

6.3 : Simultaneous Linear Equations in Two Variables

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

(a) $2m - n = 8$ _____ ①
 $4m + 3n = 6$ _____ ②

From ①, $2m - n = 8$
 $-n =$
 $n =$ _____ ③

Substitute ③ into ②:

$$\begin{aligned}4m + 3(\quad) &= 6 \\4m + &= 6 \\10m &= 6 + 24 \\10m &= \\m &= \end{aligned}$$

Substitute $m = 3$ into ③: $n = 2(\quad) - 8$
 $n =$

Therefore, $m =$, $n =$

(b) $5p + 4q = 12$ _____ ①
 $p + 2q = 3$ _____ ②

From ②, $p = 3$ _____ ③

Substitute ③ into ①:

$$\begin{aligned}5(\quad) + 4q &= 12 \\+4q &= 12 \\&= 12 \\6q &= 15 - 12 \\6q &= 3 \\q &= - \end{aligned}$$

Substitute $q = \frac{1}{2}$ into ③: $p = 3 - 2(-)$
 $p = 3 - 1$
 $p =$

Therefore, $p =$, $q =$

$$(c) \quad x + 3y = 6 \quad \text{---} \quad \textcircled{1}$$

$$3x - 2y = 7 \quad \text{---} \quad \textcircled{2}$$

$$\text{From } \textcircled{1}, \quad x = \quad \text{---} \quad \textcircled{3}$$

Substitute $\textcircled{3}$ into $\textcircled{1}$:

$$\begin{aligned} 3(\quad) - 2y &= 7 \\ -2y &= 7 \\ &= -11 \end{aligned}$$

$$y =$$

$$\text{Substitute } y = 1 \text{ into } \textcircled{3}: \quad x = 6 - 3(\quad)$$

$$x =$$

$$\text{Therefore, } x = \quad , \quad y =$$

Problem Solving Using Substitution Method :

Mr Li is four times as old as his son. In five years' time, the sum of their ages will be 60 years. How old are they now?

Let Mr Li's age be x years old and his son is y years old.

Mr Li is four times as old as his son :

$$x = \quad \text{---} \quad \textcircled{1}$$

Sum of their ages after five years = 60

Mr Li's age + His son's age = 60

$$\begin{aligned} (\quad) + (\quad) &= 60 \\ &= 60 \end{aligned}$$

$$x + y = \quad \text{---} \quad \textcircled{2}$$

Substitute $\textcircled{1}$ into $\textcircled{2}$:

$$\begin{aligned} + y &= 50 \\ &= 50 \\ y &= \end{aligned}$$

$$\text{Substitute } y = \quad \text{into } \textcircled{1}: \quad x = 4(\quad)$$

$$x =$$

Therefore, Mr Li is _____ years old and his son is _____ years old.