# 2.5 Simultaneous Equations: Linear and Quadratic: 10-minute Pack

AQA 8365 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** Solve the simultaneous equations $4x - 3y = 1$ and $2x + y = 13$.

**(Total for Question 1 is 3 marks)**

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**2** A line has equation $y = x + 2$ and a curve has equation $y = x^2 - 4$. Which one of these pairs gives both solutions of the simultaneous equations?

- ☐ A) (3, 5) and (-2, 0)
- ☐ B) (-3, -1) and (2, 4)
- ☐ C) (3, 5) only
- ☐ D) (6, 8) and (-2, 0)

**(Total for Question 2 is 1 mark)**

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**3** Show that the line $y = 3x + 2$ does not intersect the curve $y = x^2 + 2x + 9$.

**(Total for Question 3 is 4 marks)**

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**4** Two numbers have a sum of 11. Their product is 24. Find the two numbers.

**(Total for Question 4 is 2 marks)**


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# Mark scheme · 2.5 Simultaneous Equations: Linear and Quadratic: 10-minute Pack

## Question 1

| | |
|---|---|
| rearrange $2x + y = 13$ to $y = 13 - 2x$ (or equivalent elimination step) | **M1** |
| substitute and solve to find one value, e.g. $10x = 40$ leading to $x = 4$ | **M1** |
| $x = 4$ and $y = 5$ cao | **A1** |

**Answer: x = 4, y = 5**

## Question 2

| | |
|---|---|
| A selected cao | **B1** |

**Answer: A) (3, 5) and (-2, 0)**

## Question 3

| | |
|---|---|
| set $3x + 2$ equal to $x^2 + 2x + 9$ and rearrange to $x^2 - x + 7 = 0$ oe | **M1** |
| calculate the discriminant $b^2 - 4ac = 1 - 28$ | **M1** |
| discriminant = -27 | **A1** |
| cso: since $-27 < 0$ there are no real solutions, so the line does not intersect the curve | **A1** |

**Answer: Discriminant = -27 < 0, so no real intersection points exist.**

## Question 4

| | |
|---|---|
| form and attempt to solve $t^2 - 11t + 24 = 0$ | **M1** |
| the two numbers are 3 and 8 oe | **A1** |

**Answer: 3 and 8**


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