

Centre No.						Paper Reference					Surname <i>Correction</i>	Initial(s)	
Candidate No.						1	3	8	0	/	4	H	Signature <i>M. Semat</i>

Paper Reference(s)

**1380/4H**

**Edexcel GCSE**

**Mathematics (Linear) – 1380**

Paper 4 (Calculator)

**Quadratic Equations**

Past Paper Questions

Arranged by Topic

Examiner's use only

--	--	--

Team Leader's use only

--	--	--



**Materials required for examination**

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

If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.

**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.

Lots more free papers at:  
<http://bland.in>

Compiled by Peter Bland

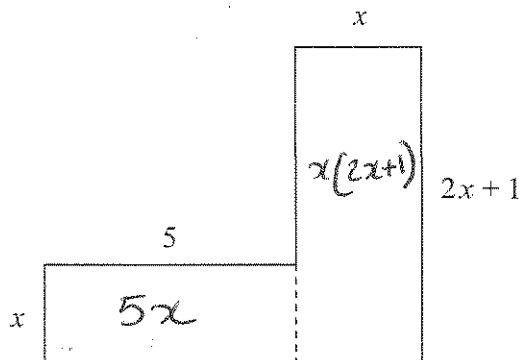


*Turn over*

**edexcel**  
advancing learning, changing lives

1. The diagram below shows a 6-sided shape.  
 All the corners are right angles.  
 All the measurements are given in centimetres.

Diagram NOT accurately drawn



The area of the shape is  $95 \text{ cm}^2$ .

- (a) Show that  $2x^2 + 6x - 95 = 0$

$$5 \times x + x \times (2x + 1) = 95$$

$$5x + 2x^2 + x - 95 = 0$$

$$2x^2 + 6x - 95 = 0$$

- (b) Solve the equation

$$2x^2 + 6x - 95 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad (3)$$

Give your solutions correct to 3 significant figures.

$$x = \frac{-6 \pm \sqrt{36 - 4(2)(-95)}}{2 \times 2} = \frac{-6 \pm \sqrt{36 + 760}}{4}$$

$$x = 5.55 \quad \text{or} \quad x = -8.55$$

(3)

Q1

(Total 6 marks)

2. Simplify fully  $\frac{x^2 - 8x + 15}{2x^2 - 7x - 15} = \frac{(x-3)(\cancel{x-5})}{(\cancel{x-5})(2x+3)} =$

$$x^2 - 8x + 15 = (x - 3)(x - 5)$$

$$2x^2 - 7x - 15 = 2x^2 - 10x + 3x - 15$$

$$= 2x(x - 5) + 3(x - 5)$$

$$= (x - 5)(2x + 3)$$

(Total 3 marks)

Q2

$$= \frac{x - 3}{2x + 3}$$

3. (a) Show that the equation

$$\frac{5}{x+2} = \frac{4-3x}{x-1}$$

can be rearranged to give  $3x^2 + 7x - 13 = 0$

$$\frac{5(x+2)}{(x+2)} = \frac{(4-3x)(x+2)}{x-1}$$

$$5 = \frac{(4-3x)(x+2)}{(x-1)}$$

$$5(x-1) = (4-3x)(x+2)$$

$$5x - 5 = 4x + 8 - 3x^2 - 6x$$

$$5x - 5 = -3x^2 - 2x + 8$$

$$3x^2 + 2x + 5x - 5 - 8 = 0$$

$$3x^2 + 7x - 13 = 0$$

(3)

(b) Solve  $3x^2 + 7x - 13 = 0$

Give your solutions correct to 2 decimal places.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-7 \pm \sqrt{49 - 4(3)(-13)}}{6} = \frac{-7 \pm \sqrt{49 + 156}}{6}$$

$$x = 1.22 \quad \text{or} \quad x = -3.55$$

(3)

Q3

(Total 6 marks)

4. (a) Expand and simplify  $(x + 3)(x - 4)$

$$x^2 - 4x + 3x - 12$$

$$\frac{x^2 - x - 12}{(2)}$$

(b) Factorise  $x^2 + 7x + 10$

$$(x + 2)(x + 5)$$

$$? + ? = 7$$

$$? \times ? = 10$$

$$\frac{(x + 2)(x + 5)}{(2)}$$

(c)  $p = 3t + 4(q - t)$

Find the value of  $q$  when  $p = 6$  and  $t = 5$

$$6 = 3 \times 5 + 4(q - 5)$$

$$6 = 15 + 4(q - 5)$$

$$4(q - 5) = 6 - 15$$

$$4(q - 5) = -9$$

$$q - 5 = -\frac{9}{4}$$

$$q = \frac{11}{4} = 2\frac{3}{4}$$

Q4

(Total 7 marks)

$$q = -\frac{9}{4} + 5$$

$$q = \frac{-9 + 20}{4} = \frac{11}{4}$$

Leave  
blank

5. (a) Factorise  $x^2 - 7x + 10$

$$(x - 2)(x - 5)$$

$$\frac{(x - 2)(x - 5)}{\dots\dots\dots} \quad (2)$$

(b) Solve  $x^2 - 7x + 10 = 0$

$$x = \frac{2}{\dots\dots\dots}$$
$$\text{or } x = \frac{5}{\dots\dots\dots} \quad (1)$$

(Total 3 marks)

Q5

6. (a) Simplify  $4a + 3c - 2a + c$

$$2a + 4c$$

$$\underline{2a + 4c}$$

(1)

(b)  $S = \frac{1}{2}at^2$

Find the value of  $S$  when  $t = 3$  and  $a = \frac{1}{4}$

$$S = \frac{1}{2} \times \frac{1}{4} \times 3^2$$

$$= \frac{1}{8} \times 9 = \frac{9}{8} = 1\frac{1}{8}$$

$$S = \underline{1\frac{1}{8}}$$

(2)

(c) Factorise  $x^2 - 5x$

$$x(x - 5)$$

$$\underline{x(x - 5)}$$

(2)

(d) Expand and simplify  $(x + 3)(x + 4)$

$$x^2 + 4x + 3x + 12$$

$$\underline{x^2 + 7x + 12}$$

(2)

(e) Factorise  $y^2 + 8y + 15$

$$= (x + 3)(x + 5)$$

$$\begin{cases} ? + ? = 8 \\ ? \times ? = 15 \end{cases} \quad 3 \text{ \& } 5$$

$$\underline{(x + 3)(x + 5)}$$

(2)

Q6

(Total 9 marks)

7. (a) Simplify  $(c^2 k^5)^4$

$$\frac{c^8 k^{20}}{\dots\dots\dots}$$

(1)

(b) Expand and simplify  $(3x + 5)(4x - 1)$

$$12x^2 - 3x + 20x - 5$$

$$\frac{12x^2 + 17x - 5}{\dots\dots\dots}$$

(2)

(c) Solve  $x^2 - 3x - 10 = 0$

$$\begin{aligned} ? + ? &= -3 \\ ? \times ? &= -10 \end{aligned} \quad (x - 5)(x + 2) = 0$$

$$x = \dots 5 \dots \text{ or } \dots x = -2 \dots$$

(3)

Q7

(Total 6 marks)



8 . The diagram below shows a large rectangle of length  $(2x + 6)$  cm and width  $x$  cm.

A smaller rectangle of length  $x$  cm and width 3 cm is cut out and removed.

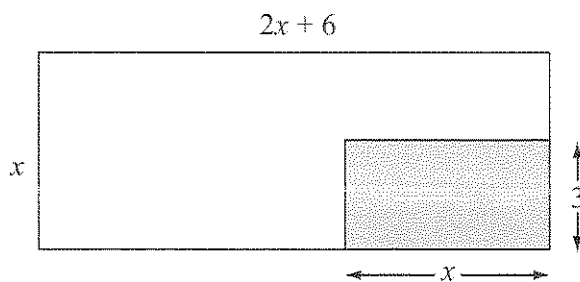


Diagram NOT accurately drawn

The area of the shape that is left is  $100 \text{ cm}^2$ .

(a) Show that  $2x^2 + 3x - 100 = 0$

$$x(2x + 6) - 3x = 100$$

$$2x^2 + 6x - 3x = 100$$

$$2x^2 + 3x - 100 = 0$$

(3)

(b) Calculate the length of the smaller rectangle.  
Give your answer correct to 3 significant figures.

$$x = \frac{-3 \pm \sqrt{9 - 4(2)(-100)}}{4}$$

$$x = \frac{-3 \pm \sqrt{9 + 800}}{4}$$

$$x = \frac{-3 + \sqrt{809}}{4} = 6.36$$

length  $x = 6.36$  (3sf)

..... cm  
(4)

Q8

(Total 7 marks)

**BLANK PAGE**