NCERT Solutions for class 8 maths squares and square roots

Q1. What will be the unit digit of the squares of the following numbers:

(i) 81

(ii) 272

(iii) 799

(iv) 3853

(v) 1234

(vi) 26387

(vii) 52698

(viii) 99880

(ix) 12796

(x) 55555

Ans: (i) The number 81 contains its unit's place digit 1. So, square of 1 is 1.

Hence, unit's digit of square of 81 is 1.

(ii) The number 272 contains its unit's place digit 2. So, square of 2 is 4.

Hence, unit's digit of square of 272 is 4.

(iii) The number 799 contains its unit's place digit 9. So, square of 9 is 81.

Hence, unit's digit of square of 799 is 1.

(iv) The number 3853 contains its unit's place digit 3. So, square of 3 is 9.

Hence, unit's digit of square of 3853 is 9.

(v) The number 1234 contains its unit's place digit 4. So, square of 4 is 16.

Hence, unit's digit of square of 1234 is 6.

(vi) The number 26387 contains its unit's place digit 7. So, square of 7 is 49.

Hence, unit's digit of square of 26387 is 9.

(vii) The number 52698 contains its unit's place digit 8. So, square of 8 is 64.

Hence, unit's digit of square of 52698 is 4.

(viii) The number 99880 contains its unit's place digit 0. So, square of 0 is 0.

Hence, unit's digit of square of 99880 is 0.

(ix) The number 12796 contains its unit's place digit 6. So, square of 6 is 36.

Hence, unit's digit of square of 12796 is 6.

(x) The number 55555 contains its unit's place digit 5. So, square of 5 is 25.

Hence, unit's digit of square of 55555 is 5.

Q2. The following numbers are obviously not perfect squares. Give reasons.

(i) 1057

(ii) 23453

(iii) 7928

(iv) 222222

(v) 64000

(vi) 89722

(vii) 222000

(viii) 505050

Ans: (i) Since, perfect square numbers contain their unit's place digit 1, 4, 5, 6, 9 and even numbers of 0.

Therefore 1057 is not a perfect square because its unit's place digit is 7.

(ii) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 23453 is not a perfect square because its unit's place digit is 3.

(iii) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 7928 is not a perfect square because its unit's place digit is 8.

(iv) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 222222 is not a perfect square because its unit's place digit is 2.

(v) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 64000 is not a perfect square because its unit's place digit is single 0.

(vi) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 89722 is not a perfect square because its unit's place digit is 2.

(vii) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 222000 is not a perfect square because its unit's place digit is triple 0.

(viii) Since, perfect square numbers contain their unit's place digit 0, 1, 4, 5, 6, 9 and even number of 0. Therefore 505050 is not a perfect square because its unit's place digit is 0.

Q3. The squares of which of the following would be odd number:

(i) 431

(ii) 2826

(iii) 7779

(iv) 82004

Ans: (i) 431 – Unit's digit of given number is 1 and square of 1 is 1. Therefore, square of 431 would be an odd number.

(ii) 2826 – Unit's digit of given number is 6 and square of 6 is 36. Therefore, square of 2826 would not be an odd number.

(iii) 7779 – Unit's digit of given number is 9 and square of 9 is 81. Therefore, square of 7779 would be an odd number.

(iv) 82004 – Unit's digit of given number is 4 and square of 4 is 16. Therefore, square of 82004 would not be an odd number.

Q4. Observe the following pattern and find the missing digits:

$11^2 = 121$

$101^2 = 10201$

$1001^2 = 1002001$

$100001^2 =$ 1.......2.......1

$1000000^2 =$ 1........................

Ans: $11^2 = 121$

$101^2 = 10201$

$1001^2 = 1002001$

$100001^2 = 10000200001$

$1000000^2 = 100000020000001$

Q5. Observe the following pattern and supply the missing numbers:

$11^2 = 121$

$101^2 = 10201$

$10101^2 = 102030201$

$1010101^2 = \ldots\ldots\ldots\ldots\ldots\ldots$

$\ldots\ldots\ldots\ldots^2 = 10203040504030201$

Ans: $11^2 = 121$

$101^2 = 10201$

$10101^2 = 102030201$

$1010101^2 = 1020304030201$

$101010101^2 = 10203040504030201$

Q6. Using the given pattern, find the missing numbers:

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

$2^2 + 3^2 + 6^2 = 7^2$

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

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

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

$6^2 + \_^2 + \_^2 = 43^2$

Ans: $1^2 + 2^2 + 2^2 = 3^2$

$2^2 + 3^2 + 6^2 = 7^2$

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

$4^2 + 5^2 + 20^2 = 21^2$

$5^2 + 6^2 + 30^2 = 31^2$

$6^2 + 7^2 + 42^2 = 43^2$

Q7. Without adding, find the sum:

(i) 1 + 3 + 5 + 7 + 9

(ii) 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19

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

Ans: (i) Here, there are five odd numbers. Therefore square of 5 is 25.

$\therefore$ 1 + 3 + 5 + 7 + 9 = 5^2 = 25

(ii) Here, there are ten odd numbers. Therefore square of 10 is 100.

$\therefore$ 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = 10^2 = 100

(iii) Here, there are twelve odd numbers. Therefore square of 12 is 144.

$\therefore$ 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23 = 12^2 = 144

Q8. (i) Express 49 as the sum of 7 odd numbers.

(ii) Express 121 as the sum of 11 odd numbers.

Ans: (i) 49 is the square of 7. Therefore it is the sum of 7 odd numbers.

49 = 1 + 3 + 5 + 7 + 9 + 11 + 13

(ii) 121 is the square of 11. Therefore it is the sum of 11 odd numbers

121 = 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21

Q9. How many numbers lie between squares of the following numbers:

(i) 12 and 13

(ii) 25 and 26

(iii) 99 and 100

Ans: (i) Since, non-perfect square numbers between n^2 and $(n+1)^2$ are $2n$.

Here, n = 12

Therefore, non-perfect square numbers between 12 and 13 = $2n$ = 2×12 = 24

(ii) Since, non-perfect square numbers between n^2 and $(n+1)^2$ are $2n$.

Here, n = 25

Therefore, non-perfect square numbers between 25 and 26 = $2n$ = 2×25 = 50

(iii) Since, non-perfect square numbers between n^2 and $(n+1)^2$ are $2n$.

Here, n = 99

Therefore, non-perfect square numbers between 99 and 100 = $2n$ = 2×99 = 198

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