# Squares and Square Roots: Exercise 6.2

**Q.1 Find the square of the following numbers.**
**(i) 32 (ii) 35 (iii) 86 (iv) 93 (v) 71 (vi) 46**

***Sol.*** **(i)** Given number = 32
So, square of 32:

$32^2 = (30 + 2)^2$
$= (30 + 2) \times (30 + 2)$
$= 30(30 + 2) + 2(30 + 2)$
$= 30^2 + 30 \times 2 + 2 \times 30 + 2^2$
$= 900 + 60 + 60 + 4$
$= 1024$

**(ii)** Given number = 35
So, square of 3:

$35^2 = (30 + 5)^2$
$= (30 + 5) \times (30 + 5)$
$= 30(30 + 5) + 5(30 + 5)$
$= 30^2 + 30 \times 5 + 5 \times 30 + 5^2$
$= 900 + 150 + 150 + 25$
$= 1225$

**(iii)** Given number = 86
So, square of 86:

$86^2 = (80 + 6)^2$
$= (80 + 6) \times (80 + 6)$
$= 80(80 + 6) + 6(80 + 6)$
$= 80^2 + 80 \times 6 + 6 \times 80 + 6^2$
$= 6400 + 480 + 480 + 36$
$= 7396$

**(iv)** Given number = 93
So, square of 93:

$93^2 = (90 + 3)^2$
$= (90 + 3) \times (90 + 3)$
$= 90(90 + 3) + 3(90 + 3)$
$= 90^2 + 90 \times 3 + 3 \times 90 + 3^2$
$= 8100 + 270 + 270 + 9$
$= 8649$

**(v)** Given number = 71
So, square of 71:

$71^2 = (70 + 1)^2$
$= (70 + 1) \times (70 + 1)$
$= 70(70 + 1) + 1(70 + 1)$
$= 70^2 + 70 \times 1 + 1 \times 70 + 1^2$
$= 4900 + 70 + 70 + 1$
$= 5041$

**(vi)** Given number = 46
So, square of 46:

$46^2 = (40 + 6)^2$
$= (40 + 6) \times (40 + 6)$
$= 40(40 + 6) + 6(40 + 6)$
$= 40^2 + 40 \times 6 + 6 \times 40 + 6^2$

= 1600 + 240 +240 + 36
= 2116

**Q.2 Write a Pythagorean triplet whose one member is.**
**(i) 6 (ii) 14 (iii) 16 (iv) 18**

***Sol.*** Since, for any natural number m > 1,
If $(2m)^2 + (m^2 - 1)^2 = (m^2 + 1)^2$
Then, 2m, $m^2 - 1$ and $m^2 + 1$ forms a Pythagorean triplet.

**(i)** Given number = 6
For number 6 to be member of Pythagorean triplet, we have to select 2m = 6.
So, m = 3.
Second number will be = $(m^2 - 1)$
$= (3^2 - 1)$
$= 9 - 1$
$= 8$
And third number will be = $(m^2 + 1)$
$= (3^2 + 1)^2$
$= 9 + 1$
$= 10$
Therefore, the Pythagorean triplet = (6, 8, 10).

**(ii)** Given number = 14
For number 14 to be member of Pythagorean triplet, we have to select 2m = 14.
So, m = 7.
Second number will be = $(m^2 - 1)$
$= (7^2 - 1)$
$= 49 - 1$
$= 48$
And third number will be = $(m^2 + 1)$
$= (7^2 + 1)$
$= 49 + 1$
$= 50$
Therefore, the Pythagorean triplet = (14, 48, 50)

**(iii)** Given number = 16
For number 16 to be member of Pythagorean triplet, we have to select 2m = 16.
So, m = 8.
Second number will be = $(m^2 - 1)$
$= (8^2 - 1)$
$= 64 - 1$
$= 63$
And third number will be = $(m^2 + 1)$
$= (8^2 + 1)$
$= 64 + 1$
$= 65$
Therefore, the Pythagorean triplet = (16, 63, 65)

**(iv)** Given number = 18
For number 18 to be member of Pythagorean triplet, we have to select 2m = 18.
So, m = 9.
Second number will be = $(m^2 - 1)$
$= (9^2 - 1)$
$= 81 - 1$
$= 80$
And third number will be = $(m^2 + 1)$

$= (9^2 + 1)$
$= 81 + 1$
$= 82$

Therefore, the Pythagorean triplet = (18, 80, 82)