

GCSE Maths: Solving equations with graphs (Higher): answers

GCSE Maths - Quadratic and Simultaneous Equations - Higher - Lesson 14.7

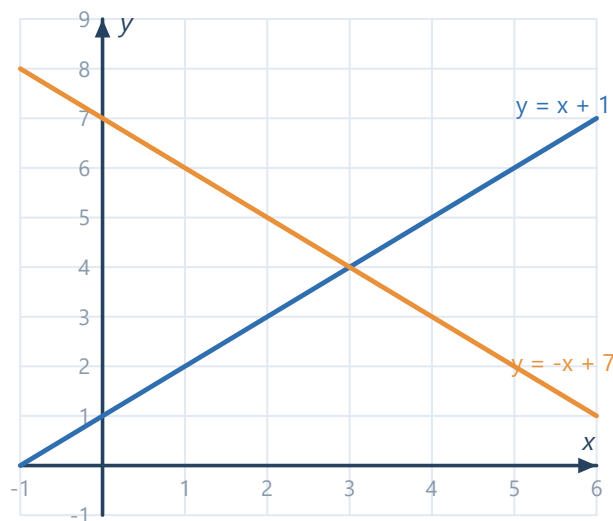
Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch14-quadratics-simultaneous/higher/solving-equations-with-graphs/

Exercise 14G Solving equations with graphs Non-calculator

- 1 Use the graph to solve the simultaneous equations

$$y = x + 1$$

$$y = 7 - x$$

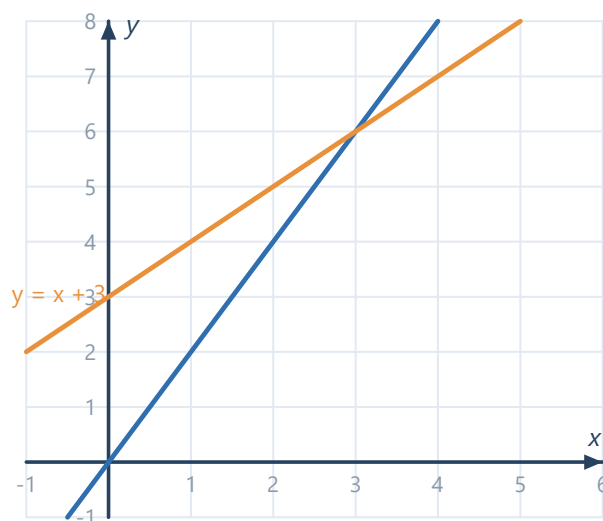


Answer: $x = 3, y = 4$

- 2 Use the graph to solve the simultaneous equations

$$y = 2x$$

$$y = x + 3$$

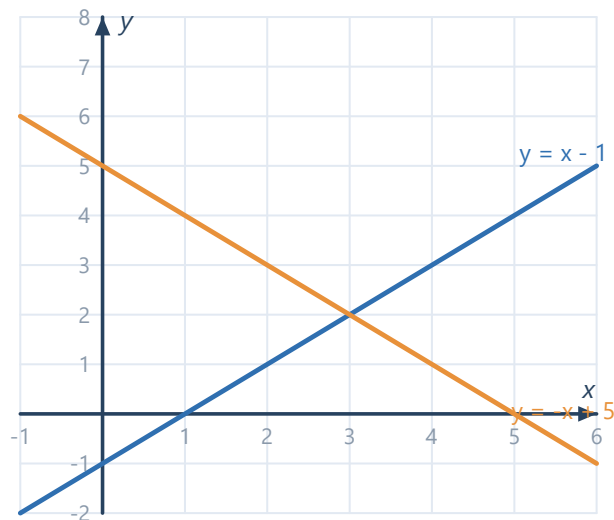


Answer: $x = 3, y = 6$

- 3 Use the graph to solve the simultaneous equations

$$y = x - 1$$

$$y = 5 - x$$

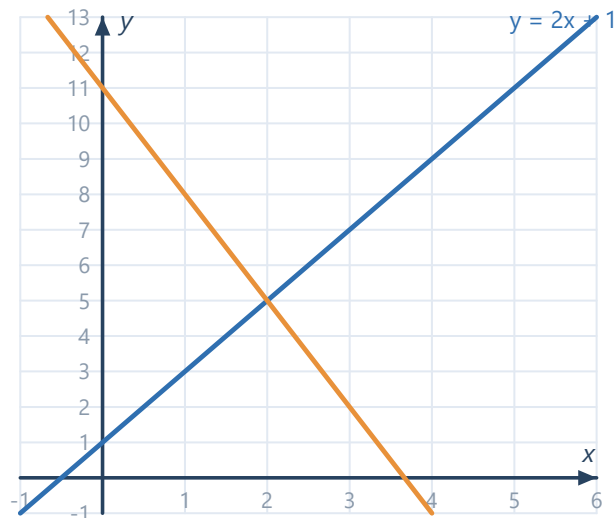


Answer: $x = 3, y = 2$

- 4 Use the graph to solve the simultaneous equations

$$y = 2x + 1$$

$$y = 11 - 3x$$



Answer: $x = 2, y = 5$

- 5 Draw the graphs of $y = 2x - 1$ and $x + y = 8$ for values of x from 0 to 6. Use your graphs to solve the simultaneous equations.

Answer: $x = 3, y = 5$

- 6 On the same grid draw the graphs of $y = x + 2$ and $y = 8 - x$ for x from 0 to 6. Write down the solution of the simultaneous equations.

Answer: $x = 3, y = 5$

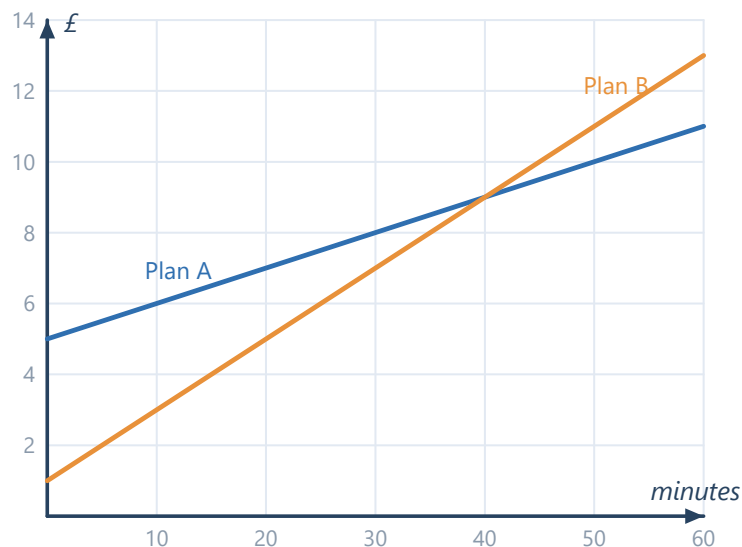
- 7 Draw the graphs of $y = 3x$ and $x + y = 8$ for x from 0 to 4. Use your graph to solve the simultaneous equations.

Answer: $x = 2, y = 6$

- 8 Without drawing, explain how you know that $y = 3x + 2$ and $y = 3x - 5$ have no solution.

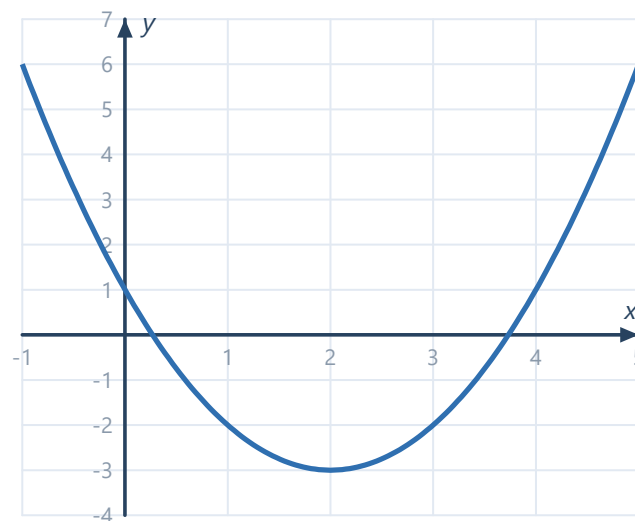
Answer: Both have gradient 3: parallel lines never cross

- 9 Plan A for a mobile phone costs a fixed £5 plus 10p per minute. Plan B costs a fixed £1 plus 20p per minute. The graph shows the cost of each plan for up to 60 minutes. For how many minutes do the two plans cost the same, and what is that cost?



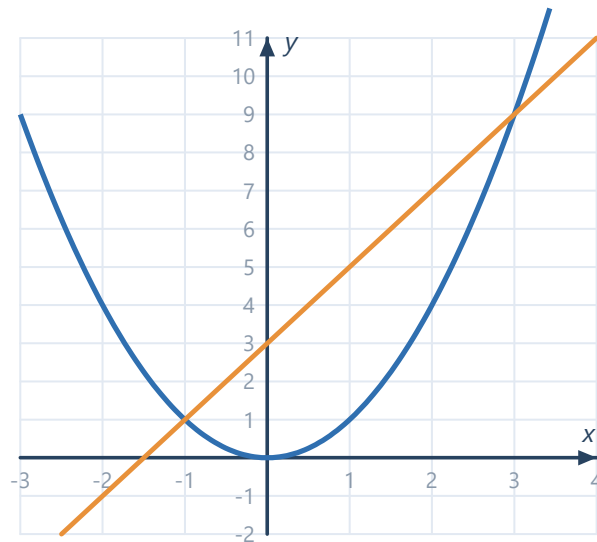
Answer: 40 minutes, £9

- 10 The graph of $y = x^2 - 4x + 1$ is drawn. Use it to estimate the solutions of $x^2 - 4x + 1 = 0$ to 1 decimal place.



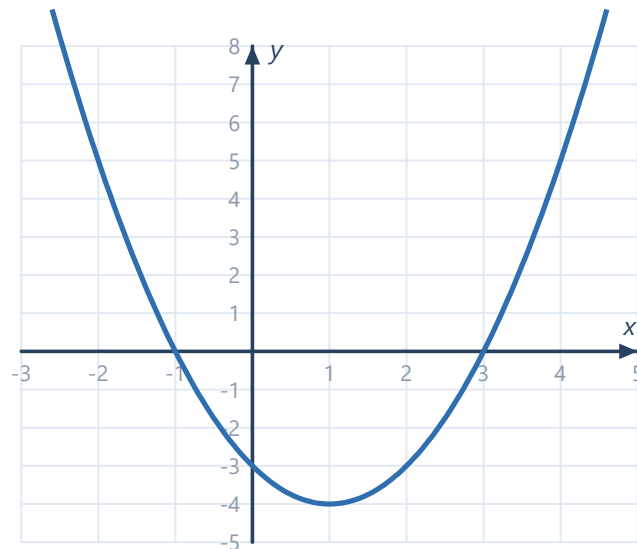
Answer: $x \approx 0.3$ or $x \approx 3.7$ (accept answers within 0.1)

- 11 The graphs of $y = x^2$ and $y = 2x + 3$ are drawn. Use them to solve $x^2 = 2x + 3$.



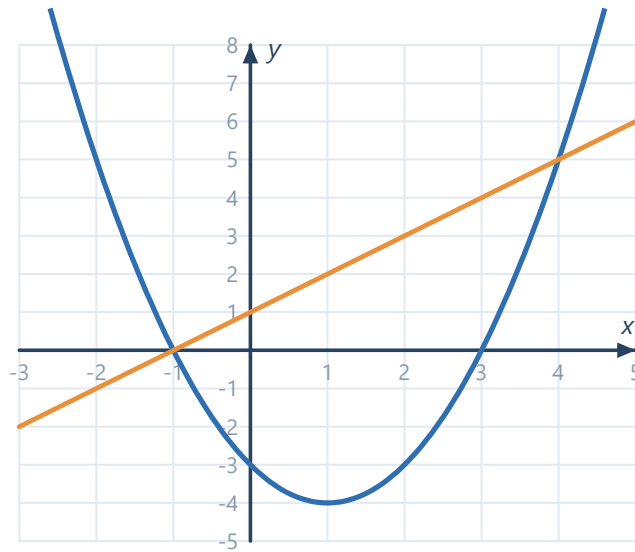
Answer: $x = -1$ or $x = 3$

- 12** The graph of $y = x^2 - 2x - 3$ is drawn. Use it to estimate the solutions of $x^2 - 2x - 3 = 2$.



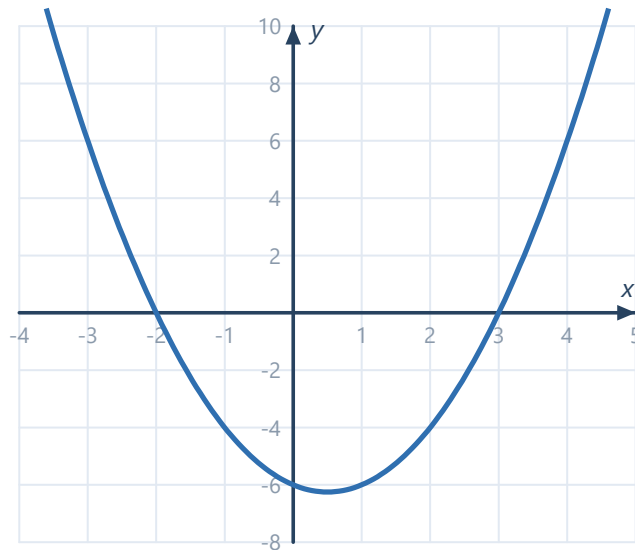
Answer: $x \approx -1.4$ or $x \approx 3.4$ (accept within 0.1)

- 13** The graph shows the curve $y = x^2 - 2x - 3$ and the line $y = x + 1$. Use the graph to solve the simultaneous equations $y = x^2 - 2x - 3$ and $y = x + 1$.



Answer: $x = -1, y = 0$ and $x = 4, y = 5$

- 14** The graph of $y = x^2 - x - 6$ is drawn. Use it to estimate the solutions of $x^2 - x - 6 = 4$.



Answer: $x \approx -2.7$ or $x \approx 3.7$ (accept within 0.1)

- 15** Sally draws the graphs of $y = x + 1$ and $y = 2x - 3$ and says they cross at (4, 5). Use algebra to show that she is correct.

Answer: $x + 1 = 2x - 3$ gives $x = 4$ and $y = 5$