JRA Tutors
Private tuition and small online Study Pods

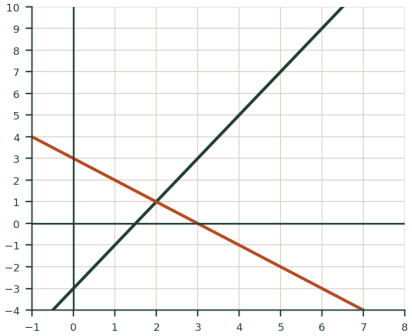
Solving Simultaneous Equations Graphically

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (43 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 66 marks.

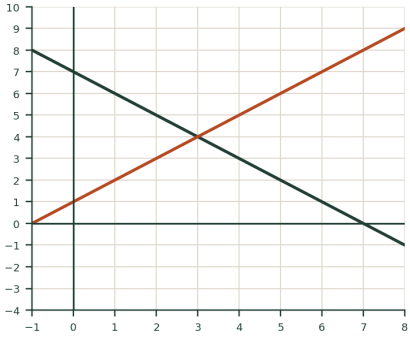
Warm-up

1 The graphs of $y = 2x - 3$ (dark) and $y = -x + 3$ (orange) are drawn. Use the graph to solve the simultaneous equations. **[3 marks]**



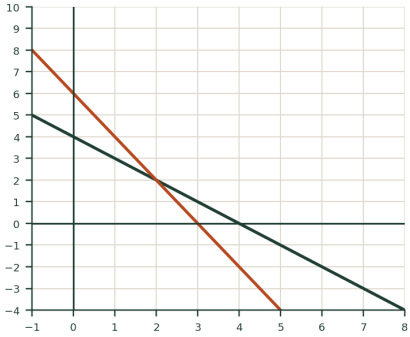
Answer _____

2 The graphs of $y = -x + 7$ (dark) and $y = x + 1$ (orange) are drawn. Use the graph to solve the simultaneous equations. **[3 marks]**



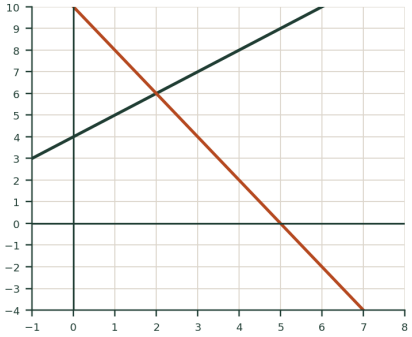
Answer _____

3 The graphs of $y = -x + 4$ (dark) and $y = -2x + 6$ (orange) are drawn. Use the graph to solve the simultaneous equations. **[3 marks]**



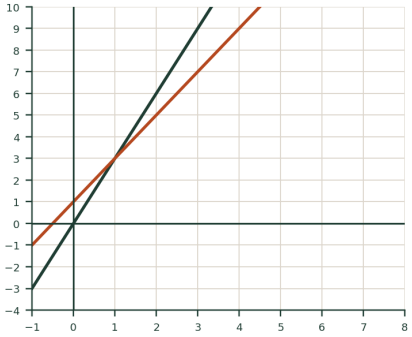
Answer _____

4 The graphs of y = x + 4 (dark) and y = −2x + 10 (orange) are drawn. Use the graph to solve the simultaneous equations. **[3 marks]**



Answer _____

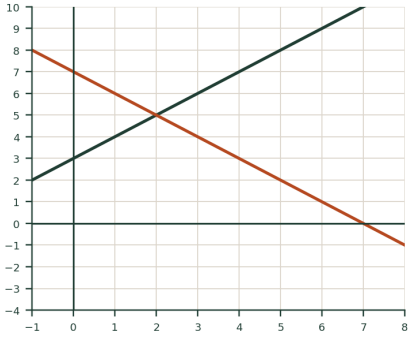
5 The graphs of y = 3x (dark) and y = 2x + 1 (orange) are drawn. Use the graph to solve the simultaneous equations. **[3 marks]**



Answer _____

Core

6 Solve the simultaneous equations graphically: $y = x + 3$ and $y = -x + 7$. **[3 marks]**
(The lines are drawn.)



Answer _____

7 Check that $x = 2$, $y = 3$ satisfies $y = 3x - 3$. **[2 marks]**

Answer _____

8 Show that the lines $y = 2x - 2$ and $y = 3x - 6$ meet at (4, 6). **[3 marks]**

Answer _____

9 Write down the gradient of each line: $y = -x + 10$ and $y = 3x - 6$. **[2 marks]**

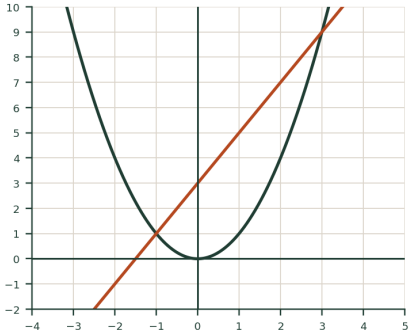
Answer _____

10 Which line is steeper, $y = -2x + 12$ or $y = 3x - 3$? **[2 marks]**

Answer _____

Stretch

11 The graphs of $y = x^2$ and $y = 2x + 3$ are drawn. Use them to solve $y = x^2$ and $y = 2x + 3$ together. **[5 marks]**



Answer _____

12 Write down the equation you get by setting $x^2 = 2x + 3$. **[3 marks]**

Answer _____

13 Solve $x^2 - x - 2 = 0$ and check your answers against the intersection points. **[4 marks]**

Answer _____

14 How many solutions does the pair $y = x^2$ and $y = -3$ have? **[2 marks]**

Answer _____

15 How many solutions does the pair $y = x^2$ and $y = 4$ have? **[2 marks]**

Answer _____

Challenge

16 Solve $x + y = 5$ and $y = 3x - 11$ graphically, then check algebraically. **[5 marks]**

Answer _____

17 Draw the graphs of $y = x + 1$ and $y = 7 - x$ and write down their intersection point. **[4 marks]**

Answer _____

18 The lines $y = -2x + 8$ and $y = 3x - 2$ meet at P. Work out the coordinates of P algebraically. **[5 marks]**

Answer _____

19 A line $y = 2x - 3$ and the curve $y = x^2 - 4x + 5$ are drawn. By setting them equal, find the x-coordinates of any intersections. **[5 marks]**

Answer _____

20 Show that the lines $y = 2x + 1$ and $y = 2x + 5$ never meet. **[4 marks]**

Answer _____