

#### **MATHS**

#### **BOOKS - NAND LAL PUBLICATION**

# **SQUARES AND SQUARE ROOTS**

**Try These** 

1. Find the perfect square numbers between:

30 and 40.



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2. Find the perfect square numbers between: 50 and 60.



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3. Can we say whether the following numbers are perfect squares

? How do we know?

1057



4. Can we say whether the following numbers are perfect squares

? How do we know?



23453

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5. Can we say whether the following numbers are perfect squares

? How do we know?



**6.** Can we say whether the following numbers are perfect squares

? How do we know ?

222222



**7.** Can we say wether the following numbers are perfect squares?

How do we know?

1069



**8.** Can we say wether the following numbers are perfect squares ? How do we know?



**9.** Write five numbers which you cannot decide just by looking at their unit's digit(or one's place) whether they are square numbers or not.



**10.**  $(123)^2$ ,  $(77)^2$ ,  $(82)^2$ ,  $(161)^2$ ,  $(109)^2$ . Which would end with digit

1?

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11. Which of the following numbers would have digit 6 at unit place ?  $19^2$ 



**12.** Will the following number would have digit 6 at unit place ?  $24^2$ 



**13.** Which of the following numbers would have digit 6 at unit place?

 $26^{2}$ 



**14.** Which of the following numbers would have digit 6 at unit place?



 $34^{2}$ 

1234

26387

**15.** What will be the "one's digit" in the square of the following numbers ?

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**16.** What will be the "one's digit" in the square of the following numbers ?



**17.** What will be the "one's digit" in the square of the following numbers ?

52698



**18.** What will be the "one's digit" in the square of the following numbers ?

99880



**19.** What will be the "one's digit" in the square of the following numbers ?

20. What will be the "one's digit" in the square of the following numbers?

9106



21. If a number contains 3 zeroes at the end, how many zeros will its square have? What do you notice about the number of zeros at the end of the number and the number of zeros at the end of its square?

Can we say that square numbers can only have even number of zeros at the end?



**22.** What can you say about the squares of even number and squares of odd numbers.



23. The square of which of the following would be an odd number/an even number?Why?

727



**24.** The square of which of the following would be an odd number/an even number?Why?



**25.** The square of which of the following would be an odd number/an even number?Why?



269

1980

60

**26.** The square of which of the following would be an odd number/an even number?Why?

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**27.** What will be the number of zeroes in the square of the following numbers?



28. What will be the number of zeroes in the square of the following numbers?
400

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**29.** Can you say how many number are there between  $6^2$  and  $7^2$ .



**30.** How many natural numbers lies between  $9^2$  and  $10^2$ ?



**31.** How many non-square numbers lie between the following pairs of numbers.



 $(100)^2$  and  $(101)^2$ .

**32.** How many non-square numbers lie between the following pairs of numbers.

$$(90)^2$$
 and  $(91)^2$ 



**33.** How many non-square numbers lie between the following pairs of numbers.

$$(1000)^2$$
 and  $(1001)^2$ .



**34.** Find whether each of the following numbers is a perfect square or not ?

12



**35.** Find whether each of the following numbers is a perfect square or not.

55



**36.** Find whether each of the following numbers is a perfect square or not.

**37.** Find whether each of the following numbers is a perfect square or not ?

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**38.** Find whether each of the following numbers is a perfect square or not.

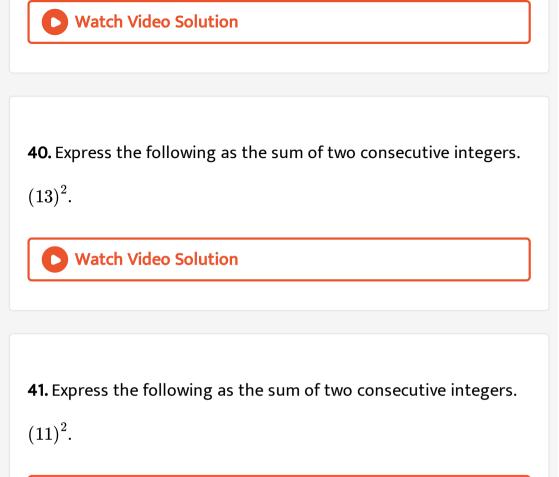
69

49



**39.** Express the following as the sum of two consecutive integers.

`(21)^2





**42.** Express the following as the sum of two consecutive integers.  $(19)^2$ .



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



**44.** Write the square making use of above pattern: 111111^2.



**45.** Write the square making use of above pattern: 111111^2.



**46.** Can you find the square of the following numbers using the above pattern:  $6666667^2.$ 



**47.** Can you find the square of the following numbers using the above pattern:

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 $6666667^2$ .

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**48.** Without calculatig square roots, find the number of digits in the square root of the following numbers.

25600.

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**49.** Without calculatig square roots, find the number of digits in the square root of the following numbers.



100000000

36864

squr 80.

**50.** Without calculatig square roots, find the number of digits in the square root of the following numbers.

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**51.** Estimate the value of the following to the nearest whole number:



**52.** Estimate the value of the following to the nearest whole number:

squr1000



**53.** Estimate the value of the following to the nearest whole number:

 $\sqrt{350}$ 



**54.** Estimate the value of the following to the nearest whole number:

 $\sqrt{500}$ .

### **Think Discuss And Write**

**1.** Can we say that if a perfect square is of n digits, then its square root will have  $\frac{n}{2}$  digits if n is even or  $\left(\frac{n+1}{2}\right)$  if n is odd ?



# Exercise 6 1

**1.** What will be the unit digit of the squares of the following numbers : 81



2. What will be the unit digit of the squares of the following numbers: 272



**3.** What will be the unit digit of the squares of the following numbers : 799



**4.** What will be the unit digit of the squares of the following numbers : 3853



**5.** What will be the unit digit of the squares of the following numbers: 1234



**6.** What will be the unit digit of the squares of the following numbers: 26387



**7.** What will be the unit digit of the squares of the following numbers ?



**8.** What will be the unit digit of the squares of the following numbers: 99880



**9.** What will be the unit digit of the squares of the following numbers: 12796



**10.** What will be the unit digit of the squares of the following numbers : 55555



**11.** The following numbers are obviously not perfect squares. Give reason: 1057



**12.** The following numbers are obviously not perfect squares. Give reason: 23453



**13.** The following numbers are obviously not perfect squares. Give reason: 7928



**14.** The following numbers are obviously not perfect squares. Give reason: 222222



**15.** The following numbers are obviously not perfect squares. Give reason: 64000



**16.** The following numbers are obviously not perfect squares. Give reason: 89722



**17.** The following numbers are obviously not perfect squares. Give reason: 222000



**18.** The following numbers are obviously not perfect squares. Give reason: 505050



**19.** The squares of which of the following would be odd numbers :



20. The squares of which of the following would be odd numbers:
2826

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21. The squares of which of the following would be odd numbers :



**22.** The squares of which of the following would be odd numbers :

82004



23. Observe the following pattern and find the missing digit.

$$11^2 = 121$$

$$101^2 = 10201$$

$$1001^2 = 1002001$$

$$100001^2=1.\dots...1$$

$$10000001^2 = \dots$$



**24.** Observe the following pattern and supply the missing numbers.

$$11^2 = 121$$

$$101^2 = 10201$$

$$10101^2 = 102030201$$

$$\dots \dots^2 = 10203040504030201$$

25. Using the given pattern, find the missing numbers.

$$1^2 + 2^2 + 2^2 = 3^2$$

$$2^2 + 3^2 + 6^2 = 7^2$$
  
 $3^2 + 4^2 + 12^2 = 13^2$ 

$$4^2 + 5^2 + \dots^2 = 21^2$$

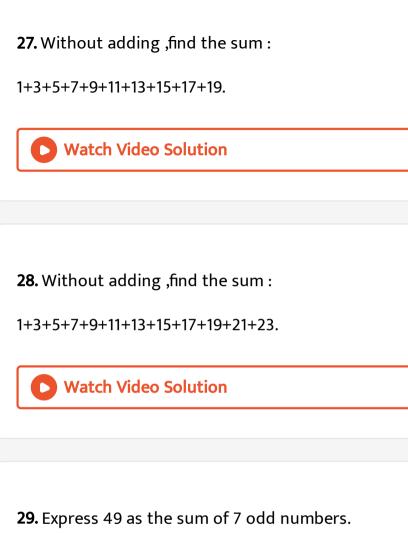
$$5^2 + \dots^2 + 30^2 = 31^2$$

$$6^2 + 7^2 + \dots^2 = \dots^2$$



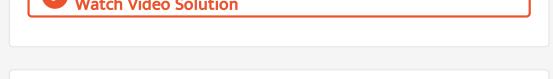
**26.** Without adding, find the sum: 1 + 3 + 5 + 7 + 9







30. Express 121 as the sum of 11 odd numbers.



**31.** How many numbers lie between squares of the following numbers: 12 and 13



**32.** How many numbers lie between squares of the following numbers: 25 and 26



**33.** How many numbers lie between squares of the following numbers: 99 and 100



34. Find the squares of the following numbers containing 5 in unit's place



15

95

35. Find the squares of the following numbers containing 5 in unit's place.

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36. Find the squares of the following numbers containing 5 in unit's place.

**Watch Video Solution** 



**37.** Find the saquares of the following numbers containing 5 in unit's place.

205



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**38.** Can you find more triplets. For any natural number m>1. We

have 
$${(2m)}^2 + {(m^2-1)}^2 = {(m^2+1)}^2$$

So,  $2m,\,(m^2-1),\,(m^2+1)$  form a pythagorean triplet

Try to find some more Pythagoren triplets using this form.



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1. Find the square of the following numbers : 32
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2. Find the square of the following numbers: 35
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3. Find the square of the following numbers: 86
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<b>4.</b> Find the square of the following numbers : 93
4. Find the square of the following numbers : 93  Watch Video Solution

5. Find the square of the following numbers : 71
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<b>6.</b> Find the square of the following numbers : 46
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7. Write a Pythagorean triplet whose one member is : 6
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8. Write a Pythagorean triplet whose one member is : 14
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**9.** Write a Pythagorean triplet whose one member is : 16



10. Write a Pythagorean triplet whose one member is: 18



**11.**  $11^2 = 121$ . What is the square root of 121.



**12.**  $14^2 = 196$ . What is the square root of 196.



**13.**  $(-1)^2 = 1$ . Is -1 a square root of 1?.



**14.**  $(-2)^2 = 4$ .ls -2,a square root of 4?



**15.**  $(-9)^2 = 81$  . Is -9 a square root of 81?



121

**16.** By repeater subtracion of odd numbers from 1,find whether the following numbers are perfect squares or not?If the number is a perfect squar,then,find its square root.

17. By repeated subtraction of odd numbers starting from 1, find whether the following numbres are perfect squares or not? It the number is a perfect square then find its square root.



**18.** By repeated subtraction of odd numbers starting from 1, find whether the following numbres are perfect squares or not? It the number is a perfect square then find its square root.

36

55



**19.** By repeated subtraction of odd numbers from 1,find whether the following numbers are perfect squares or not?If the number is a perfect squar,then,find its square root.

49



**20.** By repeater subtracion of odd numbers from 1,find whether the following numbers are perfect squares or not? If the number is a perfect squar, then, find its square root.

90



Exercise 6 3

**1.** What could be the possible 'one's' digits of the square root of each of the following numbers: 9801



2. What could be the 'one's ' digits of the square root of each of the following numbers?

99856



**3.** What could be the possible 'one's' digits of the square root of each of the following numbers: 998001



**4.** What could be the possible 'one's' digits of the square root of each of the following numbers: 657666025



**5.** Without doing any calculation, find the numbers which are surely not perfect squares: 153



**6.** Without doing any calculation, find the numbers which are surely not perfect squares: 257



**7.** Without doing any calculation, find the numbers which are surely not perfect squares: 408



**8.** Without doing any calculation, find the numbers which are surely not perfect squares: 441



**9.** Find the square roots of 100 and 169 by the method of repeated subtraction.



**10.** Find the square roots of 100 and 169 by the method of repeated subtraction.



11. Find the square roots of the following numbers by the Prime



Factorisation Method: 729

12. Find the square roots of the following numbers by the Prime

Factorisation Method: 400



**13.** Find the square roots of the following numbers by the Prime Factorisation Method: 1764



14. Find the square roots of the following numbers by the Prime



Factorisation Method: 4096

15. Find the square roots of the following numbers by the Prime

Factorisation Method: 7744



**16.** Find the square roots of the following numbers by the Prime Factorisation Method: 9604



17. Find the square roots of the following numbers by the Prime



Factorisation Method: 5929

18. Find the square roots of the following numbers by the Prime

Factorisation Method: 9216



**19.** Find the square roots of the following numbers by the Prime Factorisation Method: 529



**20.** Find the square roots of the following numbers by the Prime Factorisation Method:8100



**21.** For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained: 252



**22.** For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained: 180



**23.** For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained: 1008



**24.** For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect

square number. Also find the square root of the square number so obtained: 2028



25. For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained: 1458



26. For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained: 768



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**27.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained: 252



**28.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained: 2925



**29.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained: 396



**30.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained: 2645



**31.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect

square. Also find the square root of the square number so obtained: 2800



**32.** For each of the following numbers, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained: 1620



**33.** The students of Class VIII of a school donated Rs 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.



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**34.** 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.



**35.** Find the smallest square number that is divisible by each of the numbers 4, 9 and 10.



**36.** Find the smallest square number that is divisible by each of the numbers 8, 15 and 20.



## Exercise 6 4

1. Find the square root of each of the following numbers by



Division method: 2304

**2.** Find the square root of each of the following numbers by Division method: 4489





**4.** Find the square root of each of the following numbers by Division method: 529



**5.** Find the square root of each of the following numbers by Division method: 3249





**7.** Find the square root of each of the following numbers by Division method: 5776



**8.** Find the square root of each of the following numbers by Division method: 7921





**10.** Find the square root of each of the following numbers by Division method: 1024



11. Find the square root of each of the following numbers by



Division method: 3136



**13.** Find the number of digits in the square root of each of the following numbers (without any calculation): 64



**14.** Find the number of digits in the square root of each of the following numbers (without any calculation): 144



**15.** Find the number of digits in the square root of each of the following numbers (without any calculation): 4489



**16.** Find the number of digits in the square root of each of the following numbers (without any calculation): 27225



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

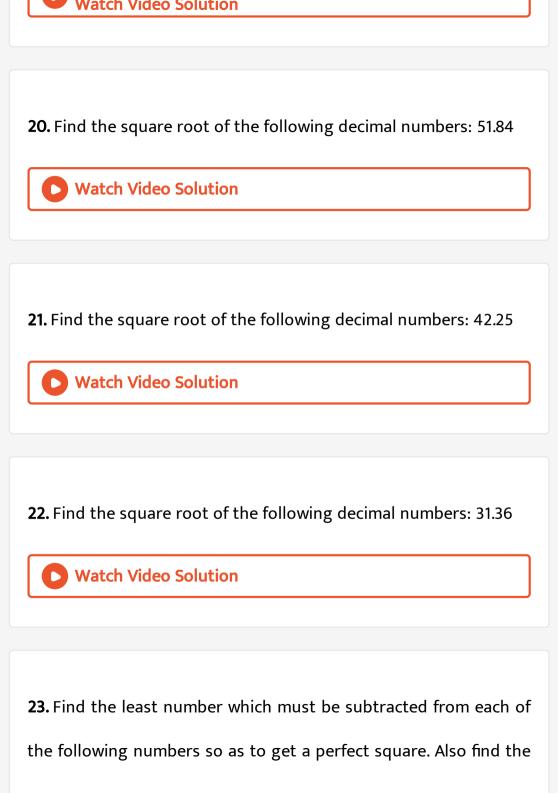


**18.** Find the square root of the following decimal numbers: 2.56



**19.** Find the square root of the following decimal numbers: 7.29





square root of the perfect square so obtained: 402

**24.** 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: 1989



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**25.** 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: 3250



**26.** 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: 825



**27.** 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: 4000



**28.** 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: 525



**29.** 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: 1750



**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



**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



**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



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



**34.** In a right triangle ABC,  $\angle B=90^\circ:$  If AB = 6 cm, BC = 8 cm, find



AC

**35.** In a right triangle ABC,  $\angle B=90^\circ:$  If AC = 13 cm, BC = 5 cm, find

AB

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**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.



**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.



Additional	Questions	For Practic	e Objective	Type Questions	Fill In
The Blanks					

1. If the number has 2 or 8 in its units place then its square would
end in



- 2. Square of an odd number is an \_\_\_\_\_
  - Watch Video Solution

**3.** The smallest number that should be added to the sum of the squares of 9 and 10 to make it a perfect square is .



<b>4.</b> Numbers ending in are never perfect squares.					
Watch Video Solution					
<b>5.</b> The number of zeros in the square root of 729000000 are					
Watch Video Solution					
<b>6.</b> The number with $n$ digits has either digits in its square.					
a. $2n+1$					
b.2n-1					
$c.n^2$					
d.2n					

Watch Video Solution

**7.** For natural number  $m>1, 2m, \left(m^2-1\right), \left(m^2+1\right)$  ar



## Additional Questions For Practice Multiple Choice Questions

1. The number of non-squares numbers lying between the square of 2 consecutive numbers n and (n+1) are

**A.** 2n

B.  $n^2$ 

 $C. n^2 + 1$ 

D. None of these

Answer: 2n

**2.** 
$$1+3+5+7+\ldots n$$
 term is equal to

A. 
$$(n+1)^2$$

B. 
$$(n-1)^2$$

$$C. n^2$$

D. None of these

#### Answer:



**3.** Smallest number by which 300 must be divided to make it a perfect square

A. 5				
B. 3				
C. 2				
D. None of these				
Answer:				
Watch Video Solution				
<b>4.</b> Smallest number that must be added to 222 to make it a perfect				
square is				
A. 3				
B. 4				
C. 5				
D. None of these				

# **Watch Video Solution** 5. One place of perfect square number cannot have the digit A. 9 B. 1 C. 8 D. None of these **Answer: Watch Video Solution**

**Answer:** 

**6.** If 2 appears 3 times in the prime factorization of the number n, then in  $n^2$  with appear

A. 3 times

B. 6 times

C. 9 times

D. None of these

### Answer:



**7.** If  $a^2$  ends in 9 then  $a^3$  ends in

**A.** 3

B. 7

C.	9
D.	Ν

D. None of these

### **Answer:**



### Additional Questions For Practice True Or False

1. Number ending in 1, 4, 5, 6, 9 are not perfect squares.



**2.** 64 can be expressed as the sum of first eight consecutive numbers.



3.	$\sqrt{0}$ .	36	=	0.06



- **4.** The number 442 is a perfect square number.
  - Watch Video Solution

- **5.**  $(109)^2$  ends with digit 1
  - Watch Video Solution

- 6. Product of two square numbers is always a square number.
  - Watch Video Solution

7. Square numbers are integers raised to the power 3. **Watch Video Solution** Additional Questions For Practice Short Answer Type Questions 1. Write the units digit of the following number.  $(109)^2$ **Watch Video Solution** 2. Write the units digit of the following number.  $(92)^2$ **Watch Video Solution** 

3. Write the units digit of the following number.		
$(225)^2$		
Watch Video Solution		
<b>4.</b> Determine whether the square of following numbers is odd or even.		
183		
Watch Video Solution		
5. Determine whether the square of following numbers is odd or even.		
Watch Video Solution		

<b>6.</b> Determine whether the square of following numbers is odd or			
even.			
826			
Watch Video Solution			
7. Show that the difference of squares of two consecutive natural			
numbers is equal to the sum of those natural numbers.			
Watch Video Solution			
8. Show that 10, 24, 26 is a pythagorean triplet.			
Watch Video Solution			

Additional Questions For Practice Long Answer Type Questions

**1.** Find a number whose one-third multiplied by one seventh gives 525.



**2.** Product of two numbers is 972 and their quotient is  $\frac{4}{3}$  find the numbers.



**3.** Product of two numbers is 2548. If one of the number is 13 times the other number. Find the number.



**4.** A ladder 13m long is leaned against the wall. The ladder reaches the wall to a height of 12 m. Find the distance between the wall and the foot of the ladder.



**5.** Find the smallest 6-digit number which is a perfect square.



**6.** Find the smallest square number which is divisible by each of the numbers, 2, 3, 4, 5.



1. The number 102, 201 have same digit. One is obtained by
reversing the other. Their square 10404, 40401 also have same
digits. One number is obtained by reversing the other. Can you
find two such pairs.



## Sample Paper For Practice Fill In The Blanks

1. Number of zeros in the square of 200 will be \_\_\_\_\_



**2.** Sum of first 10 odd numbers is \_\_\_\_\_



3. Least 4-digit number which is a perfect square is
Watch Video Solution
<b>4.</b> The number of digits in the square root of 368645 are
Watch Video Solution
Sample Paper For Practice Multiple Choice Questions
Sample Paper For Practice Multiple Choice Questions 1. Natural numbers lying between $24^2$ and $25^2$ are
<b>1.</b> Natural numbers lying between $24^2$ and $25^2$ are
1. Natural numbers lying between $24^2$ and $25^2$ are A. $48$

Answer: D
Watch Video Solution
2. Smallest number by which 180 must be multiplied to make it a
perfect square is
A. 2
B. 3
C. 5
D. None of these
Answer:
Watch Video Solution

D. None of these

3. Smallest number that can be subtracted from 405 to make it a		
perfect square is		
A. 5		
B. 4		
C. 9		
D. None of these		
Answer:		
Watch Video Solution		
<b>4.</b> The number having 1 in the unit place is		
a. $67^2$		
$b.72^2$		

$c.109^2$		
d. none		
A. $67^2$ B. $72^2$ C. $109^2$ D. None of these		
Answer: A::B  Watch Video Solution		
Water video solution		
Sample Paper For Practice		
1. Is 4, 6, 8 is a pythagorean triplet?		
Watch Video Solution		

**2.** Correct the Statements.

sum of first 'n' odd natural numbers which are perfect squares.



3. Correct the Statements.

Upto 100 there are only 9 numbers which are perfect squares.



4. Correct the Statements.

There is one square number between 50 and 60.



## 5. Match the following

(d)

- (a) Square of a number ending in 5 ends with
- (b) Greatest 1-digit number which is perfect square –
- (c) Number subtracted from 50 to make it a perfect square
- Watch Video Solution

Square root of 36 is

- **6.** If  $\sqrt{2}=1.414$ , find the value of  $\sqrt{8}$ .
  - Watch Video Solution

- **7.** Write the expression which represent a perfect square number. Write its small perfect square number and also the greatest perfect square number have 3 digits.
  - Watch Video Solution

**8.** Find the value of x, if  $\sqrt{5^x} = 125$ 



**Watch Video Solution** 

9. Find the value of x, if

$$\sqrt{2401} = \sqrt{7^x}$$



**10.** Area of the square is  $8281cm^2$ . Find its perimeter.



11. Find the smallest number that must be added to 8860 to get a perfect square.



12. Find the greatest five digit number which is a perfect square.



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