

Exercise 3E

Question 9:

Let the required numbers be x and y respectively.

Then.

$$\frac{x+2}{y+2} = \frac{1}{2} \Rightarrow 2x + 4 = y + 2 \Rightarrow 2x - y = -2$$

$$\frac{x-4}{y-4} = \frac{5}{11} \Rightarrow 11x - 44 = 5y - 20 \Rightarrow 11x - 5y = 24$$

Therefore,

2x - y = -2 ---(1)

11x - 5y = 24 ---(2)

Multiplying (1) by 5 and (2) by 1

10x - 5y = -10 ---(3)

11x - 5y = 24 ---(4)

Subtracting (3) and (4) we get

x = 34

putting x = 34 in (1), we get

 $2 \times 34 - y = -2$

68 - y = -2

-y = -2 - 68

y = 70

Hence, the required numbers are 34 and 70.

Question 10:

Let the numbers be x and y respectively.

According to the question:

$$x^2 - u^2 = 448 - - - (2)$$

$$x - y = 14 ---(1)$$

From (1), we get

$$x = 14 + y ---(3)$$

putting x = 14 + y in (2), we get

$$(14 + y)^2 - y^2 = 448$$

$$196 + y^2 + 28y - y^2 = 448$$

 $196 + 28y = 448$

$$y = \frac{252}{28} = 9$$

Putting y = 9 in (1), we get

$$x - 9 = 14$$

$$x = 14 + 9 = 23$$

Hence the required numbers are 23 and 9

Question 11:

Let the ten's digit be x and units digit be y respectively.

Then,

$$x + y = 12 ---(1)$$

Let the ten's digit of required number be x and its unit's digit be y respectively

Required number = 10x + y

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10x + y = 7(x + y)
10x + y = 7x + 7y
3x - 6y = 0 ---(1)
Number found on reversing the digits = 10y + x
(10x + y) - 27 = 10y + x
10x - x + y - 10y = 27
9x - 9y = 27
(x - y) = 27
x - y = 3 ---(2)
Multiplying (1) by 1 and (2) by 6
3x - 6y = 0 ---(3)
6x - 6y = 18 ---(4)
Subtracting (3) from (4), we get
3x = 18
x = 18/3 = 6
Putting x = 6 in (1), we get
3 \times 6 - 6y = 0
18 - 6y = 0
-6y = -18
y = 3
Number = 10x + y
= 10 \times 6 + 3
= 60 + 3
= 63
Hence the number is 63.
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********* END *******