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CLASS VIII (MATHEMATICS)

Finding Square of a number without multiplication

Finding Square of a number without multiplication (with 5 at unit's place)
Let us take the number 55, we have to find 55^2

T	O
5	5
*	55
30	/25

- Step 1 : multiply 5 by 5 and write the answer 25 in one's place.
- Step 2 : multiply the tens place digit with the next number on the number line, here 5 * 6 = 30. Write this in the tens place.
- So, we get the answer as $55^2 = 3025$.

T	O
7	5
*	75
56	/25

Let's try another number 75, 75^2 = ?

- Step 1: multiply 5 by 5 and write the answer 25 in one's place.
- Step 2 : multiply the tens place digit with the next number on the number line, here 7 * 8 = 56. Write this in the tens place.
- So, we get the answer $75^2 = 5625$

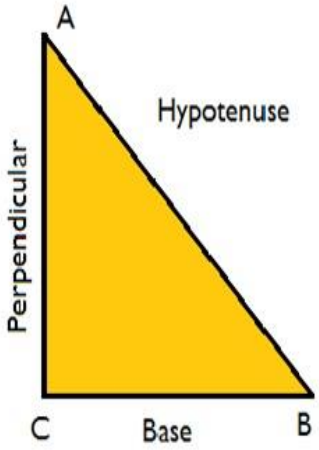
DO YOUR SELF

Find Square of a number without multiplication

(1) 75^2 (2) 65^2 (3) 95^2 (4) 125^2 (5) 265^2

Pythagorean triplets

A collection of 3 numbers such that the sum of the square of the smaller 2 numbers is equal to the square of the third number.
Let us take an example : 3, 4, 5
$3^2 + 4^2 = 5^2$
9 + 16 = 25
25 = 25
According to the Pythagorean Theorem,



In a right angled triangle, the square of hypotenuse is equal to the sum of the squares of the perpendicular and the base.

$h^2 = p^2 + b^2$

How to find the members of Pythagorean triplet for a given odd number?

- Step 1: find the square of the number
- Step 2: divide it by 2
- Step 3: the numbers between which the answer lies are members of the triplet.

Another example, We are given a number 5.

- Step 1: $5^2 = 25$
- Step 2: 25 / 2 = 12.5
- Step 3: 12.5 lies between 12 and 13. So, the Pythagorean triplet with 5 is 5, 12, 13.

How to find the members of Pythagorean triplet for a given even number?

- Step 1: divide given number by 2
- Step 2: find its square
- Step 3: the numbers between which the answer lies are members of the triplet.

Example : We are given a number 6

Solution:

- Step 1: 6 / 2 = 3
- Step 2: $3^2 = 9$
- Step 3: 9 lies between 8 and 10. So the triplet with 6 is 6, 8, 10.
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Note:
In a Pythagorean triplet where the smallest number is odd, the differenc between the other 2 numbers is 1.
In a Pythagorean triplet where the smallest number is even, the difference between the other 2 numbers is 2.

Multiples of Pythagorean triplet are also Pythagorean triplets.

3, 4, 5

*2 = 6, 8, 10

*3 = 9, 12, 15

DO YOUR SELF

Find Pythagorean triplet

(1)17 (2) 23 (3) 25 (4) 28 (5) 30