Exercise 3E

Question 15:
Let the ten's digit and unit's digit of required number be x and y respectively.
We know,
Dividend = (divisor × quotient) + remainder
According to the given questiion:
10x + y = 6 × (x + y) + 0
10x - 6x + y - 6y = 0
4x - 5y = 0 ---(1)
Number obtained by reversing the digits is 10y + x
10x + y - 9 = 10y + x
9x - 9y = 9
9(x - y) = 9
(x - y) = 1 ---(2)
Multiplying (1) by 1 and (2) by 5, we get
4x - 5y = 0 ---(3)
5x - 5y = 5 ---(4)
Subtracting (3) from (4), we get
x = 5
Putting x = 5 in (1), we get

$$4\times 5-5y=0$$

$$\Rightarrow -5y=-20$$

$$\Rightarrow y=\frac{-20}{-5}=4$$

x =5 and y = 4
Hence, required number is 54.

Question 16:
Let the ten's and unit's digits of the required number be x and y respectively.
Then, xy = 35
Required number = 10x + y
Also,
(10x + y) + 18 = 10y + x
9x - 9y = -18
9(y - x) = 18 ---(1)
y - x = 2
Now,

$$(y+x)^2-(y-x)^2=4xy$$

$$\Rightarrow y+x=\sqrt{(y-x)^2+4xy}$$
$$=\sqrt{4+4\times 35}$$
$$=\sqrt{144}$$
$$=12$$

$$y + x = 12 \text{ ---(2)}$$

Adding (1) and (2),
2y = 12 + 2 = 14
y = 7
Putting y = 7 in (1),
7 - x = 2
x = 5
Hence, the required number = 5 × 10 + 7
= 57

Question 17:
Let the ten's and units digit of the required number be x and y respectively.
Then, xy = 14
Required number = 10x + y
Number obtained on reversing the digits = 10y + x
Also,
(10x + y) + 45 = 10y + x
9(y - x) = 45
y - x = 5 ---(1)
Now,
$(y+x)^2 - (y-x)^2 = 4xy$

$$\Rightarrow (y+x)=\sqrt{(y-x)^2+4xy}$$
$$=\sqrt{25+4\times 14}$$
$$=\sqrt{81}$$

y + x = 9 ---(2) (digits cannot be negative, hence -9 is not possible)
On adding (1) and (2), we get
2y = 14
y = 7
Putting y = 7 in (2), we get
7 + x = 9
x = (9 - 7) = 2
x = 2 and y = 7
Hence, the required number is = 2 × 10 + 7
= 27

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