TOPIC - Square & square root

Class-8

Worksheet - 10

Some more properties of square of a number:-

→ Square of even number is always even and square of odd number is always odd.

Ex - $(12)^2 = 144$ (even) (even), $(13)^2 = 169$ (odd) (odd)

→ The square of any natural number n equals to the sum of first n odd numbers.

Ex - $5^2 = 1+3+5+9+11 = 25$

$7^2 = 1+3+5+7+9+11+13 = 49$ (7 odd numbers)

→ A number with n digits has either (2n-1) or (2n) digits in its square.

Ex - for a digit number, its square has either $(2\times2-1) = 3$ or $2\times2 = 4$ digits.

Ex - $(17)^2 = 189$ (3 digit), $(35)^2 = 1225$ (4 digit)

→ Between the squares of any two consecutive numbers, n and (n+1) there are 2n non perfect square numbers.

Ex - Find the numbers lie between 7^2 and 8^2.

Soln - Here 7 & 8 are consecutive numbers.

So $n = 7$ & $n+1 = 8$ so there are $2n = 2\times7 = 14$ numbers lie between 7^2 & 8^2.

→ The square of any odd number can be expressed as the sum of two consecutive positive numbers.

Ex - $5^2 = 25 = 12+13$

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$9^2 = 81 = 40 + 41$

TRICK - $9^2 = 81$

First no. $= \frac{81-1}{2} = \frac{80}{2} = 40$

Second no. $= \frac{81+1}{2} = \frac{82}{2} = 41$

$\therefore 81 = 40 + 41$.

Solved example :-

To find the unit digit in the square of any number, just find the square of its unit digit.

→ unit digit of square of 249

→ unit digit of $(249)^2$

Here unit digit of 249 is 9

square of $9 = 9^2 = 81$, 1 is the unit digit

$\therefore$ unit digit of $(249)^2 = 1$

Problems for Practice :-

1) Find the possible number of digits in the square of a) 176 b) 39.

2) Without actual addition, find the sum of $1+3+5+7+9$

3) Find the digit in the ones place in the square of the following.

a) 19 b) 114 c) 1283 d) 707.

N.B - This worksheet is prepared from home.

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