

EXERCISE :- 6.2

1. Find the squares of the following numbers:

(i) 32

(ii) 35

(iii) 86

(iv) 93

(v) 71

(vi) 46

Ans. (i) $(32)^2 = (30 + 2)^2 = (30)^2 + 2 \times 30 \times 2 + (2)^2$

$$[\because (a + b)^2 = a^2 + 2ab + b^2]$$

$$= 900 + 120 + 4 = 1024$$

(ii) $(35)^2 = (30 + 5)^2 = (30)^2 + 2 \times 30 \times 5 + (5)^2$

$$[\because (a + b)^2 = a^2 + 2ab + b^2]$$

$$= 900 + 300 + 25 = 1225$$

$$(iii) \quad (86)^2 = (80 + 6)^2 = (80)^2 + 2 \times 80 \times 6 + (6)^2$$

$$[\because (a + b)^2 = a^2 + 2ab + b^2]$$

$$= 1600 + 960 + 36 = 7386$$

$$(iv) \quad (93)^2 = (90 + 3)^2 = (90)^2 + 2 \times 90 \times 3 + (3)^2$$

$$[\because (a + b)^2 = a^2 + 2ab + b^2]$$

$$= 8100 + 540 + 9 = 8649$$

$$(v) \quad (71)^2 = (70+1)^2 = (70)^2 + 2 \times 70 \times 1 + (1)^2$$

$$\left[\because (a+b)^2 = a^2 + 2ab + b^2 \right]$$

$$= 4900 + 140 + 1 = 5041$$

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

$$\left[\because (a+b)^2 = a^2 + 2ab + b^2 \right]$$

$$= 1600 + 480 + 36 = 2116$$

2. Write a Pythagoras triplet whose one member is:

(i) 6

(ii) 14

(iii) 16

(iv) 18

Ans. (i) There are three numbers $2m$, $m^2 - 1$ and $m^2 + 1$ in a Pythagorean Triplet.

$$\text{Here, } 2m = 6 \Rightarrow m = \frac{6}{2} = 3$$

Therefore, Second number

$$(m^2 - 1) = (3)^2 - 1 = 9 - 1 = 8$$

$$\text{Third number } m^2 + 1 = (3)^2 + 1 = 9 + 1 = 10$$

Hence, Pythagorean triplet is (6, 8, 10).

(ii) There are three numbers

$2m, m^2 - 1$ and $m^2 + 1$ in a Pythagorean Triplet.

Here, $2m = 14 \Rightarrow m = \frac{14}{2} = 7$

Therefore, Second number

$$(m^2 - 1) = (7)^2 - 1 = 49 - 1 = 48$$

Third number $m^2 + 1 = (7)^2 + 1 = 49 + 1 = 50$

Hence, Pythagorean triplet is (14, 48, 50).

(iii) There are three numbers $2m, m^2 - 1$ and $m^2 + 1$ in a Pythagorean Triplet.

Here, $2m = 16 \Rightarrow m = \frac{16}{2} = 8$

Therefore, Second number

$$(m^2 - 1) = (8)^2 - 1 = 64 - 1 = 63$$

Third number $m^2 + 1 = (8)^2 + 1 = 64 + 1 = 65$

Hence, Pythagorean triplet is (16, 63, 65).

(iv) There are three numbers $2m, m^2 - 1$ and $m^2 + 1$ in a Pythagorean Triplet.

$$\text{Here, } 2m = 18 \Rightarrow m = \frac{18}{2} = 9$$

Therefore, Second number

$$(m^2 - 1) = (9)^2 - 1 = 81 - 1 = 80$$

$$\text{Third number } m^2 + 1 = (9)^2 + 1 = 81 + 1 = 82$$

Hence, Pythagorean triplet is (18, 80, 82).

