Inequalities

Question Paper 2

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Polynomials
Sub Topic	Inequalities
Booklet	Question Paper 2

Time Allowed: **55 minutes**

Score: **/46**

Percentage: **/100**

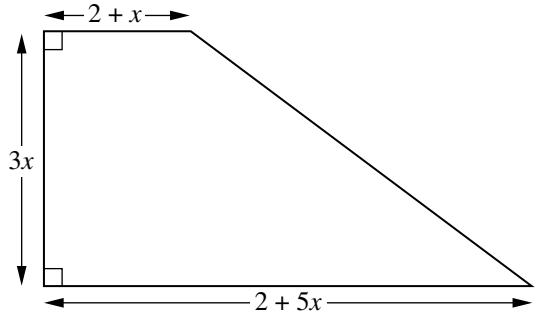
1 Solve the inequalities

(i) $1 < 4x - 9 < 5$, [3]

(ii) $y^2 \geqslant 4y + 5$. [5]

2 Solve the inequality $x^2 - 6x - 40 \geqslant 0$. [4]

3 A lawn is to be made in the shape shown below. The units are metres.



(i) The perimeter of the lawn is P m. Find P in terms of x. **[2]**

(ii) Show that the area, A m^2, of the lawn is given by $A = 9x^2 + 6x$. **[2]**

The perimeter of the lawn must be at least 39 m and the area of the lawn must be less than 99 m^2.

(iii) By writing down and solving appropriate inequalities, determine the set of possible values of x. **[7]**

4 **(i)** Solve the equation $5 - 8x - x^2 = 0$, giving your answers in simplified surd form. **[3]**

(ii) Solve the inequality $5 - 8x - x^2 \leqslant 0$. **[2]**

(iii) Sketch the curve $y = (5 - 8x - x^2)(x + 4)$, giving the coordinates of the points where the curve crosses the coordinate axes. **[5]**

5 Solve the inequalities

(i) $3(x - 5) \leqslant 24$, [2]

(ii) $5x^2 - 2 > 78$. [3]

6 The length of a rectangular children's playground is 10 m more than its width. The width of the playground is x metres.

(i) The perimeter of the playground is greater than 64 m. Write down a linear inequality in x. [1]

(ii) The area of the playground is less than 299 m^2. Show that $(x - 13)(x + 23) < 0$. [2]

(iii) By solving the inequalities in parts **(i)** and **(ii)**, determine the set of possible values of x . [5]