



5.11F Simultaneous Equations: Foundation Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 45 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Work out the value of x and y that satisfy both equations.

$$x = 3$$

$$2x + y = 8$$

(Total for Question 1 is 1 mark)

- 2** Solve the simultaneous equations by substitution.

$$y = 2x + 1$$

$$x + y = 10$$

(Total for Question 2 is 2 marks)

- 3** Use elimination to solve these equations.

$$2x + y = 11$$

$$x + 2y = 10$$

(Total for Question 3 is 2 marks)

- 4** Alf and Bea share some pens and pencils.

Alf buys 2 pens and 3 pencils for 9 pounds.

Bea buys 1 pen and 4 pencils for 7 pounds.

Let p be the price of a pen, in pounds, and q be the price of a pencil, in pounds. Write the simultaneous equations and solve for p and q .

(Total for Question 4 is 3 marks)

- 5** Solve the simultaneous equations. Give your answers as integers.

$$3x - y = 5$$

$$x + y = 7$$

(Total for Question 5 is 4 marks)

- 6** A small theatre has tickets for adults and children. An adult ticket costs 7 pounds and a child ticket costs 3 pounds.

On Monday the theatre sold 50 tickets and took 274 pounds.

Let a be the number of adult tickets and c the number of child tickets. Write the simultaneous equations and find a and c .

(Total for Question 6 is 5 marks)

- 7 Solve these simultaneous equations by elimination. Show your working clearly.

$$4x + 3y = 25$$

$$2x - y = 4$$

(Total for Question 7 is 6 marks)

- 8 A grocer mixes two sizes of fruit bags. A small bag contains 2 apples and 3 pears. A large bag contains 5 apples and 2 pears.

He makes some small bags and some large bags. In total there are 34 apples and 29 pears.

Let s be the number of small bags and L the number of large bags. Form the simultaneous equations and solve for s and L . Give your answers as integers.

(Total for Question 8 is 7 marks)

Mark scheme · 5.11F Simultaneous Equations: Foundation Tier Practice

Question 1

- **B1** $x = 3, y = 2$ cao
- **Answer:** $x = 3, y = 2$

Question 2

- **M1** substitute $y = 2x + 1$ into $x + y = 10$ leading to $x + 2x + 1 = 10$ or $3x + 1 = 10$
- **A1** $x = 3$ cao; then $y = 7$ cao
- **Answer:** $x = 3, y = 7$

Question 3

- **M1** eliminate a variable, e.g. multiply first equation by 2 and subtract or subtract equations to get x or y
- **A1** $x = 4, y = 3$ cao
- **Answer:** $x = 4, y = 3$

Question 4

- **M1** form equations: $2p + 3q = 9$ and $1p + 4q = 7$
- **M1** solve the two equations to find p and q , e.g. substitute or eliminate
- **A1** $p = 3, q = 1$ cao
- **Answer:** $p = 3, q = 1$

Question 5

- **M1** add the two equations to eliminate y giving $4x = 12$
- **A1** $x = 3$ cao
- **M1** substitute $x = 3$ into $x + y = 7$ to find y
- **A1** $y = 4$ cao
- **Answer:** $x = 3, y = 4$

Question 6

- **M1** form equations: $a + c = 50$ and $7a + 3c = 274$
- **M1** eliminate a or c , e.g. multiply first equation by 3 and subtract from second to get $4a = 274 - 150 = 124$
- **A1** $a = 31$ cao
- **M1** substitute $a = 31$ into $a + c = 50$ to find c
- **A1** $c = 19$ cao
- **Answer:** $a = 31, c = 19$

Question 7

- **M1** multiply second equation by 3 to align y : $6x - 3y = 12$
- **M1** add to first equation to eliminate y giving $10x = 37$
- **A1** $x = 37/10$ (or 3.7) cao
- **M1** substitute $x = 37/10$ into $2x - y = 4$ to find y
- **A1** $y = 17/5$ cao
- **A1** final answers $x = 37/10, y = 17/5$ cao
- **Answer:** $x = 37/10, y = 17/5$

Question 8

- **M1** form equations: $2s + 5L = 34$ and $3s + 2L = 29$
- **M1** eliminate a variable, e.g. multiply first equation by 3 and second by 2 to align s: $6s + 15L = 102$ and $6s + 4L = 58$
- **M1** subtract to get $11L = 44$
- **A1** $L = 4$ cao
- **M1** substitute $L = 4$ into $2s + 5L = 34$ to find s
- **A1** $s = 7$ cao
- **A1** final answers $s = 7$, $L = 4$ cao
- **Answer: $s = 7$, $L = 4$**