CLASS VIII: Maths
Chapter 5: Squares and Square roots

Questions and Solutions | Exercise 5.2 - NCERT Books

Q1 :

Find the square of the following numbers

(i) 32 (ii) 35

(iii) 86 (iv) 93

(v) 71 (vi) 46

Answer :

(i) $32^2 = (30 + 2)^2$

$= 30 (30 + 2) + 2 (30 + 2)$

$= 30^2 + 30 \times 2 + 2 \times 30 + 2^2$

$= 900 + 60 + 60 + 4$

$= 1024$

(ii) The number 35 has 5 in its unit's place. Therefore,

$35^2 = (3) (3 + 1)$ hundreds + 25

$= (3 \times 4)$ hundreds + 25

$= 1200 + 25 = 1225$

(iii) $86^2 = (80 + 6)^2$

$= 80 (80 + 6) + 6 (80 + 6)$

$= 80^2 + 80 \times 6 + 6 \times 80 + 6^2$

$= 6400 + 480 + 480 + 36$

$= 7396$

(iii) $86^2 = (80 + 6)^2$

$= 80 (80 + 6) + 6 (80 + 6)$

$= 80^2 + 80 \times 6 + 6 \times 80 + 6^2$

$= 6400 + 480 + 480 + 36$

$= 7396$

(iv) $93^2 = (90 + 3)^2$

$= 90 (90 + 3) + 3 (90 + 3)$

$= 90^2 + 90 \times 3 + 3 \times 90 + 3^2$

$= 8100 + 270 + 270 + 9$

$= 8649$

(v) $71^2 = (70 + 1)^2$

$= 70 (70 + 1) + 1 (70 + 1)$

$= 70^2 + 70 \times 1 + 1 \times 70 + 1^2$

$= 4900 + 70 + 70 + 1$

$= 5041$

(vi) $46^2 = (40 + 6)^2$

$= 40 (40 + 6) + 6 (40 + 6)$

$= 40^2 + 40 \times 6 + 6 \times 40 + 6^2$

$= 1600 + 240 + 240 + 36$

$= 2116$

Q2 :

Write a Pythagorean triplet whose one member is

(i) 6 (ii) 14

(iii) 16 (iv) 18

Answer :

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

(i) If we take $m^2 + 1 = 6$, then $m^2 = 5$

The value of m will not be an integer.

If we take $m^2 - 1 = 6$, then $m^2 = 7$

Again the value of m is not an integer.

Let $2m = 6$

$m = 3$

Therefore, the Pythagorean triplets are 2×3, $3^2 - 1$, $3^2 + 1$ or 6, 8, and 10.

(ii) If we take $m^2 + 1 = 14$, then $m^2 = 13$

The value of m will not be an integer.

If we take $m^2 - 1 = 14$, then $m^2 = 15$

Again the value of m is not an integer.

Let $2m = 14$

$m = 7$

Thus, $m^2 - 1 = 49 - 1 = 48$ and $m^2 + 1 = 49 + 1 = 50$

Therefore, the required triplet is 14, 48, and 50.

(iii) If we take $m^2 + 1 = 16$, then $m^2 = 15$

The value of m will not be an integer.

If we take $m^2 - 1 = 16$, then $m^2 = 17$

Again the value of m is not an integer.

Let $2m = 16$

$m = 8$

Thus, $m^2 - 1 = 64 - 1 = 63$ and $m^2 + 1 = 64 + 1 = 65$

Therefore, the Pythagorean triplet is 16, 63, and 65.

(iv) If we take $m^2 + 1 = 18$,

$m^2 = 17$

The value of m will not be an integer.

If we take $m^2 - 1 = 18$, then $m^2 = 19$

Again the value of m is not an integer.

Let $2m = 18$

$m = 9$

Thus, $m^2 - 1 = 81 - 1 = 80$ and $m^2 + 1 = 81 + 1 = 82$

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