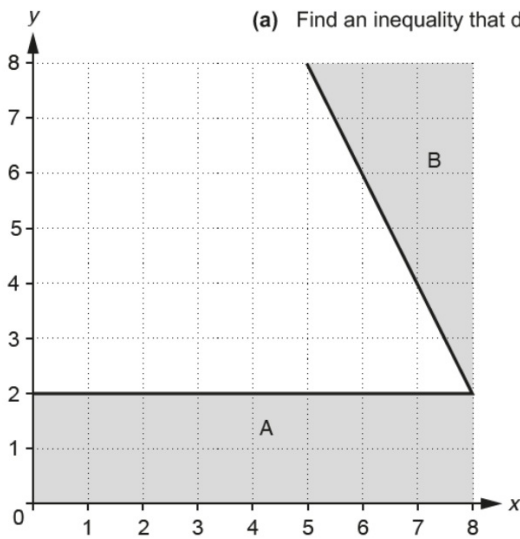


A62 (H) Graphing Inequalities

OCR

18 The diagram below shows a 1 cm coordinate grid.



(a) Find an inequality that defines region A and another inequality that defines region B.

(a) Region A:
Region B: [4]

(b) Shade the region on the grid given by the inequality $y \geq 6$.

[2]

A62

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(c) A fourth shaded region, given by the inequality

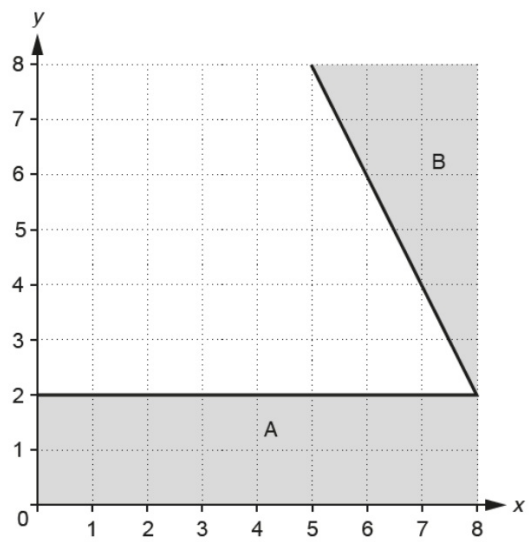
A23
G19
Ab2

$$y \geq kx + 2,$$

is added to the grid.

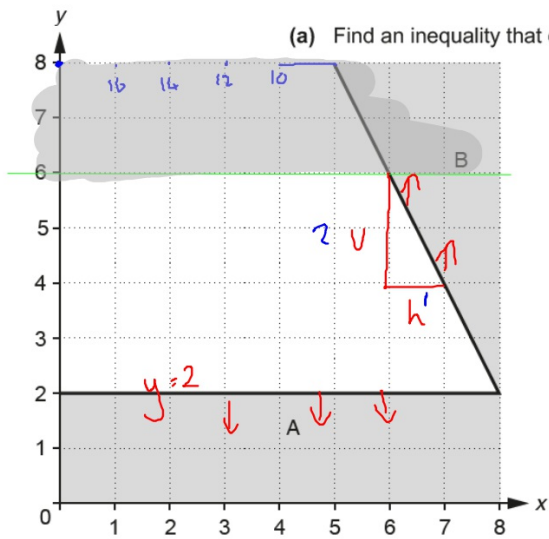
The **unshaded** region now has area 23 cm^2 .

Find the value of k .



(c) $k = \dots\dots\dots$ [5]

18 The diagram below shows a 1 cm coordinate grid.



(a) Find an inequality that defines region A and another inequality that defines region B.

$$-\frac{v}{h} = -\frac{2}{1} = -2$$

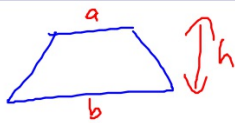
(a) Region A: $y \leq 2$
 Abz Region B: $y \geq -2x + 18$ [4]

$y = mx + c$
 $y \geq -2x + 18$

(b) Shade the region on the grid given by the inequality $y \geq 6$.

Abz

[2]



(c) A fourth shaded region, given by the inequality $y \geq kx + 2$, is added to the grid.

A23
G19
Ab2

The **unshaded** region now has area 23 cm^2 .

Find the value of k .

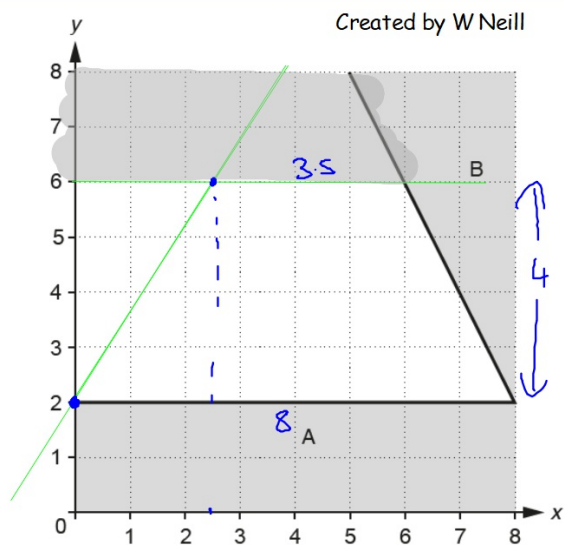
$$\frac{1}{2}(a+b)h = 23$$

$$\frac{1}{2}(a+8)4 = 23$$

$$2(a+8) = 23$$

$$a+8 = 11.5$$

$$a = 3.5$$



$$k = \frac{y}{x} = \frac{4}{2.5} = \frac{8}{5} = 1\frac{3}{5}$$

(c) $k = \frac{8}{5}$ ✓ [5]

14 The diagram shows the lines $y = 2x + 1$ and $7x + 4y = 28$.

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A62

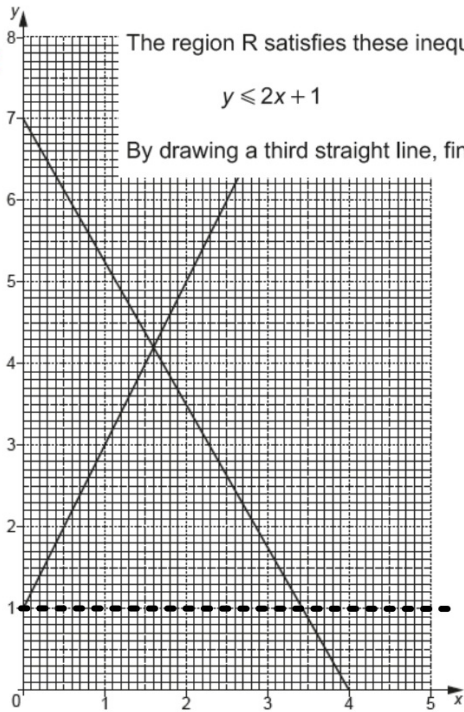
The region R satisfies these inequalities.

$$y \leq 2x + 1$$

$$7x + 4y \geq 28$$

$$y > 1$$

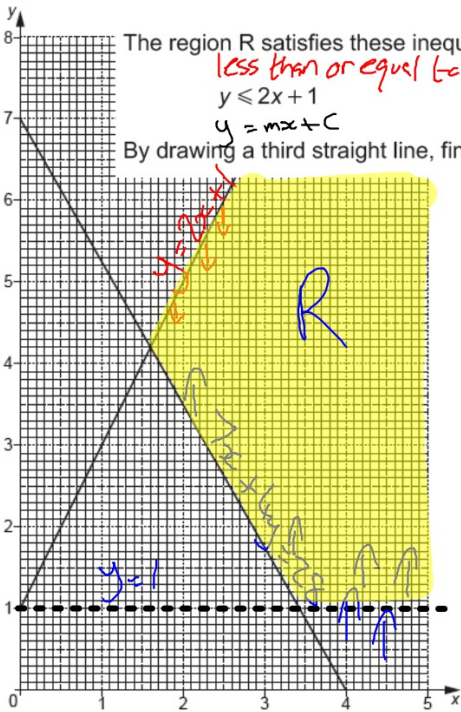
By drawing a third straight line, find and label the region R that satisfies these inequalities. [5]



14 The diagram shows the lines $y = 2x + 1$ and $7x + 4y = 28$.

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A62



The region R satisfies these inequalities.

$y \leq 2x + 1$
less than or equal to

$y = mx + c$

$7x + 4y \geq 28$
greater / =

$y = 1$
no equal sign
greater

By drawing a third straight line, find and label the region R that satisfies these inequalities. [5]

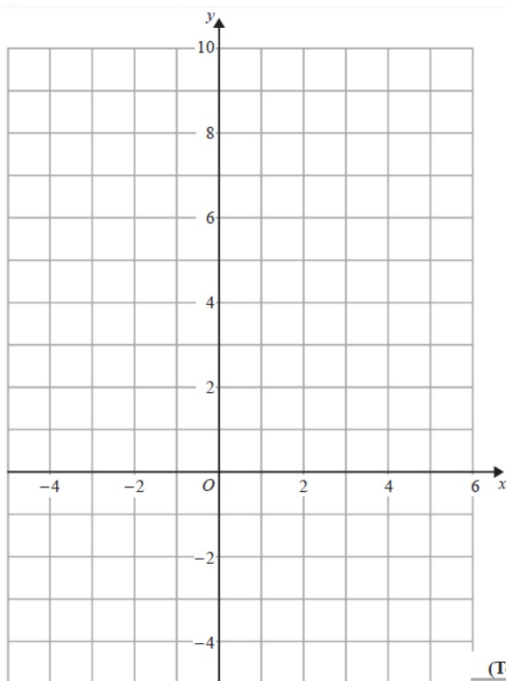
EDEXCEL

10 On the grid, shade the region that satisfies all these inequalities.

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$$x + y < 4 \quad y > x - 1 \quad y < 3x$$

Label the region **R**.



(Total for Question 10 is 4 marks)

10 On the grid, shade the region that satisfies all these inequalities.

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Label the region R. $\xrightarrow{x+y < 4}$
less than

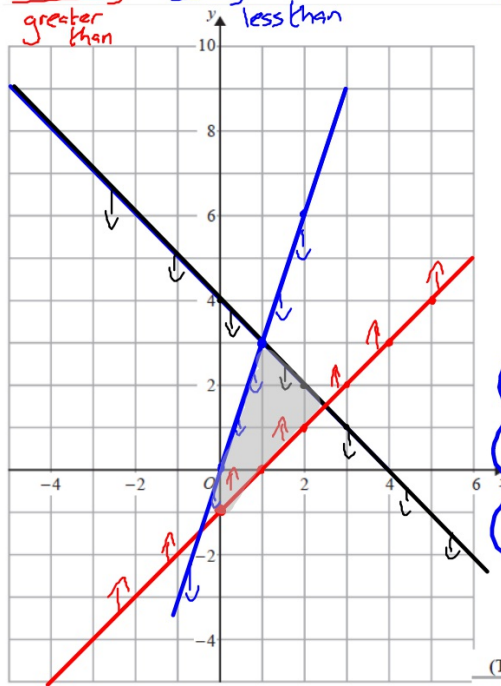
$\xrightarrow{y > x - 1}$ greater than $\xrightarrow{y < 3x}$ less than

$y = 1x - 1 \rightarrow$ y intercept
 $y = mx + c$
gradient of 1

- $x + y < 4$
 $x + y = 4$

x	y
(2)	(2)
(3)	(1)
(1)	(3)
(0)	(4)

 ✓



- $y = 3x$

x	y
(1)	(3)
(2)	(6)
(0)	(0)

(Total for Question 10 is 4 marks)

16 For her maths homework, Helen answered the following question.

Created by W Neill

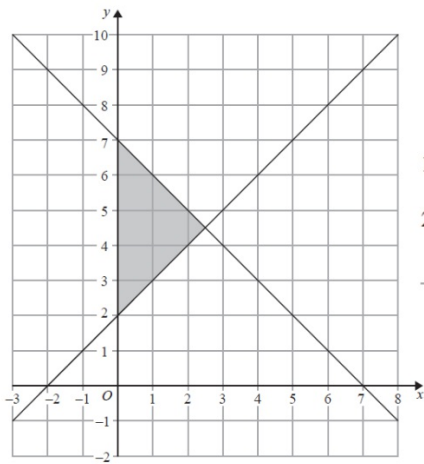
Shade the region that is defined by all these inequalities.

$$x + y \leq 6$$

$$y \geq 0$$

$$y \leq x + 2$$

Here is Helen's answer.



Helen made some mistakes when she answered the question.

Write down two mistakes Helen made.

- 1.....
- 2.....

(Total for Question 16 is 2 marks)

16 For her maths homework, Helen answered the following question.

Created by W Neill

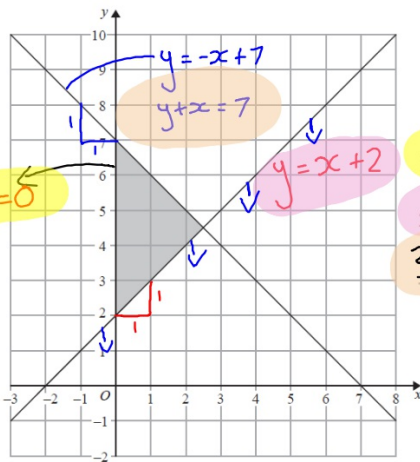
Shade the region that is defined by all these inequalities.

→ \leq less than or equal to

Here is Helen's answer.
 $x+y \leq 6$
 $x+y=6$

$y \geq 0$
 $y=0$

$y \leq x+2$
 $y=x+2$



Helen made some mistakes when she answered the question.

Write down two mistakes Helen made.

1. She used $y \geq 0$, should have been $x \geq 0$ ✓
2. She shaded $y \geq x+2$, not $y \leq x+2$ ✓
3. She has $x+y \leq 7$ on graph
She needed $x+y \leq 6$ ✓

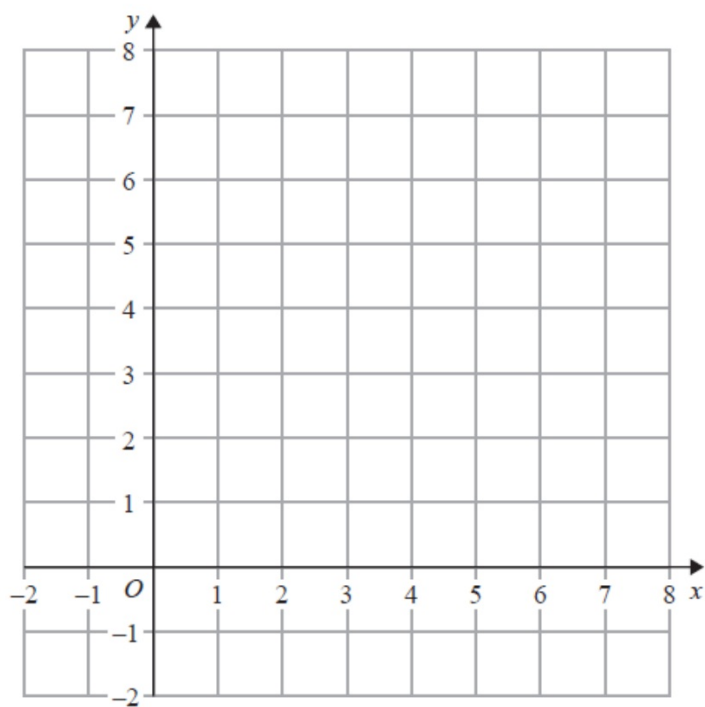
(Total for Question 16 is 2 marks)

15 On the grid show, by shading, the region defined by the inequalities

Created by W Neill

$$x < 4 \quad 2x + y > 6 \quad y > \frac{1}{3}x$$

Label the region **R**.



(Total for Question 15 is 3 marks)

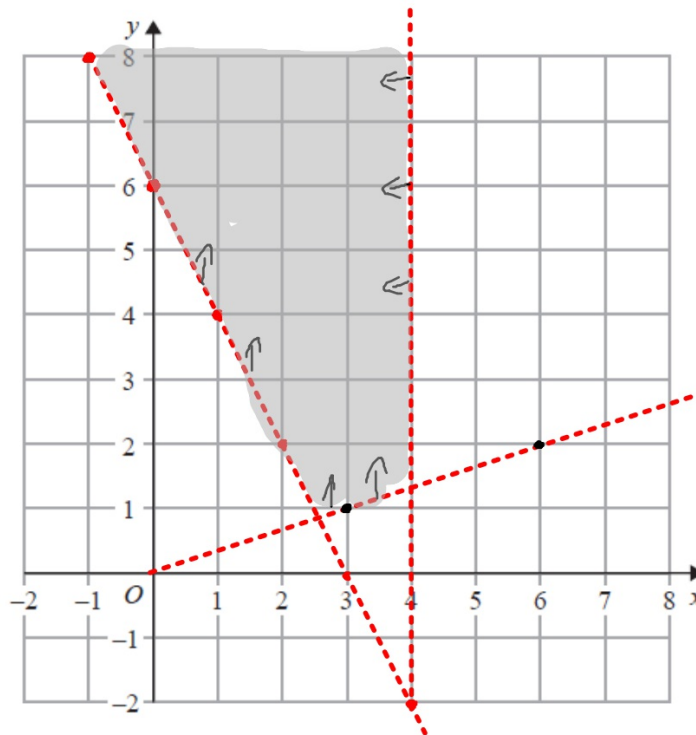
15 On the grid show, by shading, the region defined by the inequalities

Created by W Neill

$$x < 4 \quad 2x + y > 6 \quad y > \frac{1}{3}x$$

Label the region R.

$$2x + y = 6$$
$$y = mx + c$$
$$y = -2x + \underline{\underline{6}}$$

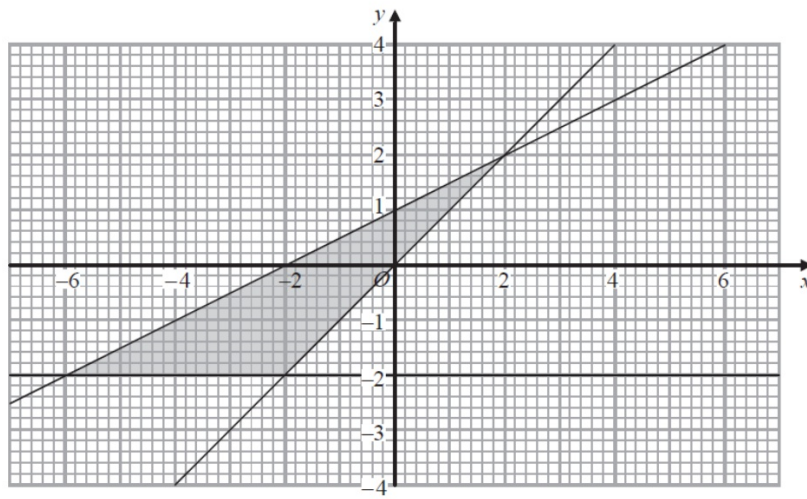


$$y = \frac{1}{3}x + 0$$
$$\frac{v}{h} = \frac{1}{3}$$
$$\frac{1}{3} \begin{array}{|l} \hline 1 \\ \hline \end{array}$$

(Total for Question 15 is 3 marks)

13

Video created by W Neill



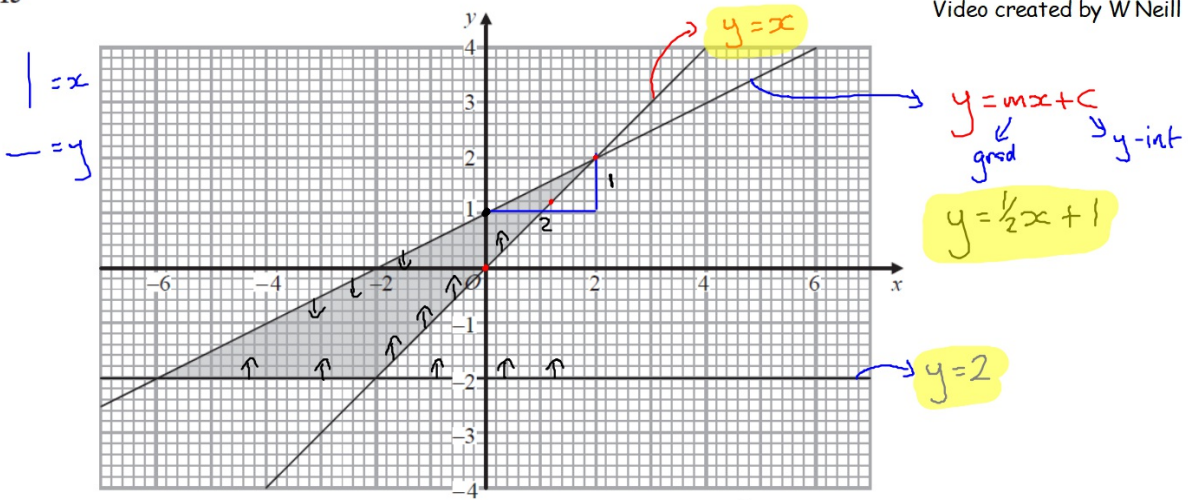
Write down the three inequalities that define the shaded region.

.....
.....
.....

(Total for Question 13 is 4 marks)

13

Video created by W Neill



Write down the three inequalities that define the shaded region.

\leq less than
 \geq greater than

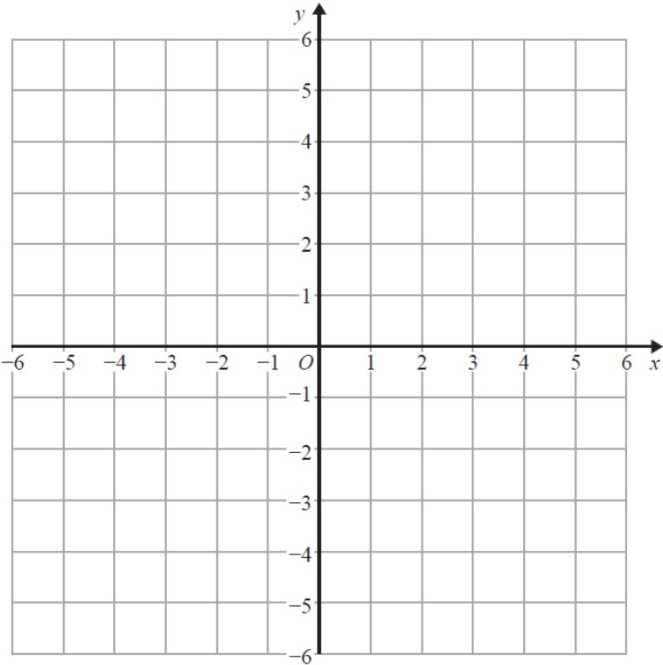
$$y \geq 2$$
$$y \leq x$$
$$y \leq \frac{1}{2}x + 1$$

(Total for Question 13 is 4 marks)

14 On the grid, shade the region that satisfies all these inequalities.

$y > 1$ $x + y < 5$ $y > 2x$

Label the region **R**.



(Total for Question 14 is 3 marks)

14 On the grid, shade the region that satisfies all these inequalities.

$y = mx + c$

$y > 1$

$x + y < 5$

$y > 2x$

Label the region R.

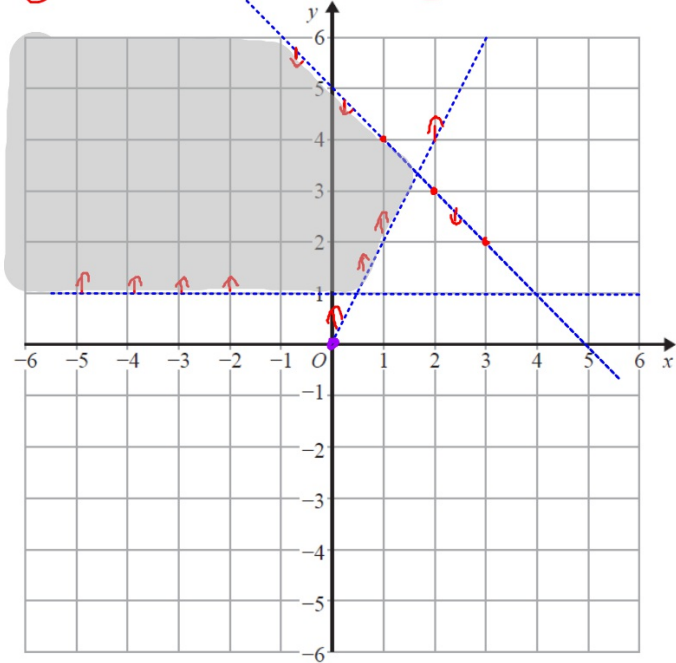
$y = 1$

$x + y = 5$

$y = 2x$

$x + y = 5$

x	y
2	3
3	2
1	4



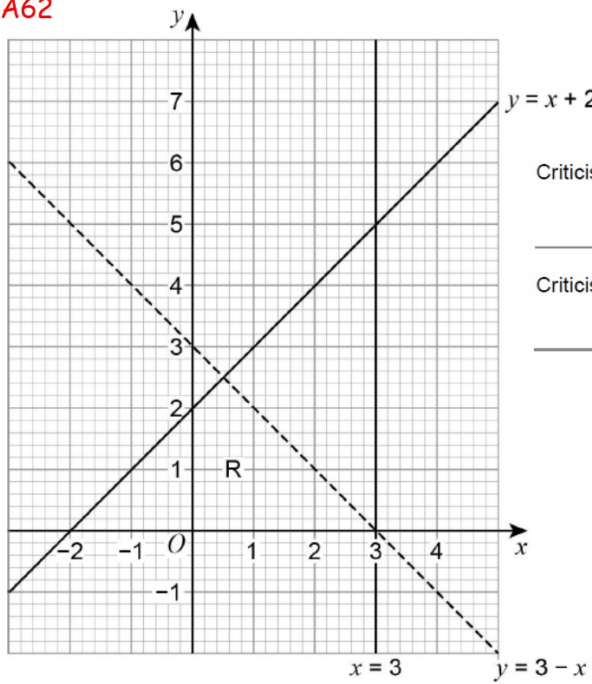
(Total for Question 14 is 3 marks)

AQA

23 Joe draws this graph to identify the region R represented by

$$y \leq x + 2 \text{ and } y > 3 - x \text{ and } x < 3$$

A62



Make two criticisms of his graph. [2 marks]

Criticism 1

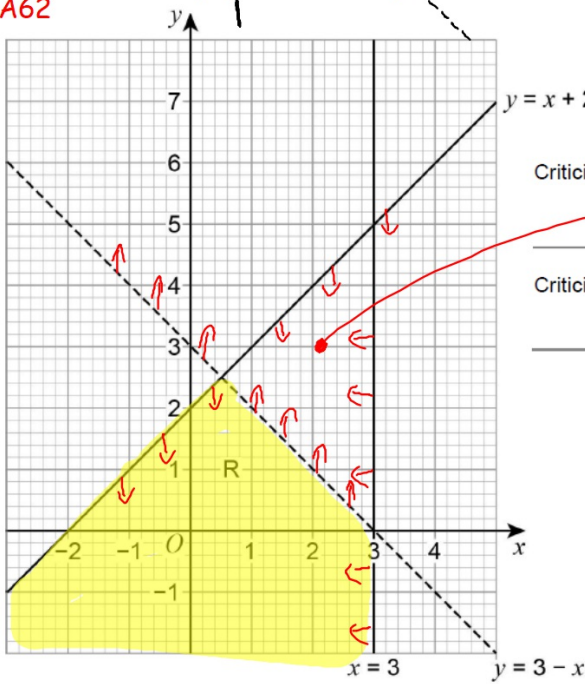
Criticism 2

23

Joe draws this graph to identify the region R represented by

$$y < x + 2 \text{ and } y > 3 - x \text{ and } x < 3$$

A62



Make two criticisms of his graph. [2 marks]

Criticism 1

Region is incorrect. it should be here

Criticism 2

$x = 3$ just be dotted because it is less than 3. Not equal to 3