

6.3 : Simultaneous Linear Equations in Two Variables (ELIMINATION METHOD)

1. Solve the simultaneous linear equations using the elimination method.

(a) $2x + 3y = 2$ (1)
 $3x + 4y = 4$ (2)

$(1) \times 3$: $6x + 9y =$ (3)
 $(2) \times 2$: $6x + 8y =$ (4)

$(3) - (4)$: $y =$

Substitute $y = -2$ into (1): $2x + 3() = 2$

$2x - 6 = 2$

$2x =$

$x =$

Therefore, $x =$, $y =$

(b) $2a + 5b = 6$ (1)
 $4a + 3b = -2$ (2)

$(1) \times 2$: $4a + 10b =$ (3)
 $4a + 3b = -2$ (2)

$(3) - (2)$: $7b =$

$b =$

Substitute $b = 2$ into (1): $2a + 5() = 6$

$2a =$

$a =$

Therefore, $a =$, $b =$

$$\begin{array}{rcl}
 (c) \quad 3u - 5v = 5 & \xrightarrow{\hspace{2cm}} & 1 \\
 4u - 3v = 14 & \xrightarrow{\hspace{2cm}} & 2 \\
 \hline
 1 \times 4: & \xrightarrow{\hspace{2cm}} & 3 \\
 2 \times 3: & \xrightarrow{\hspace{2cm}} & 4 \\
 \hline
 3 - 4: & -11v = -22 & \\
 v = & & \\
 \end{array}$$

Substitute $v = 2$ into 1: $3u - 5() = 5$

$$3u =$$

$$u =$$

Therefore, $u =$, $v =$

Problem Solving :

The sum of two numbers is 108, and the difference between the two numbers is 18. Find the two numbers.

Let the two numbers be x and y .

$$\begin{array}{rcl}
 \text{Sum of two numbers is 108} & : & \xrightarrow{\hspace{2cm}} 1 \\
 \text{Difference between two} & : & \xrightarrow{\hspace{2cm}} 2 \\
 \text{numbers is 18} & & \hline
 \end{array}$$

In Linear Equation Form

$$\begin{array}{rcl}
 \hline
 \end{array}$$

$\textcircled{1} + \textcircled{2}:$

$$x =$$

Substitute $x = 63$ into 1: $63 + y = 108$

$$y =$$

$$y =$$

Therefore, the two numbers are and .