Exercise 3E

Question 12:
Let the ten's digit and unit's digits of required number be x and y respectively.
Required number = 10x + y
Number obtained on reversing digits = 10y + x
According to the question:
10y + x × (10x + y) = 18
10y + x - 10x - y = 18
9y - 9x = 18
y - x = 2 ----(2)
Adding (1) and (2), we get
2y = 14
y = 14/2 = 7
Putting y = 7 in (1), we get
x + 7 = 12
x = 5
Number = 10x + y
= 10 × 5 + 7
= 50 + 7
= 57
Hence, the number is 57.

Question 13:
Let the ten's digit and unit's digits of required number be x and y respectively.
Then,
x + y = 15 ---(1)
Required number = 10x + y
Number obtained by interchanging the digits = 10y + x
10y + x × (10x + y) = 9
10y + x - 10x - y = 9
9y - 9x = 9
y - x = 1
-x + y = 1 ----(2)
Add (1) and (2), we get
2y = 16
y = 16/2 = 8
Putting y = 8 in (1), we get
x + 8 = 15
x = 15 - 8 = 7
Required number = 10x + y
= 10 × 7 + 8
= 70 + 8
= 78
Hence the required number is 78.

Question 14:
Let the ten's and unit's of required number be x and y respectively.
Then, required number =10x + y
According to the given question:
10x + y = 4(x + y) + 3
10x + y = 4x + 4y + 3
6x - 3y = 3
2x - y = 1 ---(1)

And
$10x + y + 18 = 10y + x$
$9x - 9y = -18$
$9(x - y) = -18$
$x - y = -18/9$
$x - y = -2$ ---(2)
Subtracting (2) from (1), we get
$x = 3$
Putting $x = 3$ in (1), we get
$2 \times 3 - y = 1$
$y = 6 - 1 = 5$
$x = 3, y = 5$
Required number $= 10x + y$
$= 10 \times 3 + 5$
$= 30 + 5$
$= 35$
Hence, required number is 35.

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