



Exercise 3B

Question 17:

The given equations are:

$$.8x + .3y = 3.8 \quad \text{---(1)}$$

$$.4x - .5y = 0.6 \quad \text{---(2)}$$

Multiplying each one of the equation by 10, we get

$$8x + 3y = 38 \quad \text{---(3)}$$

$$4x - 5y = 6 \quad \text{---(4)}$$

Multiplying (3) by 5 and (4) by 3, we get

$$40x + 15y = 190 \quad \text{---(5)}$$

$$12x - 15y = 18 \quad \text{---(6)}$$

Adding (5) and (6), we get

$$52x = 208 \Rightarrow x = \frac{208}{52} = 4$$

Substituting $x = 4$ in (3), we get

$$8 \times 4 + 3y = 38 \Rightarrow 3y = 38 - 32$$

$$3y = 6 \Rightarrow y = \frac{6}{3} = 2$$

Hence, the solution is $x = 4, y = 2$

Question 18:

The given equations are:

$$.05x + .2y = .07 \quad \text{---(1)}$$

$$.3x - .1y = .03 \quad \text{---(2)}$$

Multiplying (1) by 100 and (2) by 100

$$5x + 20y = 7 \quad \text{---(3)}$$

$$30x - 10y = 3 \quad \text{---(4)}$$

Multiplying (3) by 10 and (4) by 20, we get

$$50x + 200y = 70 \quad \text{---(5)}$$

$$600x - 200y = 60 \quad \text{---(6)}$$

Adding (5) and (6), we get

$$650x = 130 \Rightarrow x = \frac{130}{650} = \frac{1}{5} = .2$$

Substituting $x = .2$ in (3) we get

$$5 \times (.2) + 20y = 7$$

$$1 + 20y = 7$$

$$20y = 7 - 1 \Rightarrow 20y = 6, y = \frac{6}{20} = \frac{3}{10}$$

$$y = .3$$

\therefore solution is $x = .2$ and $y = .3$

Question 19:

$$mx - ny = m^2 + n^2 \text{---(1)}$$

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

Multiplying (1) by 1 and (2) by n

$$mx - ny = m^2 + n^2 \text{--- (3)}$$

$$nx + ny = 2mn \text{--- (4)}$$

Adding (3) and (4), we get

$$mx + nx = m^2 + n^2 + 2mn$$

$$x(m + n) = (m + n)^2$$

$$x = \frac{(m + n)^2}{m + n} = m + n$$

Putting $x = m + n$ in (1), we get

$$m(m + n) - ny = m^2 + n^2$$

$$m^2 + mn - ny = m^2 + n^2$$

$$- ny = m^2 + n^2 - m^2 - mn$$

$$- ny = n^2 - nm$$

$$- y = \frac{n(n - m)}{n}$$

$$- y = (n - m)$$

$$y = (m - n)$$

∴ solution is $x = (m + n)$, $y = (m - n)$

***** END *****

