

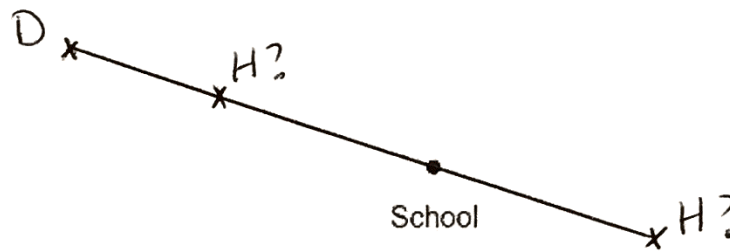
End of Unit Test
Inequalities - HIGHER

Name: Answers



1. Dave and Helen attend the same school. Dave lives 5 km from the school. Helen lives 3 km from the school. The distance between Dave's house and Helen's house is x km. Write, as an inequality, the minimum and maximum distance that x could be.
 Justify your answer in the space below. You may use a diagram if you wish.

Scale
 1 km : 1 cm



..... $2 \text{ km} \leq x \leq 8 \text{ km}$
 (Total 3 marks)

2. x is an integer.
 $4x - 3 \geq 7$ and $6x + 2 < 32$
 List the possible values of x .

$4x - 3 \geq 7$ $6x + 2 < 32$

$4x \geq 10$ $6x < 30$

$x \geq 2.5$ $x < 5$

$2.5 \leq x < 5$

.....

.....

.....

Answer 3, 4
 (Total 3 marks)

3. x and y are integers such that
 $-5 < x \leq 3$ and $2 \leq y \leq 7$
 Work out the **largest** possible value of $x^2 + y^2$

..... $(-4)^2 + 7^2 = 16 + 49 = 65$

.....

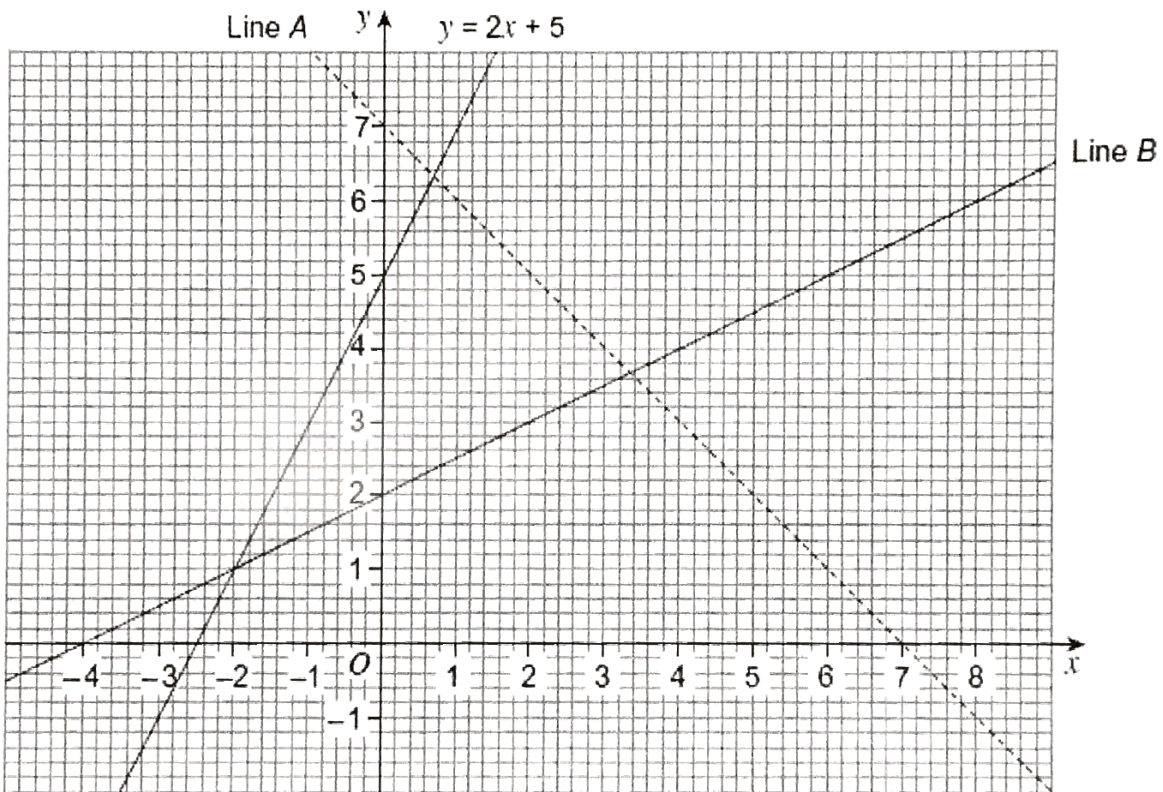
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Answer 65
 (Total 2 marks)

4. Points in the shaded region satisfy three inequalities.
 One of the inequalities is $y \leq 2x + 5$



- (a) Circle the inequality with boundary line A.

$x + y \geq 7$ $x + y < 7$ $x + y \leq 7$ $x + y > 7$

(1)

- (b) Circle the inequality with boundary line B.

$2y \geq x + 4$ $2y \leq x + 4$ $y \geq x + 2$ $y \leq x + 2$

(1)

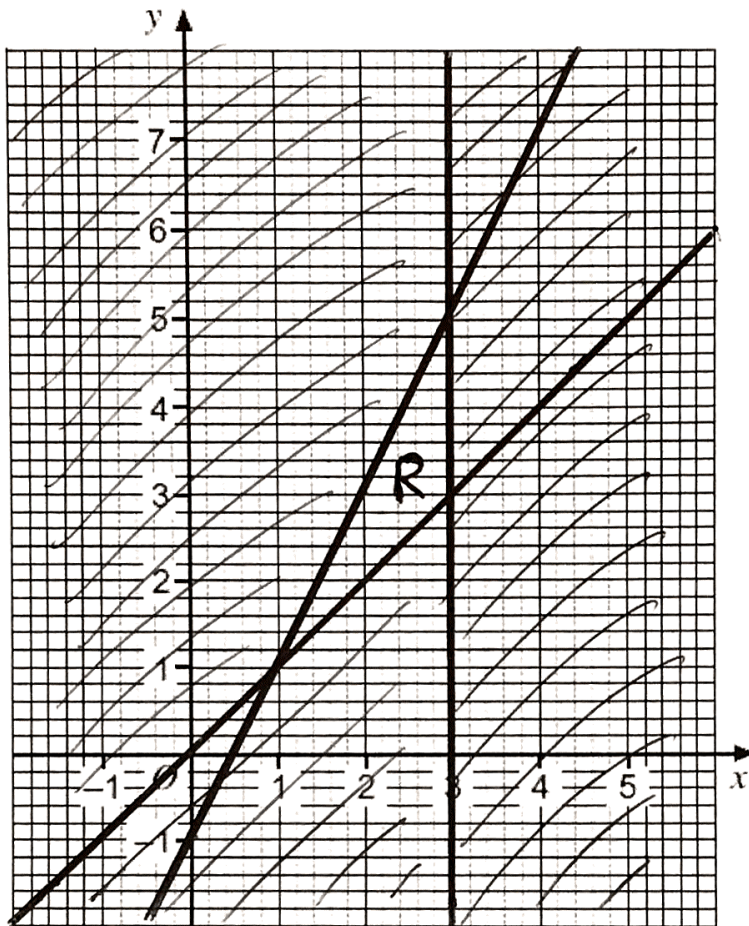
(Total 2 marks)

5. Put a label, R, in the region on the grid satisfied by all three of these inequalities.

$$x \leq 3$$

$$y \geq x$$

$$y \leq 2x - 1$$

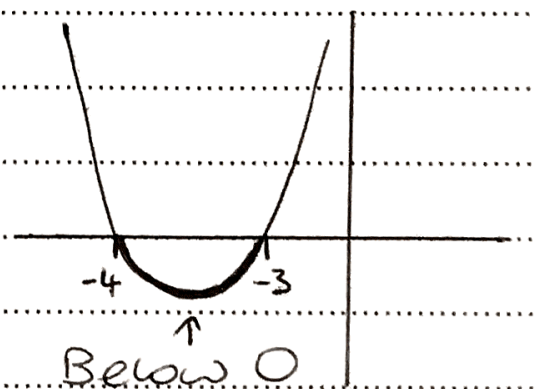


(Total 4 marks)

6. Solve $x^2 + 7x + 12 < 0$

$$(x + 3)(x + 4) < 0$$

$$x = -3 \text{ or } -4$$



$$-4 < x < -3$$

(Total 3 marks)

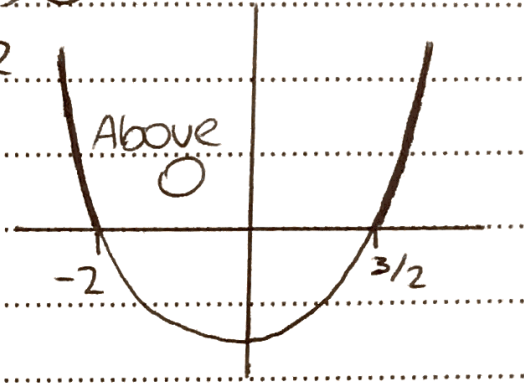
7. Solve $2x^2 + x - 6 \geq 0$

$\frac{-1 \pm \sqrt{17}}$

$(2x-3)(x+2) \geq 0$

	x	2
$2x$	$2x^2$	$4x$
-3	$-3x$	-6

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



$x \leq -2, x \geq \frac{3}{2}$

(Total 3 marks)

(Total for test = 20 marks)