Squares and Square Roots Ex 3.3 Q4

Answer :

Notice that all numbers except the one in question (vii) has 5 as their respective unit digits. We know that the square of a number with the form $n5$ is a number ending with 25 and has the number $n(n + 1)$ before 25.

(i) Here, $n = 42$
$\therefore n(n + 1) = (42)(43) = 1806$
$\therefore 425^2 = 180625$

(ii) Here, $n = 57$
$\therefore n(n + 1) = (57)(58) = 3306$
$\therefore 575^2 = 330625$

(iii) Here $n = 40$
$\therefore n(n + 1) = (40)(41) = 1640$
$\therefore 405^2 = 164025$

(iv) Here $n = 20$
$\therefore n(n + 1) = (20)(21) = 420$
$\therefore 205^2 = 42025$

(v) Here $n = 9$
$\therefore n(n + 1) = (9)(10) = 90$
$\therefore 95^2 = 9025$

(vi) Here $n = 74$
$\therefore n(n + 1) = (74)(75) = 5550$
$\therefore 745^2 = 555025$

(vii) We know:
The square of a three-digit number of the form $5ab = (250 + ab)1000 + (ab)^2$
$\therefore 512^2 = (250+12)1000 + (12)^2 = 262000 + 144 = 262144$

(viii) Here, $n = 99$
$\therefore n(n + 1) = (99)(100) = 9900$
$\therefore 995^2 = 990025$

Squares and Square Roots Ex 3.3 Q5

Answer :

(i) On decomposing:

405 = 400 + 5

Here, a = 400 and b = 5

Using the identity $(a + b)^2 = a^2 + 2ab + b^2$:

$405^2 = (400 + 5)^2 = 400^2 + 2(400)(5) + 5^2 = 160000 + 4000 + 25 = 164025$

(ii) On decomposing:

510 = 500 + 10

Here, a = 500 and b = 10

Using the identity $(a + b)^2 = a^2 + 2ab + b^2$:

$510^2 = (500 + 10)^2 = 500^2 + 2(500)(10) + 10^2 = 250000 + 10000 + 100 = 260100$

(iii) On decomposing:

1001 = 1000 + 1

Here, a = 1000 and b = 1

Using the identity $(a + b)^2 = a^2 + 2ab + b^2$:

$1001^2 = (1000 + 1)^2 = 1000^2 + 2(1000)(1) + 1^2 = 1000000 + 2000 + 1 = 1002001$

(iv) On decomposing:

209 = 200 + 9

Here, a = 200 and b = 9

Using the identity $(a + b)^2 = a^2 + 2ab + b^2$:

$209^2 = (200 + 9)^2 = 200^2 + 2(200)(9) + 9^2 = 40000 + 3600 + 81 = 43681$

(v) On decomposing:

605 = 600 + 5

Here, a = 600 and b = 5

Using the identity $(a + b)^2 = a^2 + 2ab + b^2$:

$605^2 = (600 + 5)^2 = 600^2 + 2(600)(5) + 5^2 = 360000 + 6000 + 25 = 366025$

*********** END **********