

Centre No.						Paper Reference						Surname <i>Correction</i>	Initial(s)	
Candidate No.						1	3	8	0	/	3	H	Signature <i>M. Semar</i>	

Paper Reference(s)

**1380/3H**

**Edexcel GCSE**

**Mathematics (Linear) – 1380**

**Paper 3 (Non-Calculator)**

**Simultaneous Equations**

**Past Paper Questions**

**Arranged by Topic**

Examiner's use only

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Team Leader's use only

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**Materials required for examination**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

**Items included with question papers**

Nil

**Instructions to Candidates**

In the boxes above, write your centre number, candidate number, your surname, initials and signature.

Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

**You must NOT write on the formulae page.**

**Anything you write on the formulae page will gain NO credit.**

If you need more space to complete your answer to any question, use additional answer sheets.

**Information for Candidates**

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 26 questions in this question paper. The total mark for this paper is 100.

There are 24 pages in this question paper. Any blank pages are indicated.

**Calculators must not be used.**

**Advice to Candidates**

Show all stages in any calculations.

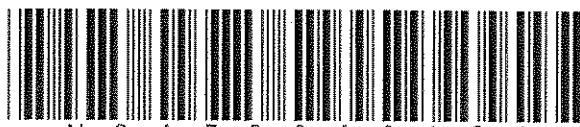
Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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N 3 4 7 3 0 A 0 1 2 4

*Turn over*

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1. Solve the simultaneous equations

$$\begin{array}{l} 2 \times \\ 3 \times \end{array} \begin{cases} 3x + 2y = 8 \\ 2x + 5y = -2 \end{cases} \Leftrightarrow \begin{array}{l} \rightarrow 6x + 4y = 16 \quad (1) \\ \rightarrow 6x + 15y = -6 \quad (2) \end{array}$$

$$(1) - (2) : \quad \underline{6x - 6x + 4y - 15y = 16 - -6} \\
 -11y = 16 + 6$$

$$-11y = 22 \quad \therefore y = -2$$

replace  $y = -2$  into  $3x + 2y = 8$ .

$$3x + 2(-2) = 8$$

$$3x - 4 = 8$$

$$3x = 12$$

$$x = 4$$

$$x = \dots\dots\dots 4 \dots\dots\dots$$

$$y = \dots\dots\dots -2 \dots\dots\dots$$

Q21

(Total 4 marks)

2. Solve the simultaneous equations

$$\begin{cases} 3x & \left\{ \begin{array}{l} 6x + 2y = -3 \\ 4x - 3y = 11 \end{array} \right. \end{cases}$$

$$\begin{array}{r} 18x + 6y = -9 \quad (1) \\ + \quad 8x - 6y = 22 \quad (2) \\ \hline \end{array}$$

$$26x = -9 + 22$$

$$26x = 13$$

$$x = \frac{1}{2}$$

replace  $x = \frac{1}{2}$  into  $6x + 2y = -3$

$$6 \times \frac{1}{2} + 2y = -3$$

$$3 + 2y = -3$$

$$\begin{array}{l} 2y = -6 \\ y = -3 \end{array}$$

$$x = \dots \frac{1}{2} \dots, y = \dots -3 \dots$$

Q2

(Total 4 marks)

3. Solve the simultaneous equations

$$x^2 + y^2 = 5 \quad (1)$$

$$y = 3x + 1 \quad (2)$$

Substitute (2) into (1) :

$$x^2 + (3x+1)^2 = 5$$

$$x^2 + 9x^2 + 1 + 6x = 5$$

$$10x^2 + 6x - 4 = 0 \quad (\div 2)$$

$$5x^2 + 3x - 2 = 0$$

$$5x^2 + 5x - 2x - 2 = 0$$

$$5x(x+1) - 2(x+1) = 0$$

$$(x+1)(5x-2) = 0$$

$$x = -1 \quad \text{or} \quad x = 2/5$$

When  $x = -1$        $y = 3x - 1 + 1 = -3 + 1 = -2$

( $x = -1$  ;  $y = -2$ ).

When  $x = 2/5$        $y = 3 \times 2/5 + 1$   
 $= 6/5 + 5/5 = 11/5$

$x = \dots -1 \dots$        $y = \dots -2 \dots$

or  $x = \dots 2/5 \dots$        $y = \dots 11/5 \dots$

(Total 6 marks)

4. Solve the simultaneous equations

$$4x + y = -1 \quad (1)$$

$$4x - 3y = 7 \quad (2)$$

$$(1) - (2) : \quad 4x + y - 4x + 3y = -1 - 7$$
$$4y = -8$$
$$y = -2$$

Replace  $y = -2$  into (1) =

$$4x + (-2) = -1$$

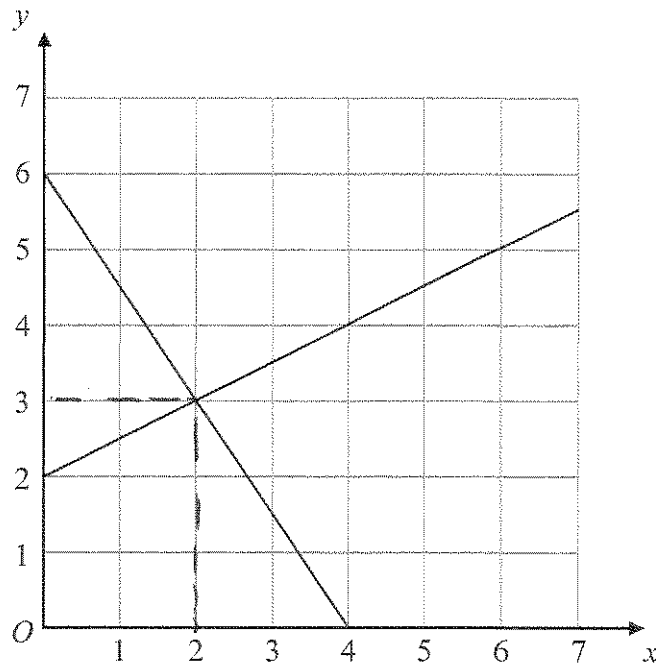
$$4x - 2 = -1 \quad \therefore \quad 4x = -1 + 2$$
$$x = \frac{1}{4}$$

$$x = \frac{1}{4} \quad y = -2$$

(Total 3 marks)

Q4

5.



The diagram shows graphs of  $y = \frac{1}{2}x + 2$

and  $2y + 3x = 12$

(a) Use the diagram to solve the simultaneous equations

$$y = \frac{1}{2}x + 2$$

$$2y + 3x = 12$$

$x = \dots\dots\dots 2 \dots\dots\dots y = \dots\dots\dots 3 \dots\dots\dots$   
(1)

(b) Find an equation of the straight line which is parallel to the line  $y = \frac{1}{2}x + 2$  and passes through the point (0, 4).

$y = mx + c$  equation of line

$m = \frac{1}{2}$  because parallel lines have same gradient.

$$y = \frac{1}{2}x + c$$

$$\dots\dots\dots y = \frac{1}{2}x + 4 \dots\dots\dots$$

(0, 4) on the line means  $4 = \frac{1}{2} \times 0 + c \therefore c = 4$  (Total 3 marks)

Q5

6. Solve the simultaneous equations

$$\begin{cases} 3x \} 6x + 2y = -3 \\ 2x \{ 4x - 3y = 11 \end{cases}$$

$$18x + 6y = -9 \quad (1)$$

$$8x - 6y = 22 \quad (2)$$

(1) + (2) gives

$$18x + 8x + 6y - 6y = -9 + 22$$

$$26x = 13$$

$$x = \frac{13}{26} = \frac{1}{2}$$

Replace  $x = \frac{1}{2}$  into  $6x + 2y = -3$  gives

$$6 \times \frac{1}{2} + 2y = -3$$

$$3 + 2y = -3$$

$$2y = -3 - 3$$

$$2y = -6$$

$$y = -3$$

$$x = \frac{1}{2}, y = -3$$

(Total 4 marks)

Q6

7. Solve the simultaneous equations

$$(1) \begin{cases} 4x + y = 10 & \times 1 \\ 2x - 3y = 19 & \times 2 \end{cases}$$

$$\begin{cases} 4x + y = 10 & (1) \\ 4x - 6y = 38 & (2) \end{cases}$$

$$(1) - (2) =$$

$$4x + y - 4x + 6y = 10 - 38$$

$$7y = -28$$

$$y = -4$$

Replace -4 into (1) gives =

$$4x - 4 = 10$$

$$4x = 14$$

~~$$x = \frac{14}{4}$$~~

$$x = \frac{14}{4} = \frac{7}{2} = 3.5$$

$$x = \dots \dots \dots 3.5$$

$$y = \dots \dots \dots -4$$

(Total 3 marks)

Q7