Solve linear simultaneous equations graphically (R)

1 Solve the simultaneous equations.

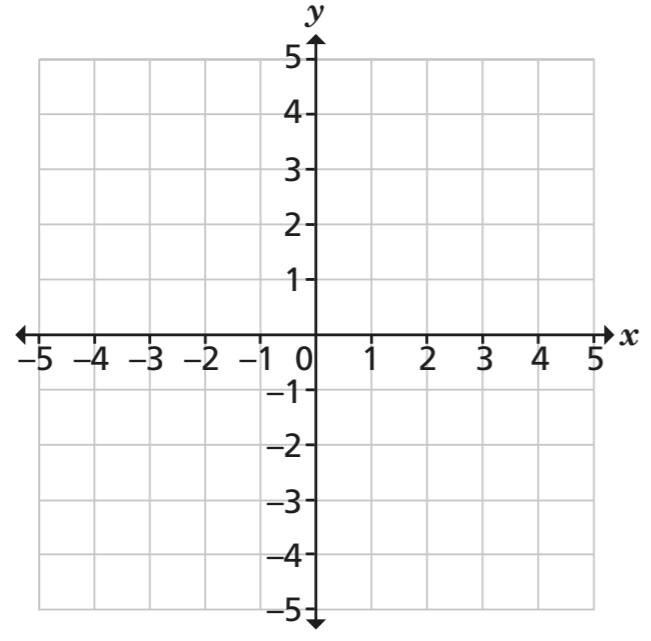$$y + 2x = 7 \qquad y + x = 4$$

$x =$ ☐ $y =$ ☐

2 Two lines are given by the equations $y = 7 - 2x$ and $y = 4 - x$.

a) Complete the table of values for each line.

$y = 7 - 2x$	x	0	1	2
	y			

$y = 4 - x$	x	0	1	2
	y			

b) Draw and label the graphs of $y = 7 - 2x$ and $y = 4 - x$.

c) The graphs of $y = 7 - 2x$ and $y = 4 - x$ intersect at exactly one point.

Circle this point. What are its coordinates? (☐ , ☐)

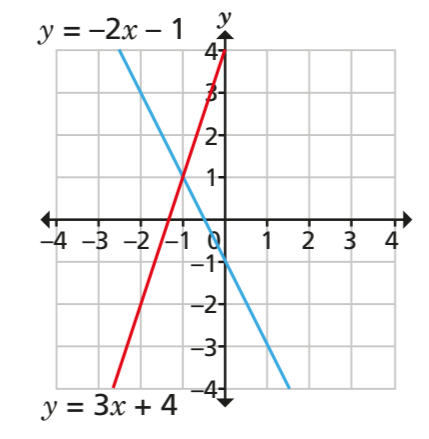**d)** Use your answer to part c) to solve the simultaneous equations.

$$y = 7 - 2x \qquad y = 4 - x$$

$x =$ ☐ $y =$ ☐

3 Compare your answers to questions 1 and 2.

What do you notice? Why does this happen?

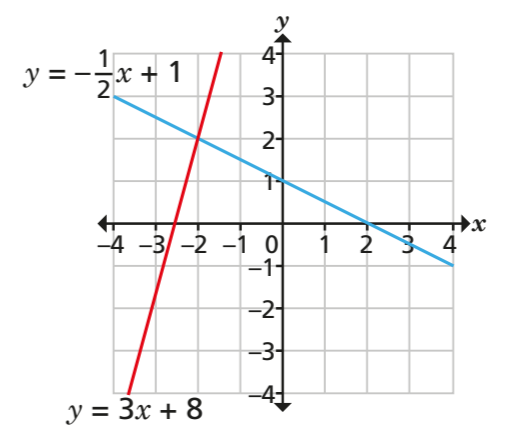**4** The graph shows the lines $y = -2x - 1$ and $y = 3x + 4$

a) What are the coordinates of the point where the graphs of $y = -2x - 1$ and $y = 3x + 4$ intersect? (☐ , ☐)

b) Hence, solve the simultaneous equations.

$$y = -2x - 1 \qquad y = 3x + 4$$

$x =$ ☐ $y =$ ☐

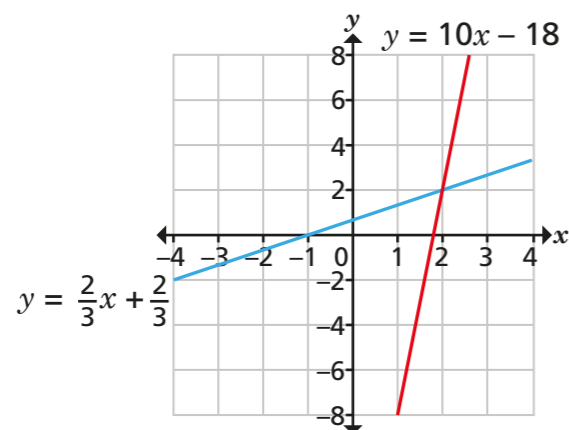**5** The graph shows the lines $y = -\frac{1}{2}x + 1$ and $y = 3x + 8$

a) What are the coordinates of the point where the graphs of $y = -\frac{1}{2}x + 1$ and $y = 3x + 8$ intersect? (☐ , ☐)

b) Hence, solve the simultaneous equations.

$$y = -\frac{1}{2}x + 1 \qquad y = 3x + 8$$

$x =$ ☐ $y =$ ☐
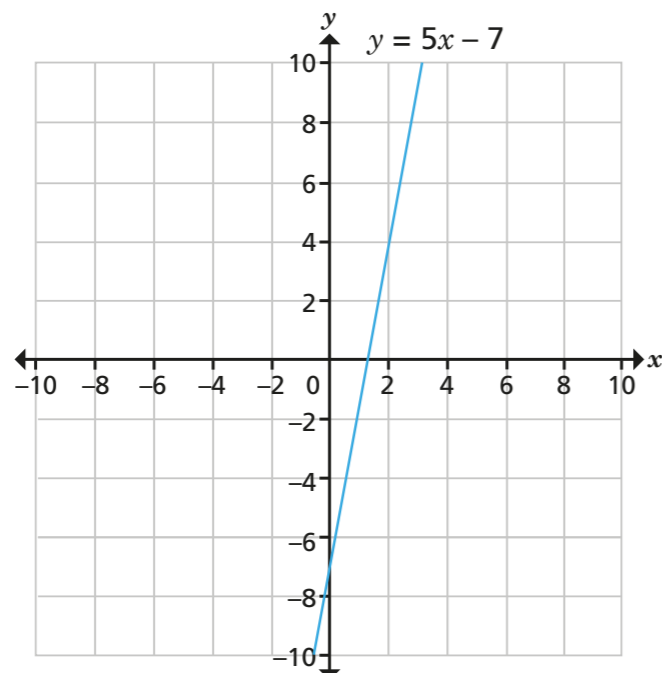
6 The graph shows the lines $y = 10x - 18$ and $y = \frac{2}{3}x + \frac{2}{3}$

$y = 10x - 18$

$y = \frac{2}{3}x + \frac{2}{3}$

a) What are the coordinates of the point where the graphs of $y = 10x - 18$ and $y = \frac{2}{3}x + \frac{2}{3}$ intersect?

(⬚ , ⬚)

b) Hence, solve the simultaneous equations.

$y = 10x - 18$ $y = \frac{2}{3}x + \frac{2}{3}$ $x =$ ⬚ $y =$ ⬚

7 The graph shows the line $y = 5x - 7$

$y = 5x - 7$

a) On the same grid, draw the graph of $y = -2x$

b) Hence, solve the simultaneous equations.
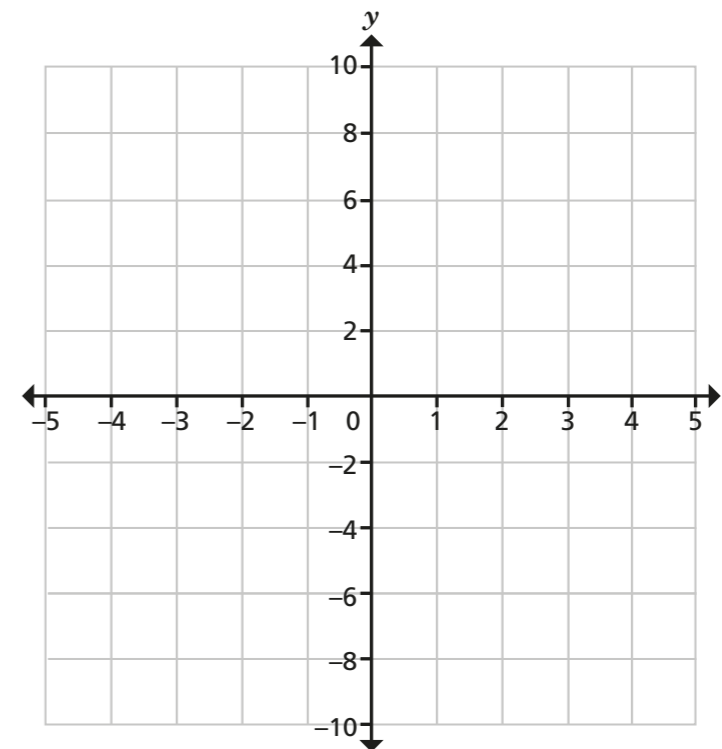
$y = 5x - 7$ $y = -2x$ $x =$ ⬚ $y =$ ⬚

8 Two lines are given by the equations. L_1 $y = 3x - 8$ L_2 $y = 4 - 5x$

a) Complete the tables of values for the lines.

L_1	x	0	1	2
	y			

L_2	x	0	1	2
	y			

b) On the coordinate grid, draw and label the graphs of L_1 and L_2

c) Use your graph in part b) to estimate the solutions to the simultaneous equations.

$y = 3x - 8$ $y = 4 - 5x$ $x =$ ⬚ $y =$ ⬚

d) Why is your answer to part c) an estimate?

e) Solve the simultaneous equations algebraically to check your estimate.

$x =$ ⬚ $y =$ ⬚

Compare methods with a partner.