

1. Simultaneous Equations (In two Unknowns)

To solve pairs of simultaneous equations you need to:

- 1 Use the elimination method to get rid of one of the variables
- 2 Find the value of one variable
- 3 Find the value of the remaining variables via substitution
- 4 Clearly state the final answer/s
- 5 Check your answer by substituting both values into either of the original equation

Example: Solve for x and y

$$x + y = 6 \quad (1)$$

$$2x + 4y = 20 \quad (2)$$

From (1) $x = 6 - y$

Substitute for x in (2) and solve for y

$$2(6 - y) + 4y = 20$$

$$12 - 2y + 4y = 20$$

$$2y = 8$$

$$\therefore y = 4$$

Substituting y in (1), $x + 4 = 6$

$$\therefore x = 6 - 4 = 2$$

Practice Exercise

Solve the following simultaneous equations for x and y

- a. $y = 2x - 3$ and $2y = 5x - 8$
- b. $3y = -4x + 1$ and $2y = x - 4$
- c. $3y = x$ and $y = 2x + 5$
- d. $y + x = 1$ and $5y = -x + 3$
- e. $-2y = 5x + 6$ and $y = 4x - 5$
- f. $6y - x = 0$ and $y = -5 + \frac{1}{3}x$
- g. $y = 2x - 4$ and $x - 8y = 27$
- h. $5y = 2x + 8$ and $2y = x + 4$