

Write your name here

Surname

Other names

In the style of:

Edexcel GCSE

Centre Number

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Candidate Number

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Mathematics A

Quadratic Equations

Higher Tier

Past Paper Style Questions
Arranged by Topic

Paper Reference

1MA0/1H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks



Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators must not be used.**

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►



1.

Simplify fully

$$\frac{6x^2 + x - 1}{4x^2 - 1}$$

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

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

$$\frac{3x - 1}{2x - 1}$$

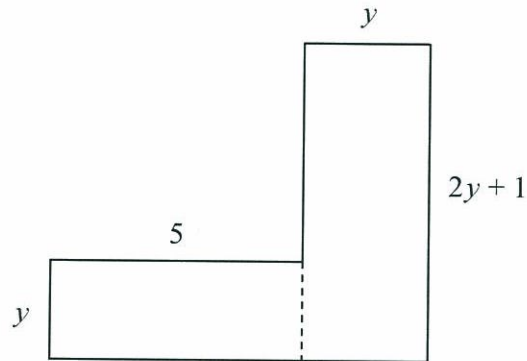
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(Total 4 marks)



2. 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 cm^2 .

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

$$5y + y(2y+1) = 95$$

$$\Rightarrow 5y + 2y^2 + y = 95$$

$$\Rightarrow 2y^2 + 6y - 95 = 0$$

(3)

- (b) Solve the equation

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

Give your solutions correct to 3 significant figures.

$$y = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-6 \pm \sqrt{6^2 - 4(2)(-95)}}{2(2)}$$

$$= \frac{-6 \pm \sqrt{796}}{4} = 5.55 \text{ or } -8.55 \text{ (3 s.f.)}$$

$$y = 5.55 \text{ or } y = -8.55$$

(3)



3. Simplify fully

$$\frac{x^2 - 8x + 15}{2x^2 - 7x - 15}$$

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

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

.....

(Total 3 marks)



4. (a) Rearrange this equation

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

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

N.B: $\frac{a}{b} = \frac{c}{d} \Rightarrow ad = bc$

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

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

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

(3)

(b) Solve $3x^2 + 7x - 13 = 0$
correct to 2 decimal places.

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

$$= \frac{-7 \pm \sqrt{7^2 - 4(3)(-13)}}{2(3)}$$

$$= \frac{-7 \pm \sqrt{205}}{6} = 1.22 \text{ or } -3.55 \text{ (2d.p.)}$$

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

(3)

(Total 6 marks)



5. (a) Expand and simplify $(x + 3)(x - 2)$

$$\begin{aligned} & x^2 - 2x + 3x - 6 \\ = & x^2 + x - 6 \end{aligned}$$

$$\frac{x^2 + x - 6}{\dots\dots\dots} \quad (2)$$

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

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

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

(c) $x = 3y + 4(z - y)$

Find the value of x when $y = 6$ and $z = 5$

$$\begin{aligned} x &= 3(6) + 4(5 - 6) \\ &= 18 + 4(-1) \\ &= 14 \end{aligned}$$

$$x = \underline{14} \dots\dots\dots \quad (3)$$

(Total 7 marks)

