



## Quadratic Inequalities Exam Practice

Q1. Solve the inequality:

$$x^2 + 2x - 15 < 0$$

Answer: \_\_\_\_\_  
(3 marks)

Q2. Solve the inequality:

$$x^2 - 2x - 80 < 0$$

Answer: \_\_\_\_\_  
(3 marks)



Q3. Solve the inequality:

$$x^2 + 22x + 72 > 0$$

Answer: \_\_\_\_\_  
(3 marks)

Q4. Solve the inequality:

$$2x^2 - x - 28 \geq 0$$

Answer: \_\_\_\_\_  
(3 marks)



Q5. Solve the inequality:

$$3x^2 < 32x - 20$$

Answer: \_\_\_\_\_  
(3 marks)

Q6. Solve the inequality:

$$4a^2 - 6a - 40 \leq 0$$

Answer: \_\_\_\_\_  
(3 marks)



Q7. Solve the inequality:

$$25x^2 + 275x + 750 < 0$$

Answer: \_\_\_\_\_  
(3 marks)

Q8. a) Show that the inequality,  $5 + \frac{29}{x} > \frac{6}{x^2}$   
can be written in the form  $5x^2 + 29x - 6 > 0$

Answer: \_\_\_\_\_  
(2 marks)

b) Hence solve the inequality  $5 + \frac{29}{x} > \frac{6}{x^2}$

Answer: \_\_\_\_\_  
(3 marks)



Q9. Solve the inequality:

$$4x^2 + 12x - 27 < 7x^2 + 53x - 87$$

Answer: \_\_\_\_\_  
(4 marks)

### Applied Mixed Practice Problems

Q10. Find the range of numbers which satisfy both these inequalities:

$$b^2 - 36 < 0 \text{ and } 2b^2 - 2b - 12 \geq 0$$

Answer: \_\_\_\_\_  
(4 marks)



Q11. A cannon ball is fired from a gun which is mounted on a platform above the ground.

The height  $h$  of the ball in metres above the ground can be modelled by the quadratic equation,  $h = -x(x - 5) + 1.5$ , where  $t$  is the time in seconds after it is launched.

a) State the height of the platform.

Answer: \_\_\_\_\_  
(1 mark)

b) According to the model, how many seconds does the ball spend above a height of 3.75 meters above the ground?

Answer: \_\_\_\_\_  
(4 marks)

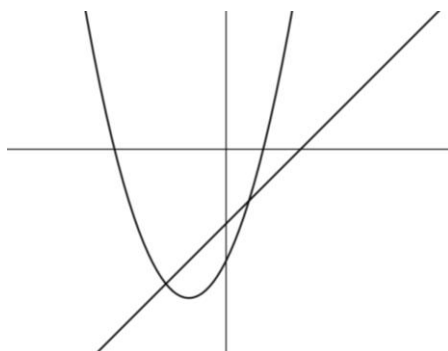


Q12. Find the range of whole numbers which satisfy the inequality  
 $5y^2 - 12y + 6 \leq 0$

Answer: \_\_\_\_\_  
(4 marks)



Q13. Below is a sketch of the line  $x - y = 2$  and the curve  $y = x^2 + 2x - 3$ .



- a) Find an equality in  $x$  which describes when the curve is exactly below the line.

Answer: \_\_\_\_\_  
(2 marks)

- b) Hence, or otherwise, find the set of values of  $x$  for which the curve is under the line. Give your answers to 1 decimal place.

Answer: \_\_\_\_\_  
(3 marks)