Name:	Teacher Assessment		Topic 24 - H Inequalities

Section A — **Solving Linear Inequalities** — **Grade D / C**

1. Solve the inequality $3x + 8 < 29$

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Answer ....

(Total 2 marks)

2. Solve $\qquad 3x + 7 < 1$

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Answer ....

(Total 2 marks)

3. Solve the inequality $\qquad 7y < 3y + 6$

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Answer ....

(Total 2 marks)

4. Solve the inequality $5x + 3 > 10$

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Answer ....

(Total 2 marks)

5. Solve the inequality $3x + 7 \geq 4$

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Answer ....

(Total 2 marks)

6. (a) Solve the inequality $3x + 7 \geq 13$

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Answer ....

(2)

(b) A mathematics teacher says

I am thinking of an integer.
I double the integer and add 1.
The result is **less than** −7.
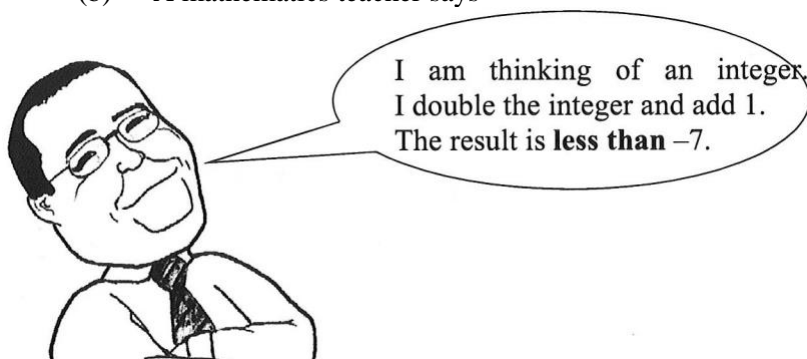
What is the **largest** integer the teacher could have thought of?

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Answer ....
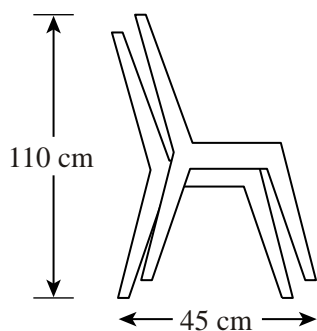
(2)
(Total 4 marks)

7. A stacking chair is 100 cm high and 40 cm wide.

Not drawn accurately

100 cm

← 40 cm →
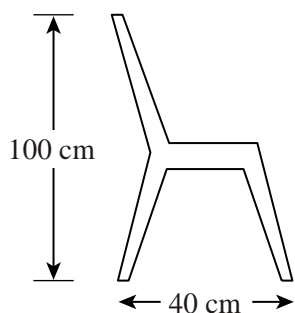
When a chair is added to a stack it increases the height by 10 cm and the width by 5 cm.

Not drawn accurately

110 cm

← 45 cm →

(a) Find an expression for the height of a stack of *n* chairs.

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Answer …………………………………………………………

(2)

(b) A rule for the maximum number of chairs that can be stacked before they fall over is

$$4n + 35 < 70$$

What is the maximum number of chairs that can be stacked?

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Answer …………………………………………………………

(3)
(Total 5 marks)

8. (a) Solve the inequality $2x + 3 \geq 1$

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Answer ....

(2)

(b) Write down the inequality shown by the following diagram.

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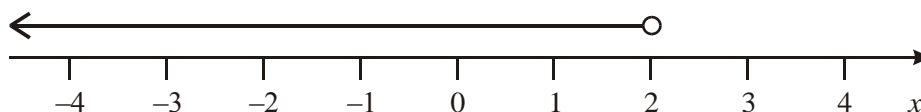
Answer ....

(1)

(c) Write down all the integers that satisfy both inequalities shown in parts (a) and (b).

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Answer ....

(1)
(Total 4 marks)

9. (a) Solve the inequality $3(x - 2) \leq 9$

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Answer ....

(3)

(b) The inequality $x \leq 3$ is shown on the number line below.
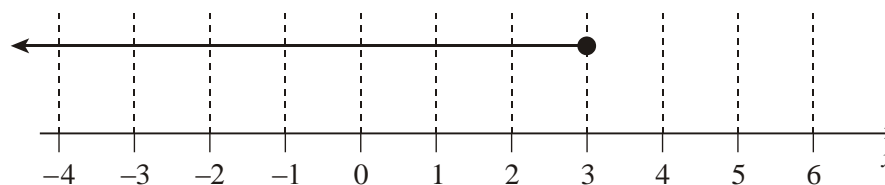
Draw another inequality on the number line so that only the following integers satisfy both inequalities

$\{-2, -1, 0, 1, 2, 3\}$

(1)
(Total 4 marks)

10. (a) Solve the inequality $3x + 5 \leq 16$

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Answer ....

(2)

(b) Write down the integer value satisfied by the inequality $5 < 2x < 7$

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Answer ....

(2)
(Total 4 marks)

11. n is an integer.
List the values of n such that

$$-6 \leq 3n < 13$$

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Answer ....

(Total 3 marks)

12. (a) *x* is an integer.

$0 < x \le 3$

Write down all the possible values of *x*.

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Answer ……………………………….........

(2)

(b) *x* and *y* are integers.

$0 < x \le 3$

$y < x$

$x + y < 5$

Write down **two** pairs of values of *x* and *y* which satisfy all three inequalities.

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Answer   (................., ...) and (................., ...)

(2)
(Total 4 marks)

13. (a) *x* is an integer.

List all the values of x such that $-1 < 2x \le 8$

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Answer ....

(Total 3 marks)

14. (a) List the integer values of *x* such that $5 \le 3x < 18$

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Answer ……………………………………………

(Total 3 marks)

15. (a) List all the solutions of the inequality

$$4 < 2n \leq 11$$

where n is an integer.

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Answer..

(3)

(b) Solve the inequality

$$4x + 1 < 7$$

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Answer..

(2)

(c) Show that, for any value of n,

$$(n + 1)^2 > n(n + 2)$$

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(2)
(Total 7 marks)

Success:	Target:

Teacher Assessment

Section B   **Shading Regions**   **Grade B**

1.   (a)   Solve the inequality $3x - 5 \leq 5 - 2x$

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                                             Answer ....

(2)

   (b)   The region R is shown shaded below.
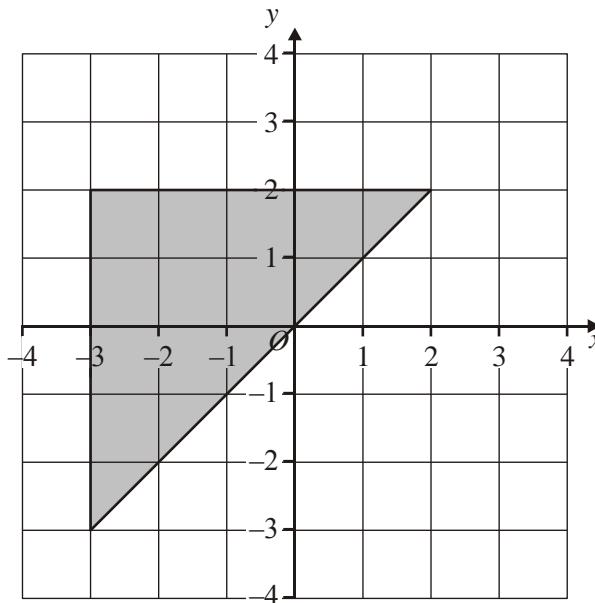
   Write down **three** inequalities which together describe the shaded region.

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                                             Answer ....

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(3)
(Total 5 marks)

2. The region *R* is shown shaded below.
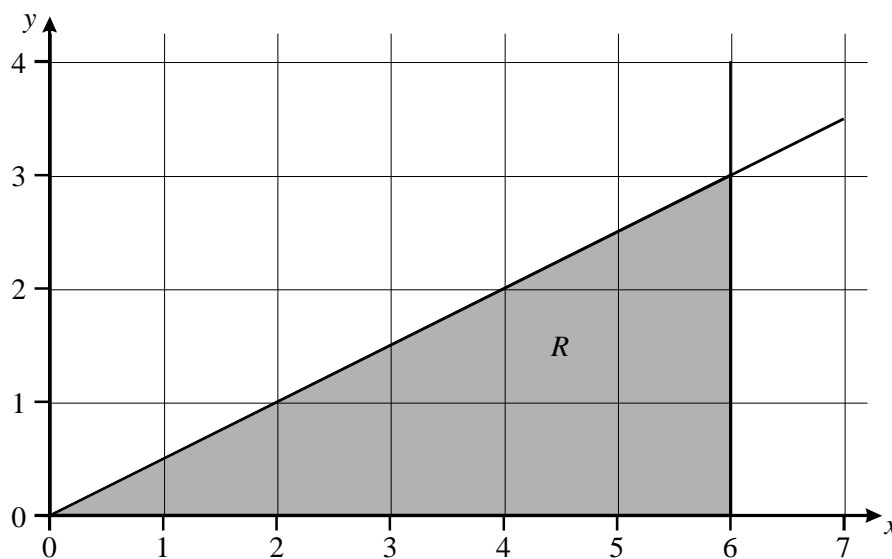
Write down three inequalities which together describe the shaded region.

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Answer ....

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(Total 3 marks)

3. On the grid below, indicate clearly the region defined by the three inequalities

$$x \geq 1$$
$$y \geq x - 1$$
$$x + y \leq 7$$

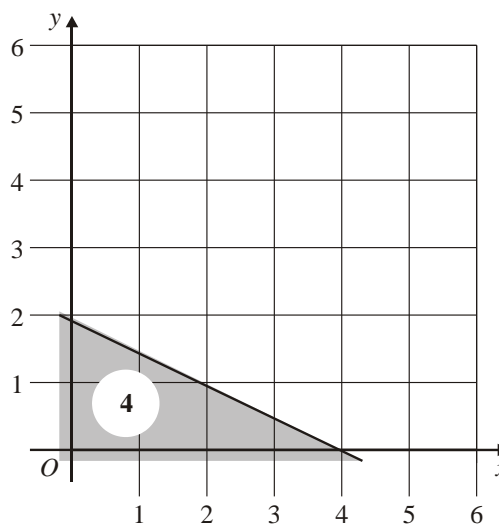Mark the region with an *R*.

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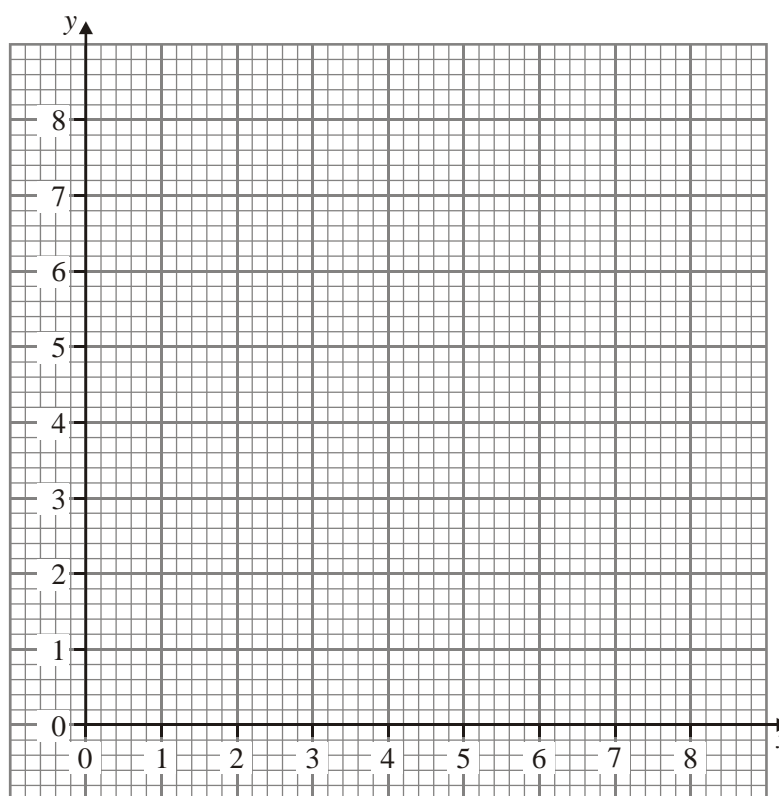
(Total 3 marks)

4. On the grid below, indicate clearly the region defined by the three inequalities

$$y \leq 4$$
$$x \geq -3$$
$$y \geq x + 2$$
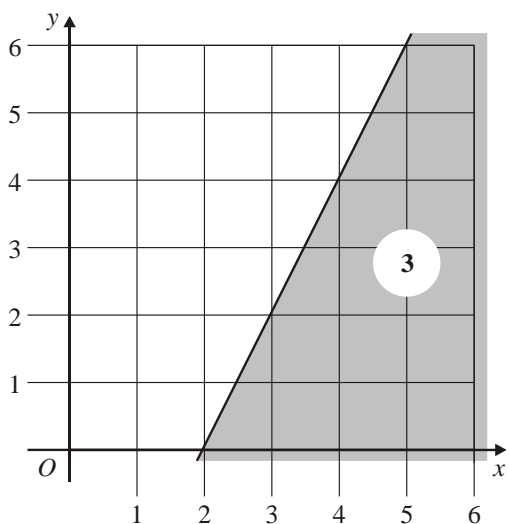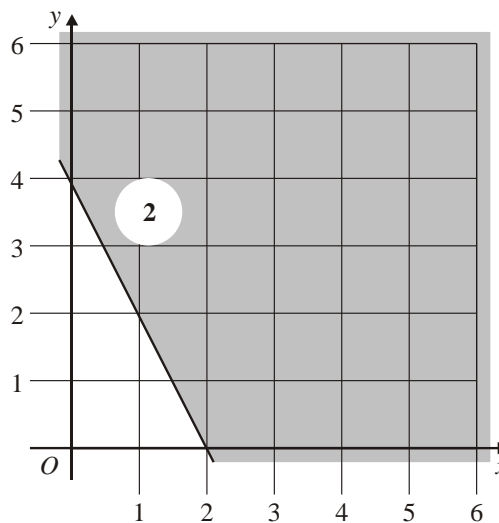
Mark the region with an *R*.

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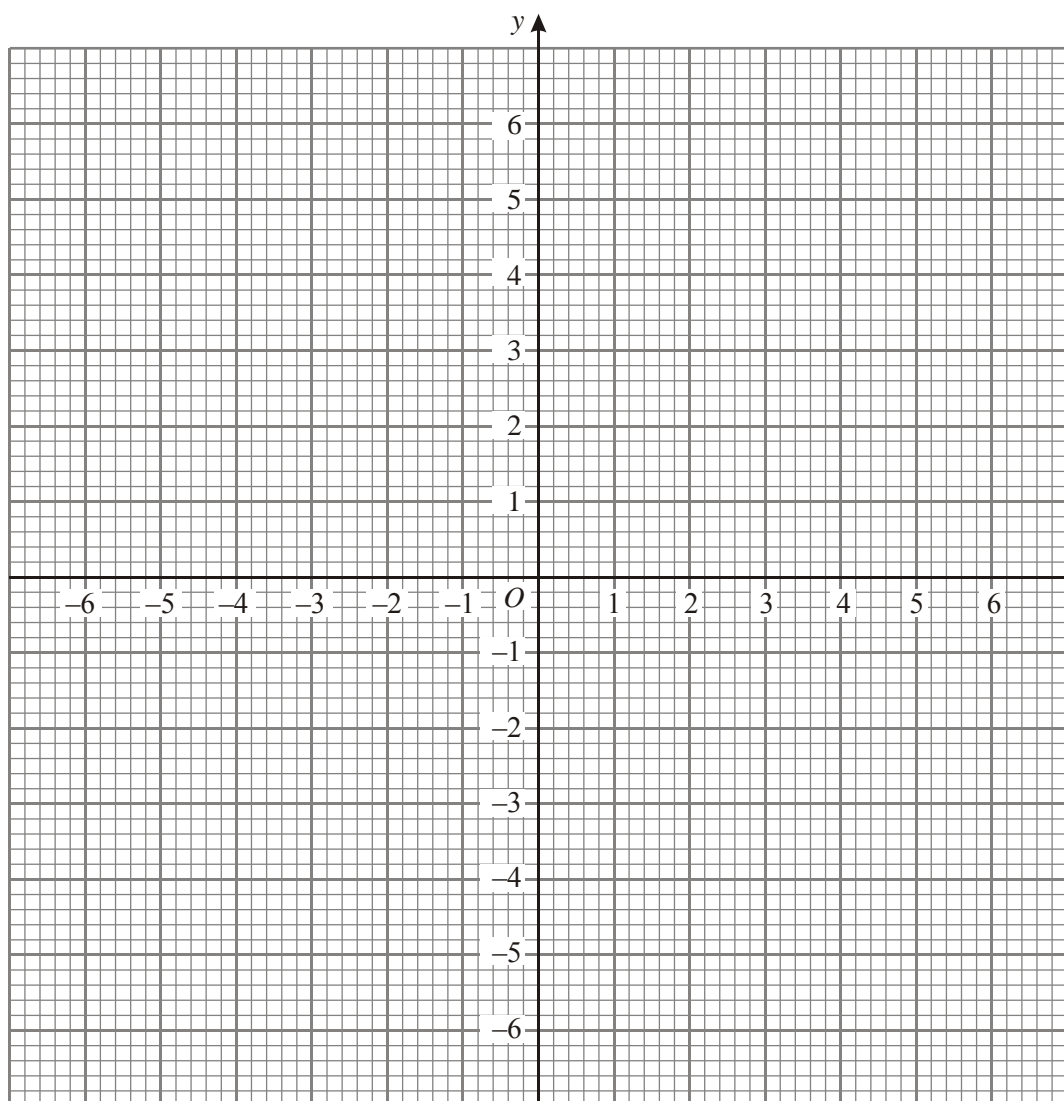
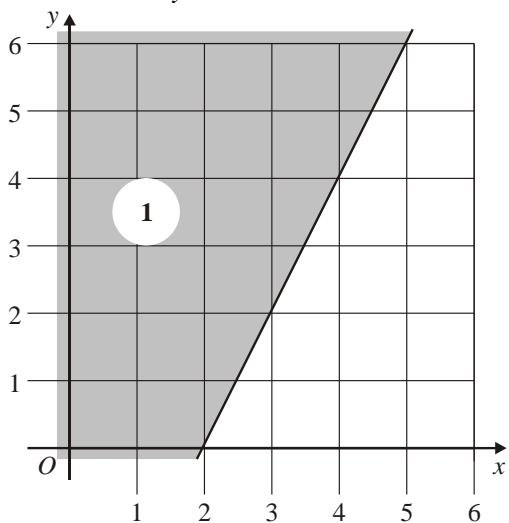**(Total 3 marks)**

5.   Match each of the **shaded** regions to one of these inequalities.

A $y \le -\dfrac{1}{2}x + 2$ **D** $y \ge 2x - 4$

B $y \le \dfrac{1}{2}x + 2$ **E** $y \le 2x - 4$

C $y \ge -2x + 4$

Region **1** ....   Region **2** ....

Region **3** ....   Region **4** ....

(**Total 4 marks**)

Success:

Target: