

∴7.29=2.7

Q.20. Find the square root of the following decimal numbers.

51.84

7.2

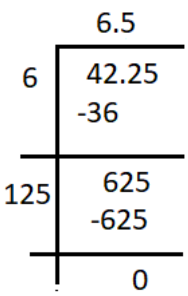
Solution: The square root of 51.84 can be calculated as follows.

	7.2
7	51-.84- -49
142	284 -284
	0

$\therefore \sqrt{51.84}=7.2$

Q.21. Find the square root of the following decimal numbers.
42.25
6.5

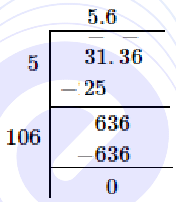
Solution: The square root of 42.25 can be calculated as follows.



$\therefore \sqrt{42.25}=6.5$

Q.22. Find the square root of 31.36.
5.6

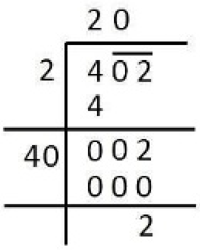
Solution: The square root of 31.36 can be calculated as follows.



$\therefore \sqrt{31.36}=5.6$

Q.23. 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.
402

Solution: The square root of 402 can be calculated by long division method as follows.



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, 400=20

Q.24. Find the least number which must be subtracted from the following number to get a perfect square. Also, find the square root of the perfect square so obtained.
1989

Solution: The square root of 1989 can be calculated by long division method as follows.

4)19 89 (4 16 84) 389 (4 336 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 undefined.
Therefore, required perfect square =1989-53=1936
And, 1936=44

Q.25. Find the least number which must be subtracted from the following number so as to get a perfect square. Also, find the square root of the perfect square so obtained.
3250

Solution: The square root of 3250 can be calculated by long division method as follows.

5) 32 50 (5 25 107)750 (7 749 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, 3249=57

Q.26. Find the least number which must be subtracted from the following number so as to get a perfect square. Also, find the square root of the perfect square so obtained.
825

Solution: The square root of 825 can be calculated by long division method as follows.

2) 8 25 (2 4 48)425(8 384 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 41 from the given number 825.
Therefore, required perfect square =825-41=784
And, 784=28

Q.27. Find the least number which must be subtracted from the following number so as to get a perfect square. Also, find the square root of the perfect square so obtained.
4000

Solution: The square root of 4000 can be calculated by long division method as follows.

6) 40 00 (6 36 123)400(3 369 31

The remainder is 31. It represents that the square of 63 is less than 4000 by 31. Therefore, a perfect square can be obtained by subtracting 31 from the given number 4000.
Therefore, required perfect square =4000-31=3969
And, 3969=63

Q.28. Find the least number which must be added to the following numbers so as to get a perfect square. Also, find the square root of the perfect square so obtained.
525

Solution: The square root of 525 can be calculated by long division method as follows.

2) 5 25 (2 4 42) 125 (2 84 41

It represents that the square of 22 is less than 525.
The remainder is 41. Next number is 23 and 232=529
Hence, number to be added to 525 is =529-525=4
The required perfect square is 529 and 529=23

Q.29. Find the least number which must be added to the following number to get a perfect square. Also, find the square root of the perfect square so obtained.
1750

Solution: The square root of 1750 can be calculated by long division method as follows.

4)17 50(4 16 81) 150(1 81 69

The remainder is 69.
It represents that the square of 41 is less than 1750.
The next number is 42 and 422=1764
Hence, number to be added to 1750=422-1750=1764-1750=14
The required perfect square is 1764 and 1764=42

Q.30. 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.
252

Solution: The square root of 252 can be calculated by long division method as follows.

1) 2 52 (1 1 25)152 (5 125 27

The remainder is 27. It represents that the square of 15 is less than 252.
The next number is 16 and 162=256
Hence, number to be added to 252=162-252=256-252=4
The required perfect square is 256 and 256=16

Q.31. 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.
1825

Solution: The square root of 1825 can be calculated by long division method as follows.

4) 18 25 (4 16 82) 225 (2 164 61

The remainder is 61. It represents that the square of 42 is less than 1825.
The next number is 43 and 432=1849
Hence, number to be added to 1825=432-1825=1849-1825=24
The required perfect square is 1849 and 1849=43

Q.32. 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.
6412

Solution: The square root of 6412 can be calculated by long division method as follows.

8) 64 12 (8 64 12

The remainder is 12. It represents that the square of 80 is less than 6412.
The next number is 81 and 812=6561
Hence, number to be added to 6412=812-6412=6561-6412=149
The required perfect square is 6561 and 6561=81

Q.33. Find the length of the side of a square whose area is 441 m2.

Solution: Let the length of the side of the square be x m.
Area of square =x2=441 m2
x=441
The square root of 441 can be calculated as follows.

2) 4 41 (2 4 41)041(1 41 0

∴x=21 m
Hence, the length of the side of the square is 21 m.

Q.34. In a right triangle ABC,∠B=90°.
If AB=6 cm, BC=8 cm find AC ?

Solution: ΔABC is right-angled at B.
Therefore, by applying Pythagoras theorem, we obtain
AC2=AB2+BC2
AC2=6 cm2+8 cm2
AC2=36+64 cm2=100 cm2
AC=100 cm=10×10 cm
AC=10 cm

Q.35. In a right triangle ABC,∠B=90o.

If AC=13 cm,BC=5 cm, find AB

Solution: ΔABC is right-angled at B.
Therefore, by applying Pythagoras theorem, we obtain
AC2=AB2+BC2
13 cm2=AB2+5 cm2
AB2=13 cm2-5 cm2=169-25 cm2=144 cm2
AB=144 cm=12×12 cm
AB=12 cm

Q.36. 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.

Solution: 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.

3) 10 00 (3 9 61) 100 (1 61 39

The remainder is 39. It represents that the square of 31 is less than 1000.
The next number is 32 and 322=1024
Hence, number to be added to 1000 to make it a perfect square
=322-1000=1024-1000=24
Thus, the required number of plants is 24.

Q.37. 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?

Solution: It is given that there are 500 children in the school. They have to stand for a prove that 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.

2) 5 00 (2 4 42)100(2 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.

Q.38. What will be the unit digit of the square of 81?

Solution: Given: 81

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 1, its square will end with the unit digit of the multiplication 1×1=1 i.e. 1. Hence, the unit digit of the square of 81 is 1.

Q.39. What will be the unit digit of the square of the following number
272

Solution: Given number: 272

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.
As the given number has its unit's place digit as 2, its square will end with the unit digit of the multiplication 2×2=4 i.e., 4.

Hence, the unit digit is 4.

Q.40. What will be the unit digit of the square of the following number
799

Solution: Given: 799

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 9, its square will end with the unit digit of the multiplication 9×9=81 i.e., 1. Hence, the unit digit is 1.

Q.41. What will be the unit digit of the square of the following number
3853

Solution: Given: 3853

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 3, its square will end with the unit digit of the multiplication 3×3=9 i.e., 9.

Hence, the unit digit is 9.

Q.42. What will be the unit digit of the square of the following number?
12796

Solution: Given: 12796

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 6, its square will end with the unit digit of the multiplication 6×6=36 i.e., 6. Hence, the unit digit is 6.

Q.43. What will be the unit digit of the square of the following number
1234

Solution: Given number is 1234.

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 4, its square will end with the unit digit of the multiplication 4×4=16 i.e., 6. Hence, unit digit of the square of the given number is 6.

Q.44. What will be the unit digit of the square of the following number
26387

Solution: Given: 26387

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 7, its square will end with the unit digit of the multiplication 7×7=49 i.e., 9. Hence, the unit digit is 9.

Q.45. What will be the unit digit of the square of the following number
52698

Solution: Given: 52698

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 8, square of the number 52698 will end with the unit digit of the multiplication: 8×8=64 i.e., 4. Hence, the unit digit is 4.

Q.46. What will be the unit digit of the square of the following number?
99880

Solution: Given: 99880

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 0, its square will have two zeroes at the end. Hence, the unit digit of the square of the given number is 0.

Q.47. What will be the unit digit of the square of the following number
55555

Solution: Given: 55555

We know that if a number has its unit's place digit as m, then its square will end with the unit digit of the multiplication m×m.

As the given number has its unit's place digit as 5, its square will end with the unit digit of the multiplication 5×5=25. Hence, the unit digit is 5.

Q.48. The following number is obviously not perfect a square. Give reason.
1057

Solution: Given: 1057

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.

Has its unit place digit as 7.

Hence, it cannot be a perfect square.

Q.49. The following number is obviously not a perfect square. Give reason.
23453

Solution: Given: 23453

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.
The given number has its unit place digit as 3.

Hence, it cannot be a perfect square.

Q.50. The following number is obviously not a perfect square. Give reason.
7928

Solution: Given: 7928

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.

The given number has its unit place digit as 8. Hence, it cannot be a perfect square.

Q.51. The following number is obviously not perfect square. Give reason.
222222

Solution: Given: 222222

We know that the square of numbers may end with any one of the digits: 0,1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.

Has its unit place digit as 2. Hence, it cannot be a perfect square.

Q.52. The following number is obviously not a perfect square. Give reason.
64000

Solution: Given: 64000

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.
The given number has three zeros at the end of it. However, since a perfect square cannot end with an odd number of zeroes,

Hence, it is not a perfect square.

Q.53. The following number is obviously not a perfect square. Give reason.
89722

Solution: Given: 89722

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.

The given number has its unit place digit as 2. Hence, it cannot be a perfect square.

Q.54. The following number is obviously not a perfect square. Give reason.
222000

Solution: Given: 222000

We know that the square of numbers may end with any one of the digits: 0, 1, 4, 5, 6, or 9. Also, a perfect square has only even number of zeroes at the end of it.
The given number has three zeroes at the end of it.

For the number with power of 10 has even or odd number of 0 at unit place. A perfect square cannot end with odd number of zeroes, Hence, it is not a perfect square.

Q.55. The following number is obviously not perfect square. Give reason.
505050

Solution: Given: 505050

We know that the square of numbers may end with any one of the digits: 0,1,5,6, or 9. Also, a perfect square has only even number of zeroes at the end of it.

For the number with power of 10 has even or odd number of 0 at unit place, A perfect square cannot end with odd number of zeroes. The given number has one zero at the end of it. Hence, it is not a perfect square.

Q.56. Check whether the square of the following would be odd number or not.

431

Solution: We observe, that the square of an odd number is odd and the square of an even number is even.

Here 431 is an odd number.

Hence, 4312 is an odd number.

Q.57. The square of the following would be odd number or not

Note: Few modifications in question text to be meaningful sentence.

2826

Solution: We observe, that the square of an odd number is odd and the square of an even number is even.

Here 2826 is even number.

Hence, 28262 is an even number

Q.58. The square of the following would be odd number or not.

Note: Few modifications in question text to be meaningful sentence.

7779

Solution: We observe, that the square of an odd number is odd and the square of an even number is even.

Here, 7779 is an odd number.

Hence, 77792 is an odd number

Q.59. The squares of the following would be odd number or not.

Note: Few modifications in question text to be meaningful sentence.

82004

Solution: We observe, that the square of an odd number is odd and the square of an even number is even.

Here, 82004 is an even number.

Hence, 820042 is an even number

Q.60. Observe the following pattern and find the missing digits.

112=121
1012=10201
10012=1002001
1000012=1........2.........1
100000012=……….......

Solution: From the given pattern, it can be observed that the squares of the given numbers have the same number of zeroes before and after the digit 2 as it was in the original number.

Therefore,

By observing the pattern we get
1000012=10000200001
100000012=100000020000001

Q.61. Observe the following pattern and supply the missing number.

112=121
1012=10201
101012=102030201
10101012=…….......
.............2=10203040504030201

Solution: We observe that the square on the number on right hand side equality has an odd number of digits(first and last digits both are one) and the square is symmetric about the middle digit So from the above pattern, we obtain
10101012=1020304030201
1010101012=10203040504030201

Q.62. Using the given pattern, find the missing numbers.
12+22+22=32
22+32+62=72
32+42+122=132
42+52+__2=212
52+__2+302=312
62+72+__2=__2

Solution: From the given pattern, it can be observed that,
(i) The third number is the product of the first two numbers.
(ii) The fourth number can be obtained by adding 1 to the third number.
Thus, the missing numbers in the pattern will be: 12+22+22=32
22+32+62=72
32+42+122=132
42+52+__2=212
52+62_+302=312
62+72+422_=432_

Q.63. Without adding, find the sum
1+3+5+7+9

Solution: We know that the sum of first n odd natural numbers is n2.

Now, we have to find the sum of given first five odd natural numbers.

Hence, 1+3+5+7+9=52=25.

Q.64. Without adding find the sum

1+3+5+7+9+11+13+15+17+19

Solution: We know that the sum of first n odd natural numbers is n2.

Now, we have to find the sum of first ten odd natural numbers.

Hence, 1+3+5+7+9+11+13+15+17+19=102=100

Q.65. Without adding find the sum

1+3+5+7+9+11+13+15+17+19+21+23

Solution: We know that the sum of first n odd natural numbers is n2.

Now, we have to find the sum of first twelve odd natural numbers.

Hence, 1+3+5+7+9+11+13+15+17+19+21+23=122=144

Q.66. Express 49 as the sum of 7 odd numbers.

Solution: We know that the sum of first n odd natural numbers is n2.

49=72

Therefore, 49 is the sum of first 7 odd natural numbers. 49=1+3+5+7+9+11+13

Q.67. Express 121 as the sum of 11 odd numbers.

Solution: We know that the sum of first n odd natural numbers is n2.

121=112

Therefore, 121 is the sum of first 11 odd natural numbers. 121=1+3+5+7+9+11+13+15+17+19+21

Q.68. How many numbers lie between squares of the following numbers

12 and 13

Solution: Given numbers are 12 and 13

We know that there will be 2n numbers in between the squares of the numbers n and n+1.

Between 122 and 132, there will be 2×12=24 numbers

Q.69. How many numbers lie between squares of the following numbers?

25 and 26

Solution: Given, 25 and 26.

We know that there will be 2n numbers in between the squares of the numbers n and n+1.

Here, n=25 and n+1=26. Numbers in between the squares of 25 and 26 =2n=2×25=50.

Hence, between 252 and 262, there will be 50 numbers.

Q.70. How many numbers lie between squares of the following numbers?
99 and 100

Solution: Given, 99 and 100.

We know that there will be 2n numbers in between the squares of the numbers n and n+1.

Here, n=99 and n+1=100. Numbers in between the squares of 99 and 100 =2n=2×99=198.

Hence, between 992 and 1002, there will be 198 numbers.

Q.71. Find the square of 32.
1024

Solution: The given number is 32.

We have the identity:a+b2=a2+2ab+b2

322=30+22
=302+2×30×2+22 =900+120+4
=1024 Hence, 322=1024.

Q.72. Find the square of the following number:
35

1225

Solution: 352=30+52
=3030+5+530+5
=302+30×5+5×30+52
=900+150+150+25
=1225

Hence, the square of 35 is 1225.

Q.73. Find the square of the following number
86

7396

Solution: Given, 86.

862=80+62

=80+680+6
=8080+6+680+6 ∵a+bc+d=ac+d+bc+d
=802+80×6+6×80+62
=6400+480+480+36
=7396 Hence, 862=7396.

Q.74. Find the square of the following number
93

8649

Solution: Given, 93

932=90+32

=90+390+3
=9090+3+390+3∵a+bc+d=ac+d+bc+d
=902+90×3+3×90+32
=8100+270+270+9
=8649
Hence, 932=8649.

Q.75. Find the square of the following number:
71

5041

Solution: Given, 71

712=70+12

=70+170+1
=7070+1+170+1∵a+bc+d=ac+d+bc+d
=702+70×1+1×70+12
=4900+70+70+1
=5041. Hence, 712=5041.

Q.76. Find the square of the following number
46

2116

Solution: Given, 46

462=40+62

=40+640+6
=4040+6+640+6∵a+bc+d=ac+d+bc+d
=402+40×6+6×40+62
=1600+240+240+36
=2116 Hence, 462=2116.

Q.77. Write a Pythagorean triplet whose one number is

6

6,8,10

Solution: Given, 6

For any natural number m>1 and m∈N; 2m, m2-1, m2+1

Forms a Pythagorean triplet.
If we take m2+1=6, then m2=5
The value of m will not be an integer.
If we take m2-1=6, then m2=7
Again the value of m is not an integer.
Let 2m=6,
m=3
2×m=2×3=6
m2-1=32-1=8
m2+1=32+1=10.
Therefore, the Pythagorean triplets are: 6,8, and 10.

Q.78. Write a Pythagorean triplet whose one number is
14

14,48,50

Solution: Given, 14

For any natural number m>1;2m,m2-1,m2+1 forms a Pythagorean triplet.

If we take m2+1=14, then m2=13
The value of m will not be an integer.
If we take m2-1=14, then m2=15
Again the value of m is not an integer.
Let 2m=14
m=7
Thus, m2-1=49-1=48 and m2+1=49+1=50
Therefore, the required triplet is 14,48, and 50.

Q.79. Write a Pythagorean triplet whose one member is
16

16,63,65

Solution: Given, 16

For any natural number m>1;2m,m2-1,m2+1 forms a Pythagorean triplet.
If we take m2+1=16, then m2=15
The value of m will not be an integer.
If we take m2-1=16, then m2=17
Again the value of *m* is not an integer.
Let 2m=16
m=8
Thus, m2-1=64-1=63 and m2+1=64+1=65
Therefore, the Pythagorean triplet is 16,63, and 65.

Q.80. Write a Pythagorean triplet whose one number is
18
18,80,82

Solution: For any natural number m>1;2m,m2-1,m2+1 forms a Pythagorean triplet.
If we take m2+1=18,
m2=17
The value of m will not be an integer.
If we take m2-1=18, then m2=19
Again the value of m is not an integer.
Let 2m=18
m=9
Thus, m2-1=81-1=80 and m2+1=81+1=82

Therefore, the Pythagorean triplet is 18,80, and 82.

Q.81. What could be the possible one’s digits of the square root of the following number.
9801

Solution: Given, 9801

If the number ends with 1, then the one’s digit of the square root of that number may be 1 or 9. (since, 12 and 92 gives 1 at unit's place).

Hence, one’s digit of the square root of 9801 is either 1 or 9.

Q.82. What could be the possible one’s digits of the square root of 99856?

Solution: Given, 99856
If the number ends with 6, then the one’s digit of the square root of that number may be 4 or 6. (since, 42 and 62 give 6 at unit's place).

Hence, one’s digit of the square root of 99856 is either 4 or 6.

Q.83. What could be the possible one’s digits of the square root of 998001?

Solution: Given, 998001

If the number ends with 1, then the one’s digit of the square root of that number may be 1 or 9. (since, 12 and 92 give 1 at unit's place.)

Hence, one’s digit of the square root of 998001 is either 1 or 9.

Q.84. What could be the possible one’s digits of the square root of the following number?

657666025

Solution: Given, 657666025

If the number ends with 5, then the one’s digit of the square root of that number will be 5.

(since, only 52 will give 5 at unit's place.) Hence, the one’s digit of the square root of 657666025 is 5.

Q.85. Find the smallest square number that is divisible by each of the numbers 8,15, and 20.
3600

Solution: The number that is perfectly divisible by each of the numbers 8,15, and 20 is their LCM.

LCM of 8,15, and 20=2×2_×2×3×5=120
Here, prime factors 2,3, and 5 do not have their respective pairs. Therefore, 120 is not a perfect square.
Therefore, 120 should be multiplied by 2×3×5, i.e. 30, to obtain a perfect square.

Hence, the required square number is 120×2×3×5=3600.

Q.86. Without doing any calculation, find the number which is surely not perfect square.
153

Solution: The perfect squares of a number can end with any of the digits 0,1,4,5,6, or 9 at unit's place. Also, a perfect square will end with even number of zeroes.
Since the number 153 has its unit's place digit as 3, it is not a perfect square.

Q.87. Without doing any calculation, find the number which are surely not perfect square.

257

Solution: The perfect squares of a number can end with any of the digits 0,1,4,5,6, or 9 at unit's place. Also, a perfect square will end with even number of zeroes.

Since the number 257 has its unit's place digit as 7, it is not a perfect square.

Q.88. Without doing any calculation, find the number which is surely not a perfect square.
408

Solution: The perfect squares of a number can end with any of the digits 0,1,4,5,6, or 9 at unit's place. Also, a perfect square will end with even number of zeroes.
Since the number 408 has its unit's place digit as 8, it is not a perfect square.

Q.89. Without doing any calculation, find the number which is surely not a perfect square.
441

Solution: The perfect squares of a number can end with any of the digits 0,1,4,5,6, or 9 at unit's place. Also, a perfect square will end with even number of zeroes.
Since the number 441 has its unit's place digit as 1, it is a perfect square.

Q.90. Find the square roots of 100 and 169 by the method of repeated subtraction.

Solution: To Find: The square roots of 100 and 169 by the method of repeated subtraction. Every square number can be expressed as a sum of successive odd natural numbers starting from 1. Consider 100.
(i) 100-1=99
(ii) 99-3=96
(iii) 96-5=91
(iv) 91-7=84
(v) 84-9=75
(vi) 75-11=64
(vii) 64-13=51
(viii) 51-15=36
(ix) 36-17=19
(x) 19-19=0
We see that we have subtracted successive odd numbers starting from 1 to 100, and obtained 0 at 10th step.
Therefore, 100=10

The square root of 169 can be obtained by the method of repeated subtraction as follows.
(i) 169-1=168
(ii) 168-3=165
(iii) 165-5=160
(iv) 160-7=153
(v) 153-9=144
(vi) 144-11=133
(vii) 133-13=120
(viii) 120-15=105
(ix) 105-17=88
(x) 88-19=69
(xi) 69-21=48
(xii) 48-23=25
(xiii) 25-25=0
We have subtracted successive odd numbers starting from 1 to 169, and obtained 0 at 13th step.
Therefore, 169=13

Hence, the square roots of 100 and 169 are 10 and 13 respectively.

Q.91. Find the square root of the following number by the Prime Factorization Method.
729

Solution: 1. Obtain the given number.

2. Resolve the given number into prime factors by successive division.

3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors. 4. Take one factor from each pair. 5. Find the product of factors obtained in step 4 6. The product obtained in step 5 is the required square root. After performing the prime factorization, we obtain the factors as, 729=3×3×3×3×3×3
729=3×3×3=27

Q.92. Find the square root of the following number by the Prime Factorization Method.
400

Solution: **1.** Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root.

After performing the prime factorisation, we obtain the factors as,
400=2×2_×2×2_×5×5_

Taking one factor from each pair,
400=2×2×5=20 Hence, square root of 400 is 20.

Q.93. Find the square roots of the following number by the Prime Factorization Method.

1764

Solution: **1.** Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root.

After performing the prime factorization, we obtain the factors as,
1764=2×2_×3×3_×7×7_
1764=2×3×7=42

Hence, the square root of 1764 is 42.

Q.94. Find the square roots of the following numbers by the Prime Factorization Method.

4096

Solution:
1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root.

After performing the prime factorization, we obtain the factors as
4096=2×2_×2×2_×2×2_×2×2_×2×2_×2×2_
4096=2×2×2×2×2×2=64 Hence, the square root of 4096 is 64.

Q.95. Find the square roots of the following number by the Prime Factorisation Method.
529

Solution:
1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the prime factorisation, we obtain the factors as,
529=23×23_
529=23
Hence, the square root of 529 is 23.

Q.96. Find the square roots of the following number by the Prime Factorization Method.
7744

Solution:
1. Obtain the given number. **2.** Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the prime factorization, we obtain the factors as,
7744=2×2_×2×2_×2×2_×11×11_
7744=2×2×2×11=88 Hence, the square root of 7744 is 88.

Q.97. Find the square roots of the following number by the Prime Factorisation Method.
9604

Solution:
1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the prime factorisation, we obtain the factors as,
9604=2×2_×7×7_×7×7_
9604=2×7×7=98 Hence, the square root of 9604 is 98.

Q.98. Find the square roots of the following number by the Prime Factorisation Method.
5929

Solution:

1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the prime factorisation, we obtain the factors as,
5929=7×7_×11×11_
5929=7×11=77 Hence, the square root of 5929 is 77.

Q.99. Find the square root of the following numbers by the Prime Factorisation Method.
9216

Solution:

1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the prime factorisation, we obtain the factors as,
9216=2×2_×2×2_×2×2_×2×2_×2×2_×3×3_
9216=2×2×2×2×2×3=96
Hence, the square root of 9216 is 96.

Q.100. Find the square roots of the following number by the Prime Factorisation Method.
8100

Solution:

1. Obtain the given number.
2. Resolve the given number into prime factors by successive division.
3. Make pairs of prime factors such that both the factors in each pair are equal. Since the number is a perfect square, you will be able to make an exact number of pairs of prime factors.
4. Take one factor from each pair.
5. Find the product of factors obtained in step 4
6. The product obtained in step 5 is the required square root. After performing the division, we obtain the factors as,
8100=2×2_×3×3_×3×3_×5×5_
8100=2×3×3×5=90 Hence, the square root of 8100 is 90.

Q.101. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also find the square root of the square number so obtained.
252

Solution:

Given, 252

Finding the prime factors of 252, we get

252=2×2_×3×3_×7
Here, prime factor 7 does not have its pair.
If 7 gets a pair, then the number will become a perfect square.
Therefore, 252 must be multiplied with 7 to obtain a perfect square.
252×7=2×2_×3×3_×7×7_
Therefore, 252×7=1764 is a perfect square
∴1764=2×3×7=42
Hence, to obtain a perfect square the number to be multiplied is 7 and the square root of the number obtained is 42.

Q.102. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also, find the square root of the square number so obtained.

180

Solution: Given, 180

Finding the prime factors of 180, we get

180=2×2_×3×3_×5
Here, prime factor 5 does not have its pair. If 5 gets a pair, then the number will become a perfect square.
Therefore, 180 must be multiplied with 5 to obtain a perfect square.
180×5=900=2×2_×3×3_×5×5_
Therefore, 180×5=900 is a perfect square.
∴900=2×3×5=30 Hence, the number to be multiplied to get a perfect square is 5 and the square root of the number obtained is 30.

Q.103. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also, find the square root of the square number so obtained.
1008

Solution: Given, 1008

Finding the prime factors of 1008, we get

1008=2×2×2×2×3×3×7
Here, prime factor 7 does not have its pair. If 7 gets a pair, then the number will become a perfect square.
Therefore, 1008 can be multiplied with 7 to obtain a perfect square.
1008×7=7056=2×2_×2×2_×3×3_×7×7_
Therefore, 1008×7=7056 is a perfect square.
∴7056=2×2×3×7=84 Hence, the number to be multiplied to get a perfect square is 7 and the square root of the number obtained is 84.

Q.104. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also find the square root of the square number so obtained.
2028

Solution: Given, 2028

Finding the prime factors of 2028, we get

2028=2×2_×3×13×13_
Here, prime factor 3 does not have its pair. If 3 gets a pair, then the number will become a perfect square.
Therefore, 2028 has to be multiplied with 3 to obtain a perfect square.
Therefore, 2028×3=6084 is a perfect square.
2028×3=6084=2×2_×3×3_×13×13_
∴6084=2×3×13=78 Hence, the number to be multiplied to get a perfect square is 3 and the square root of the number obtained is 78.

Q.105. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also find the square root of the square number so obtained.
1458

Solution: Given, 1458

Finding the prime factorisation of 1458, we get

1458=2×3×3_×3×3_×3×3_ Here, prime factor 2 does not have its pair. If 2 gets a pair, then the number will become a perfect square.
Therefore, 1458 has to be multiplied with 2 to obtain a perfect square.
Therefore, 1458×2=2916 is a perfect square.
1458×2=2916=2×2_×3×3_×3×3_×3×3_
∴2916=2×3×3×3=54 Hence, the number to be multiplied to get a perfect square is 2 and the square root of the obtained number is 54.

Q.106. For the following number, find the smallest whole number by which it should be multiplied to get a perfect square number. Also find the square root of the square number so obtained.
768

Solution: Given, 768

Finding prime factors of 768, we get

$768=2\times2\_\times2\times2\_\times2\times2\_\times2\times2\_\times3$
Here, prime factor 3 does not have its pair. If 3 gets a pair, then the number will become a perfect square.
Therefore, 768 must be multiplied with 3 to obtain a perfect square.
Therefore, $768\times3=2304$ is a perfect square.
$768\times3=2304=2\times2\_\times2\times2\_\times2\times2\_\times2\times2\_\times3\times3\_$
$\therefore \sqrt{2304}=2\times2\times2\times2\times3=48$ Hence, the number to be multiplied to get a perfect square is 3 and the square root of the obtained number is 48.

Q.107. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also, find the square root of the square number so obtained.
252

Solution: Given, 252

252 can be factorized as follows.
$252=2\times2\_\times3\times3\_\times7$
Here, prime factor 7 does not have its pair.
If we divide this number by 7, then the number will become a perfect square. Therefore, 252 must be divided by 7 to obtain a perfect square.
$252\div7=36$ is a perfect square.
$36=2\times2\_\times3\times3\_$
$\therefore \sqrt{36}=2\times3=6$

Hence, the number to be divided to get a perfect square is 7 and the square root of the number obtained is 6.

Q.108. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also find the square root of the square number so obtained.
2925

Solution: Given, 2925

2925 can be factorized as follows.
$2925=3\times3\_\times5\times5\_\times13$
Here, prime factor 13 does not have its pair.
If we divide this number by 13, then the number will become a perfect square.
Therefore, 2925 has to be divided by 13 to obtain a perfect square.
$2925\div13=225$ is a perfect square.
$225=3\times3\_\times5\times5\_$
$\therefore \sqrt{225}=3\times5=15$

Hence, the number to be divided to get a perfect square is 13 and the square root of the obtained number is 15.

Q.109. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also find the square root of the square number so obtained.
396

Solution: Given, 396

396 can be factorised as follows.
$396=2\times2\_\times3\times3\_\times11$
Here, prime factor 11 does not have its pair.
If we divide this number by 11, then the number will become a perfect square.
Therefore, 396 must be divided by 11 to obtain a perfect square.
$396\div11=36$ is a perfect square.
$36=2\times2\_\times3\times3\_$
$\therefore \sqrt{36}=2\times3=6$

Hence, the number to be divided to get a perfect square is 11 and the square root of the obtained number is 6.

Q.110. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also, find the square root of the square number so obtained.
2645

Solution: Given, 2645

2645 can be factorised as follows.
2645=5×23×23_
Here, prime factor 5 does not have its pair.
If we divide this number by 5, then the number will become a perfect square.
Therefore, 2645 has to be divided by 5 to obtain a perfect square.
2645÷5=529 is a perfect square.
529=23×23
∴529=23

Hence, the number to be divided to get a perfect square is 5 and the square root of the obtained number is 23.

Q.111. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also, find the square root of the square number so obtained.
2800

Solution: Given, 2800

2800 can be factorised as follows.
2800=2×2_×2×2_×5×5_×7
Here, prime factor 7 does not have its pair.
If we divide this number by 7, then the number will become a perfect square.
Therefore, 2800 has to be divided by 7 to obtain a perfect square.
2800÷7=400 is a perfect square.
400=2×2_×2×2_×5×5_
∴400=2×2×5=20

Hence, the number to be divided to get a perfect square is 7 and the square root of the obtained number is 20.

Q.112. For the following number, find the smallest whole number by which it should be divided to get a perfect square number. Also, find the square root of the square number so obtained.
1620

Solution: Given, 1620

1620 can be factorised as follows.
1620=2×2_×3×3_×3×3_×5
Here, prime factor 5 does not have its pair.
If we divide this number by 5, then the number will become a perfect square.
Therefore, 1620 has to be divided by 5 to obtain a perfect square.
1620÷5=324 is a perfect square
324=2×2_×3×3_×3×3_
∴324=2×3×3=18

Hence, the number to be divided to get a perfect square is 5 and the square root of the obtained number is 18.

Q.113. The students of Class VIII of a school donated ₹2401 in all, for Prime Minister's National Relief Fund. Each student donated as many rupees as the number of students in the class. Find the number of students in the class.

Solution: Let x be the total number of students in the class.

It is given that each student donated as many rupees as the number of students of the class.
The total amount of donation is ₹ 2401.

Therefore x2=2401
Number of students in the class x =2401
2401=7×7_×7×7_
∴2401=7×7=49
Hence, the number of students in the class is 49.

Q.114. 2025 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.

Solution: Given that in the garden, each row contains as many plants as the number of rows.
Let, number of rows $=x$.
Total number of plants = Number of rows × Number of plants in each row.
$\Rightarrow 2025=x\times x \Rightarrow x\times x=2025$
$\Rightarrow x2=2025$

$\Rightarrow x=2025$
$2025=5\times5\_\times3\times3\_\times3\times3\_$
$\therefore 2025=5\times3\times3=45$
Thus, the number of rows and the number of plants in each row is 45.

Q.115. Find the smallest square number that is divisible by each of the numbers 4,9, and 10.
900

Solution: The number that will be perfectly divisible by each one of 4,9, and 10 is the LCM of these numbers. The LCM of these numbers is as follows.
LCM of $4,9,10=2\times2\_\times3\times3\_\times5=180$
Here, prime factor 5 does not have its pair. Therefore, 180 is not a perfect square. If we multiply 180 with 5, then the number will become a perfect square.
Therefore, 180 should be multiplied with 5 to obtain a perfect square.
Hence, the required square number is $180\times5=900$.

Try these

Q.1. By repeated subtraction of odd numbers starting from 1, find whether the given number is a perfect square or not? If the number is a perfect square, then find its square root.

121

Solution: We know that, sum of the first n odd natural numbers is n2. Every square number can be expressed as a sum of successive odd natural number starting from 1.

Now, we have 121. Then,

121-1=120120-3=117117-5=112112-7=105105-9=9696-11=8585-13=7272-15=5757-17=4040-19=2121-21=0 Now, from 121 we have subtracted successive odd numbers starting from 1 and obtained 0 at 11th step. Therefore, square root of 121 is 11.

Q.2. If 112=121. What is the square root of 121?

Solution: Given, 112=121.

We know that, the inverse operation of addition is subtraction and the inverse operation of multiplication is division. Similarly, finding the square root is the inverse operation of squaring.

For example; 12=1, therefore square root of 1 is 1. 22=4, therefore square root of 4 is 2. 32=9, therefore square root of 9 is 3. And, similarly, 112=121, therefore square root of 121 is 11. Hence, the square root of 121 is equal to 11

Q.3. By repeated subtraction of odd numbers starting from 1, find whether the given number is a perfect square or not? If the number is a perfect square, then find its square root.

55

Solution: We know that, sum of the first n odd natural numbers is n2. Every square number can be expressed as a sum of successive odd natural number starting from 1.

Now, we have 55. Then,

55-1=5454-3=5151-5=4646-7=3939-9=3030-11=1919-13=66-15=-9 We obtained -9 , which is not possible. Hence, 55 is not a perfect square.

Q.4. If 142=196. What is the square root of 196?

Solution: Given, 142=196.

We know that, the inverse operation of addition is subtraction and the inverse operation of multiplication is division. Similarly, finding the square root is the inverse operation of squaring.

For example; 12=1, therefore square root of 1 is 1. 22=4, therefore square root of 4 is 2. 32=9, therefore square root of 9 is 3. 112=121, therefore square root of 121 is 11. And, similarly, 142=196, therefore square root of 196 is 14 Hence, the square root of 196 is equal to 14

Q.5. By repeated subtraction of odd numbers starting from 1, find whether the given number is a perfect square or not? If the number is a perfect square, then find its square root.

36

Solution: We know that, sum of the first n odd natural numbers is n2. Every square number can be expressed as a sum of successive odd natural number starting from 1.

Now, we have 36. Then,

36-1=3535-3=3232-5=2727-7=2020-9=1111-11=0 Now, from 36 we have subtracted successive odd numbers starting from 1 and obtained 0 at 6th step. Therefore, square root of 36 is 6.

Q.6. By repeated subtraction of odd numbers starting from 1, find whether the given number is a perfect square or not? If the number is a perfect square, then find its square root.

49

Solution: We know that, sum of the first n odd natural numbers is n2. Every square number can be expressed as a sum of successive odd natural number starting from 1.

Now, we have 49. Then,

49-1=4848-3=4545-5=4040-7=3333-9=2424-11=1313-13=0 Now, from 49 we have subtracted successive odd numbers starting from 1 and obtained 0 at 7th step. Therefore, 49 is a perfect square and square root of 49 is 7.

Q.7. By repeated subtraction of odd numbers starting from 1, find whether the given number is a perfect square or not? If the number is a perfect square, then find its square root.

90

Solution: We know that, sum of the first n odd natural numbers is n2. Every square number can be expressed as a sum of successive odd natural number starting from 1.

Now, we have 55. Then,

90-1=8989-3=8686-5=8181-7=7474-9=6565-11=5454-13=4141-15=2626-17=99-19=-10 We obtained -10 , which is not possible. Hence, 90 is not a perfect square.

Q.8. Find whether the square of the following number is odd number or an even number.

727

Solution: Here, we have 727.

We need to find whether the square of the given number is odd or even.

We know that the squares of even numbers are even numbers and squares of odd numbers are odd numbers. For example, 32=9 which is odd and 22=4 which is even. Since, 727 is an odd number. So, square of 727 also will be an odd number.

Q.9. Express the following as the sum of two consecutive integers: 212

Solution: Given: 212

The square of the given number is,

212=21×21=441 Let the first consecutive number as x and the second consecutive number as x+1. Sum of the two consecutive numbers is x+x+1=441 Now, we need to find the consecutive numbers. x+x+1=441 x+x=441-1 2x=440 x=4402=220 Then, x+1=220+1=221 Therefore, the sum of the two consecutive integers can be expressed as, 220+221=441

Q.10. Find whether the square of the following number is odd number or an even number.

158

Solution: Here, we have 158.

We need to find whether the square of the given number is odd or even.

We know that the squares of even numbers are even numbers and squares of odd numbers are odd numbers. For example, 32=9 which is odd and 22=4 which is even. Since, 158 is an even number. So, square of 158 also will be an even number.

Q.11. Express the following as the sum of two consecutive integers: 132

Solution: Given: 132

The square of the given number is,

132=13×13=169 Let the first consecutive number as x and the second consecutive number as x+1. Sum of the two consecutive numbers is x+x+1=169 Now, we need to find the consecutive numbers. x+x+1=169 x+x=169-1 2x=168 x=1682=84 Then, x+1=84+1=85 Therefore, the sum of the two consecutive integers can be expressed as, 84+85=169

Q.12. Find whether the square of the following number is odd number or an even number.

269

Solution: Here, we have 269.

We need to find whether the square of the given number is odd or even.

We know that the squares of even numbers are even numbers and squares of odd numbers are odd numbers. For example, 32=9 which is odd and 22=4 which is even. Since, 269 is an odd number. So, square of 269 also will be an odd number.

Q.13. Express the following as the sum of two consecutive integers: 112

Solution: Given: 112

The square of the given number is,

112=11×11=121 Let the first consecutive number as x and the second consecutive number as x+1. Sum of the two consecutive numbers is x+x+1=121 Now, we need to find the consecutive numbers. x+x+1=121 x+x=121-1 2x=120 x=1202=60 Then, x+1=60+1=61 Therefore, the sum of the two consecutive integers can be expressed as, 60+61=121.

Q.14. Find whether the square of the following number is odd number or an even number.

1980

Solution: Here, we have 1980.

We need to find whether the square of the given number is odd or even.

We know that the squares of even numbers are even numbers and squares of odd numbers are odd numbers. For example, 32=9 which is odd and 22=4 which is even. Since, 1980 is an even number. So, square of 1980 also will be an even number.

Q.15. Express the following as the sum of two consecutive integers: 192

Solution: Given: 192

The square of the given number is,

192=19×19=361 Let the first consecutive number as x and the second consecutive number as x+1. Sum of the two consecutive numbers is x+x+1=361 Now, we need to find the consecutive numbers. x+x+1=361 x+x=361-1 2x=360 x=3602=180 Then, x+1=180+1=181 Therefore, the sum of the two consecutive integers can be expressed as, 180+181=361.

Q.16. How many natural numbers lie between 92 and 102? Between 112 and 122?

Solution: Given,

92 and 102; 112 and 122

We know that, natural numbers =1, 2, 3, 4, ... So, the natural numbers between 92 and 102=102-92 =100-81 =19 But we can not count the last number, =19-1=18 And the natural numbers between 112 and 122=122-112 =144-121 =23 But we can not count the last number, =23-1=22 So, the natural numbers between 92 and 102 are 18 and 112 and 122 are 22.

Q.17. Without calculating square roots, find the number of digits in the square root of 25600

Solution: The given number is 25600.

We use bars to find the numbers of digits in the square root of a perfect square number.

Now, by placing the bars, we get, 2¯ 56¯ 00¯ Since, there are 3 bars, the square root will be of 3 digits.

Q.18. Without calculating square roots, find the number of digits in the square root of 100000000

Solution: The given number is 100000000.

We use bars to find the numbers of digits in the square root of a perfect square number.

Now, by placing the bars, we get, 1¯ 00¯ 00¯ 00¯ 00¯ Since, there are 5 bars, the square root will be of 5 digits.

Q.19. Without calculating square roots, find the number of digits in the square root of 36864

Solution: The given number is 36864.

We use bars to find the numbers of digits in the square root of a perfect square number.

Now, by placing the bars, we get, 3¯ 68¯ 64¯ Since, there are 3 bars, the square root will be of 3 digits.

Q.20. What will be the number of zeros in the square of 60?
2

Solution: Here, we have 60.

We need to find how many zeros will be there in the square of 60.

We know that the number of zeros present in a number will become double in the square of that number. Here, in the number 60 the number of zeros is 1. So, in square of 60 the number of zeros will be 1×2=2. Hence, the answer is 2.

Q.21. How many non-square numbers lie between the following pair of numbers.

1002 and 1012
200

Solution: Given,

1002 and 1012

We know that, there are 2n non square numbers between square of any two numbers. Here, n=100 & n+1=101 So, the non-square numbers lies between 1002 and 1012=2n =2×100 =200 Hence, the non-square numbers lies between 1002 and 1012 are 200.

Q.22. What will be the number of zeros in the square of 400?
4

Solution: Here, we have 400.

We need to find how many zeros will be there in the square of 400.

We know that the number of zeros present in a number will become double in the square of that number. Here, in the number 400 the number of zeros is 2. So, in square of 400 the number of zeros will be 2×2=4. Hence, the answer is 4.

Q.23. Write five numbers which you cannot decide just by looking at their units digit (or units place) whether they are square numbers or not.

Solution: If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

Here are the five examples which we cannot decide whether they are perfect square or not just by looking at the units place:

2061, 1069, 1234, 56790, 76555

Q.24. Do you think the reverse is also true, i.e., is the sum of any two consecutive positive integers is perfect square of a number? Give example to support your answer.

Solution: Let the number 121.

The sum of the two consecutive integers can be expressed as,

60+61=121. 121=112 Here, 121 is a perfect square. Now, consider the other number 43. The sum of the two consecutive integers can be expressed as, 21+22=43 But, 43 is not a perfect square number. Hence, it is not always true, i.e., is the sum of any two consecutive positive integers is not always a perfect square of a number.

Q.25. Estimate the value of the 80 to the nearest whole number

Solution: First we will find the values of squares in between 80 lies.

The value of 82 is equal to 64 and the value of 92 is equal to 81.

And, we can see that, 80 lies in between 64 and 81. Thus, 64<80<81 or 82<81<92. Now, we will calculate the difference of 64 and 80 ⇒80-64=16 And, the difference of 80 and 81 is; 81-80=1 We can see that one of the difference is 16 whereas another is 1. Therefore, the square root of 80 is nearest to the integer 9. Hence, the estimated value of 80 to the nearest whole number is 9.

Q.26. Estimate the value of the 1000 to the nearest whole number.

Solution: First we will find the values of squares in between 1000 lies.

The value of 312 is equal to 961 and the value of 322 is equal to 1024.

And, we can see that, 1000 lies in between 961 and 1024. Thus, 961<1000<1024 or 312<1000<322. Now, we will calculate the difference of 961 and 1000 ⇒1000-961=39 And, the difference of 1000 and 1024 is; ⇒1024-1000=24 We can see that one of the difference is 39 where as another is 24. Therefore, the square root of 1000 is nearest to the whole number 32. Hence, the estimated value of 1000 to the nearest whole number is 32.

Q.27. Estimate the value of the 350 to the nearest whole number

Solution: First we will find the values of squares in between 350 lies.

The value of 182 is equal to 324 and the value of 192 is equal to 361.

And, we can see that, 350 lies in between 324 and 361. Thus, 324<350<361 or 182<350<192. Now, we will calculate the difference of 324 and 350 ⇒350-324=26 And, the difference of 350 and 361 is; 361-350=11 We can see that one of the difference is 26 whereas another is 11. Therefore, the square root of 350 is nearest to the integer 19. Hence, the estimated value of 350 to the nearest whole number is 19.

Q.28. Estimate the value of the 500 to the nearest whole number

Solution: First we will find the values of squares in between 500 lies.

The value of 222 is equal to 484 and the value of 232 is equal to 529.

And, we can see that, 500 lies in between 484 and 529. Thus, 484<500<529 or 222<500<232. Now, we will calculate the difference of 484 and 500 ⇒500-484=16 And, the difference of 500 and 529 is; 529-500=29 We can see that one of the difference is 29 whereas another is 16. Therefore, the square root of 500 is nearest to the integer 22. Hence, the estimated value of 500 to the nearest whole number is 22.

Q.29. Check whether the following number would have digit 6 at unit place:

192

Solution: Given, 192

We have to check whether the given number would have digit 6 at unit place.

We know that, when a square number ends in 6, the number whose square it is, will have either 4 or 6 in unit's place. Here, the number 19 has 9 in its unit place. Hence, 192 would not have digit 6 at unit place.

Q.30. What will be the "one's digits" in the square of the following number?

1234

6

Solution: Given,

1234

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, at one's place of a number is 4 or 6 then its square ends with 6 or at the one's place of its square is 6. So, the given number ends with 4. So, the "one's digits" in the square of the number is 6.

Q.31. Check whether the following number is a perfect square or not:
121

Solution: Given, 121

121-1=120120-3=117117-5=112112-7=105105-9=9696-11=8585-13=7272-15=5757-17=4040-19=2121-21=0
Thus, 1+3+5+7+9+11+13+15+17+19+21=121
Hence, 121 can be expressed as the sum of successive odd numbers.
Thus, 121 is perfect square number.

Q.32. Observe the pattern.

12=1

112=121 1112=12321 11112=1234321 111111112=123456787654321 Write the square, making use of the above pattern: 1111112

Solution: Given pattern is,

12=1

112=121 1112=12321 11112=1234321 111111112=123456787654321 By observing the above pattern, we can write 111112=123454321 11111112=1234567654321 Therefore, 1111112=12345654321.

Q.33. Observe the pattern.

72=49

672=4489 6672=444889 66672=44448889 666672=4444488889 6666672=444444888889 Write the square, making use of the above pattern: 66666672

Solution: Given pattern is,

72=49

672=4489 6672=444889 66672=44448889 666672=4444488889 6666672=444444888889 Therefore, by observing the pattern 66666672=44444448888889

Q.34. Find the square of following number containing 5 in unit's place.

152
225

Solution: Given, 152

We can write, 152 as n52, where n=1.

It can be written as nn+1 hundred+52 Now, substituting the values, we get, ⇒11+1 hundred+25 ⇒1×2 hundred+25 On further calculation, we get, ⇒200+25 ⇒225. Hence, the square of 15 is 225.

Q.35. Check whether the following number would have digit 6 at unit place:

242

Solution: Given, 242

We have to check whether the given number would have digit 6 at unit place.

We know that, when a square number ends in 6, the number whose square it is, will have either 4 or 6 in unit's place. Here, the number 24 has 4 in its unit place. And the value of 242=576. Hence, 242 has digit 6 at unit place.

Q.36. What will be the "one's digits" in the square of the following number?

26387

9

Solution: Given,

26387

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, if the number has 7 at its one's place then its square always ends with 9 or at the one's place of its square is 9. So, the given number ends with 7. So, the "one's digits" in the square of the number is 9.

Q.37. How many non-square numbers lie between the following pair of numbers.

902 and 912

180

Solution: Given,

902 and 912

We know that, there are 2n non-square numbers between square of any two numbers. Here, n=90 & n+1=91 So, the non-square numbers lies between 902 and 912=2n =2×90 =180 Hence, the non-square numbers lies between 902 and 912 are 180.

Q.38. Check whether the following number is a perfect square or not:
55

Solution: Given, 55

55-1=5454-3=5151-5=4646-7=3939-9=3030-11=1919-13=66-15=-9
Thus, 1+3+5+7+9+11+13+15=64
Hence, 55 can not be expressed as the sum of successive odd numbers.
Thus, 55 is not a perfect square number.

Q.39. Observe the pattern.

12=1

112=121 1112=12321 11112=1234321 111111112=123456787654321 Write the square, making use of the above pattern: 11111112

Solution: Given pattern is,

12=1

112=121 1112=12321 11112=1234321 111111112=123456787654321 By observing the above pattern, we can write 111112=123454321 1111112=12345654321 Therefore, 11111112=1234567654321.

Q.40. Observe the pattern.

72=49

672=4489 6672=444889 66672=44448889 666672=4444488889 6666672=444444888889 Write the square, making use of the above pattern: 666666672

Solution: Given pattern is,

72=49

672=4489 6672=444889 66672=44448889 666672=4444488889 6666672=444444888889 Therefore, by observing the pattern 666666672=4444444488888889

Q.41. Find the square of following number containing 5 in unit's place.

952

9025

Solution: Given, 952

We can write, 952 as n52, where n=9.

It can be written as nn+1 hundred+52 Now, substituting the values, we get, ⇒99+1 hundred+25 ⇒9×10 hundred+25 On further calculation, we get, ⇒9000+25 ⇒9025. Hence, the square of 95 is 9025.

Q.42. Check whether the following number would have digit 6 at unit place:

262

Solution: Given, 262

We have to check whether the given number would have digit 6 at unit place.

We know that, when a square number ends in 6, the number whose square it is, will have either 4 or 6 in unit's place. Here, the number 26 has 6 in its unit place. And we know that 262=676 Hence, 262 has the digit 6 at unit place.

Q.43. What will be the "one's digits" in the square of the following number?

52698

4

Solution: Given,

52698

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, if the number has 2 or 8 at its one's place then its square always ends with 4 or at the one's place of its square is 4. So, the given number ends with 8. So, the "one's digits" in the square of the number is 4.

Q.44. How many non-square numbers lie between the following pair of numbers.

10002 and 10012

2000

Solution: Given,

10002 and 10012

We know that, there are 2n non-square numbers between square of any two numbers. So, the non-square numbers lies between 10002 and 10012=2n =2×1000 =2000 Hence, the non-square numbers lies between 10002 and 10012 are 2000.

Q.45. Check whether the following number is a perfect square or not:
81

Solution: Given, 81
81-1=8080-3=7777-5=7272-7=6565-9=5656-11=4545-13=3232-15=1717-17=0
Thus, 1+3+5+7+9+11+13+15+17=81
Hence, 81 can be expressed as the sum of successive odd numbers.
Thus, 81 is perfect square number.

Q.46. Find the square of following number containing 5 in unit's place.

1052

11025

Solution: Given, 1052

We can write, 1052 as n52, where n=10.

It can be written as nn+1 hundred+52 Now, substituting the values, we get, ⇒1010+1 hundred+25 ⇒10×11 hundred+25 On further calculation, we get, ⇒11000+25 ⇒11025. Hence, the square of 105 is 11025.

Q.47. Check whether the following number would have digit 6 at unit place:

362

Solution: Given, 362

We have to check whether the given number would have digit 6 at unit place.

We know that, when a square number ends in 6, the number whose square it is, will have either 4 or 6 in unit's place. Here, the number 36 has 6 in its unit place. Hence, 362 would have digit 6 at unit place.

Q.48. What will be the "one's digits" in the square of the following number?

99880

0

Solution: Given,

99880

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, if the number has 0 at its one's place then its square always ends with 0 or at the one's place of its square is 0. So, the given number ends with 0. So, the "one's digits" in the square of the number is 0.

Q.49. Check whether the following number is a perfect square or not:
49

Solution: Given, 49
49-1=4848-3=4545-5=4040-7=3333-9=2424-11=1313-13=0
Thus, 1+3+5+7+9+11+13=49.
Hence, 49 can be expressed as the sum of successive odd numbers.
Thus, 49 is perfect square number.

Q.50. Find the square of following number containing 5 in unit's place.

2052

42025

Solution: Given, 2052

We can write, 2052 as n52, where n=20.

It can be written as nn+1 hundred+52 Now, substituting the values, we get, ⇒2020+1 hundred+25 ⇒20×21 hundred+25 On further calculation, we get, ⇒42000+25 ⇒42025. Hence, the square of 205 is 42025.

Q.51. Check whether the following number would have digit 6 at unit place:

342

Solution: Given, 342

We have to check whether the given number would have digit 6 at unit place.

We know that, when a square number ends in 6, the number whose square it is, will have either 4 or 6 in unit's place. Here, the number 34 has 4 in its unit place. And we know that 342=1156 Hence, 342 has the digit 6 at unit place.

Q.52. What will be the "one's digits" in the square of the following number?

21222

4

Solution: Given,

21222

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, if the number has 2 or 8 at its one's place then its square always ends with 4 or at the one's place of its square is 4. So, the given number ends with 2. So, the "one's digits" in the square of the number is 4.

Q.53. Check whether the following number is a perfect square or not:
69

Solution: Given, 69

69-1=6868-3=6565-5=6060-7=5353-9=4444-11=3333-13=2020-15=55-17=-12
Thus, 1+3+5+7+9+11+13+15+17=72
Hence, 69 can not be expressed as the sum of successive odd numbers.
Thus, 69 is not a perfect square number.

Q.54. What will be the "one's digits" in the square of the following number?

9106
6

Solution: Given,

9106

A square number can only end with digits 0, 1, 4, 5, 6, 9. We know that, at one's place of a number there is 4 or 6 then its square ends with 6 or at the one's place of its square is 6. So, the given number ends with 6. So, the "one's digits" in the square of the number is 6.

Q.55. Find the perfect square numbers between 30 and 40.
36

Solution: A square number is the result when a number has been multiplied by itself.

Example:

Number (a)	Square (a×a)
1	1×1=1
2	2×2=4
3	3×3=9
4	4×4=16
5	5×5=25
6	6×6=36
7	7×7=49
8	8×8=64

From the above table, there is a perfect square 36 between 30 and 40.

Q.56. Find the perfect square numbers between 50 and 60.

Solution: A square number is the result when a number has been multiplied by itself.

Example:

Number (a)	Square (a×a)
1	1×1=1
2	2×2=4
3	3×3=9
4	4×4=16
5	5×5=25
6	6×6=36
7	7×7=49
8	8×8=64

From the above table, we can conclude that there is no perfect square between 50 and 60.

Q.57. Can you say whether the following number is perfect square? How do you know?

1057

Solution: If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these ends with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it can be a perfect square number.

Here, the given number 1057 ends with 7 at unit's place. Hence, the given number is not a perfect square.

Q.58. Can you say whether the following number is perfect square? How do you know?

23453

Solution: Given, 23453

If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it may or may not be a perfect square number. Here, the given number 23453 ends with 3 at unit's place. Hence, the given number is not a perfect square.

Q.59. Can you say whether the following number is perfect square? How do you know?

7928

Solution: Given, 7928

If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it may or may not be a square number. Here, the given number 7928 ends with 8 at unit's place. Hence, the given number is not a perfect square.

Q.60. Can you say whether the following number is perfect square? How do you know?

222222

Solution: Given, 222222

If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it may or may not be a square number. Here, the given number 222222 ends with 2 at unit's place. Hence, the given number is not a perfect square.

Q.61. Can you say whether the following number is perfect square? How do you know?

1069

Solution: Given, 1069

If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it may or may not be a square number. Here, the given number 1069 ends with 9 at unit's place. Even though the given number is ending with 9, its not a perfect square because no natural number between 1024 & 1089 is a square number. Hence, the given number is not a perfect square.

Q.62. Can you say whether the following number is perfect square? How do you know?

2061

Solution: Given, 2061

If we observe the ending digits (that is, digits in the units place) of the square numbers, all these numbers end with 0, 1, 4, 5, 6 or 9 at units place. None of these end with 2, 3, 7or 8 at unit's place.

So, we can say that if a number ends in 0, 1, 4, 5, 6 or 9, then it may or may not be a square number. Even though the given number is ending with 1, its not a perfect square because no natural number between 2025 & 2116 is a square number. Hence, the given number is not a perfect square.

Q.63. Which of 1232, 772, 822, 1612, 1092 would end with digit 1?

Solution: We have to check, which of 1232, 772, 822, 1612, 1092 would end with digit 1.

Square of end digit of 123 is 32=9

Square of end digit of 77 is 72=49 Square of end digit of 82 is 22=4 Square of end digit of 161 is 12=1 Square of end digit of 109 is 92=81 So, the square of ending digits of 161 and 109 are ending with 1.
Hence, 1612 and 1092 end with 1.