Name	Class

MATHS TEACHER HUB

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Inequalities - Graphing

(9 – 1) Topic booklet

HIGHER

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

•Use **black** ink or ball-point pen.
•**Fill in the boxes** at the top of this page with your name, centre number and candidate number.
•Answer **all** questions.
•Answer the questions in the spaces provided
– *there may be more space than you need*.
•Diagrams are NOT accurately drawn, unless otherwise indicated.
•You must **show all your working out.**
•If the question is a **1F** question you are not allowed to use a calculator.
•If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

Advice

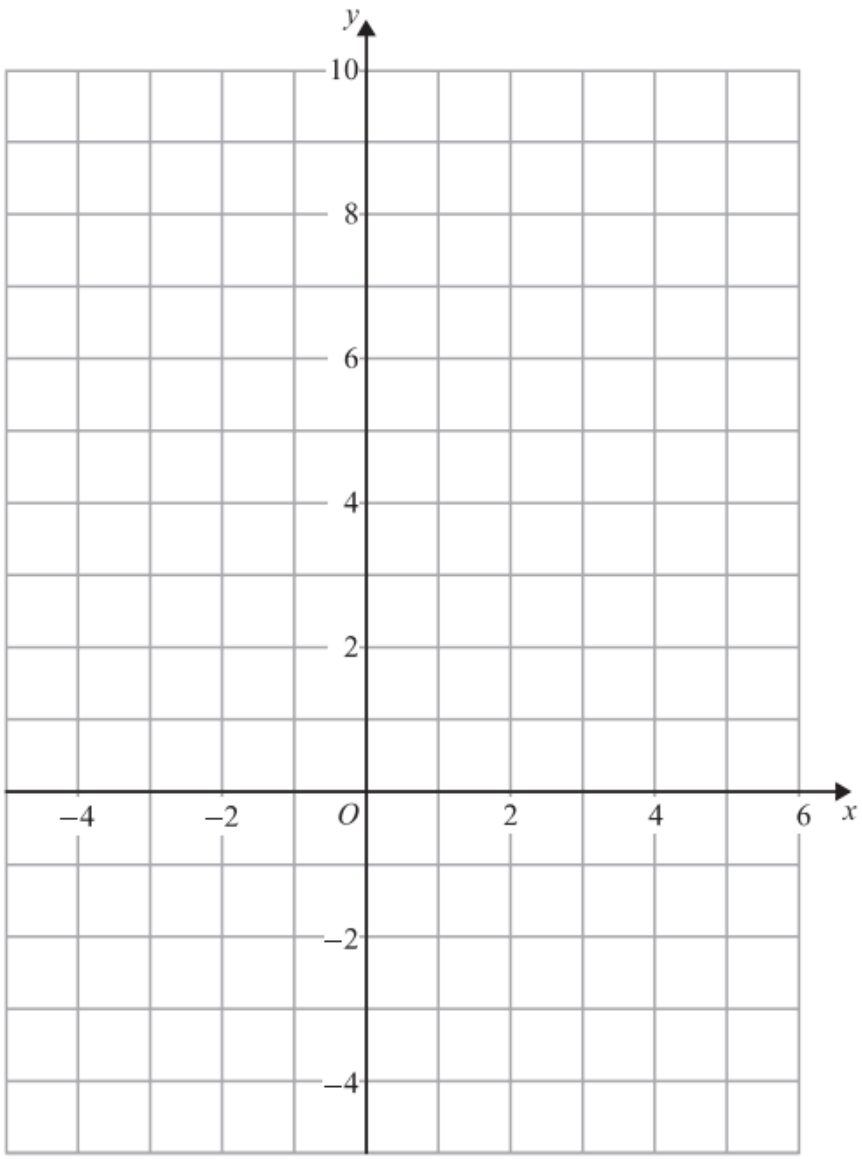
•Read each question carefully before you start to answer it.
•Keep an eye on the time.
•Try to answer every question.
•Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

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

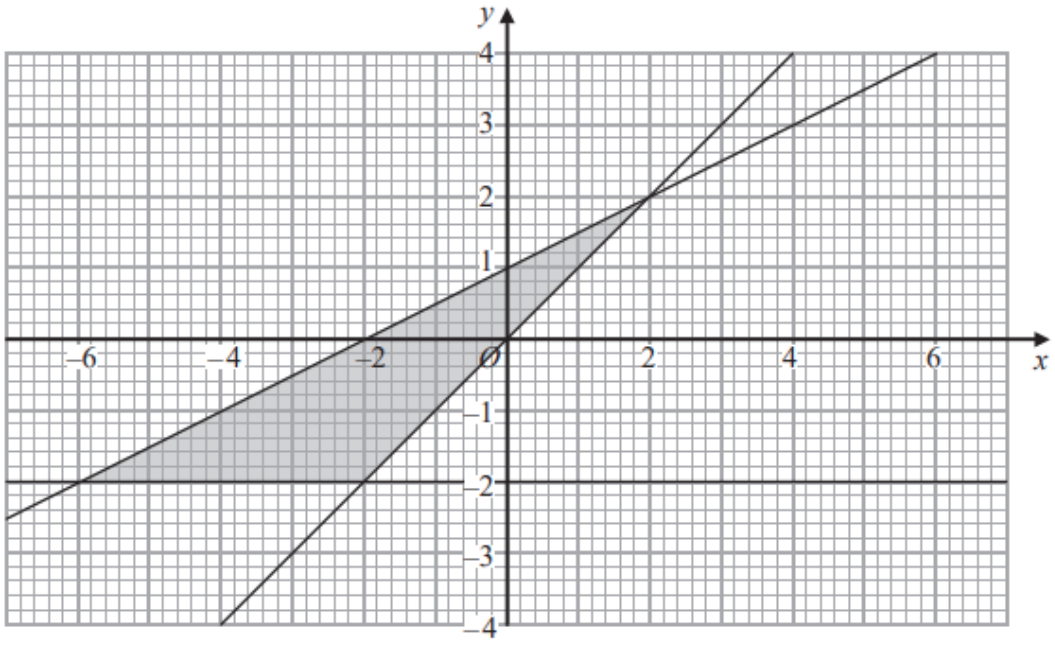
$$x + y < 4 \qquad y > x - 1 \qquad y < 3x$$

Label the region **R**.



(Total for Question 10 is 4 marks)

13



Write down the three inequalities that define the shaded region.

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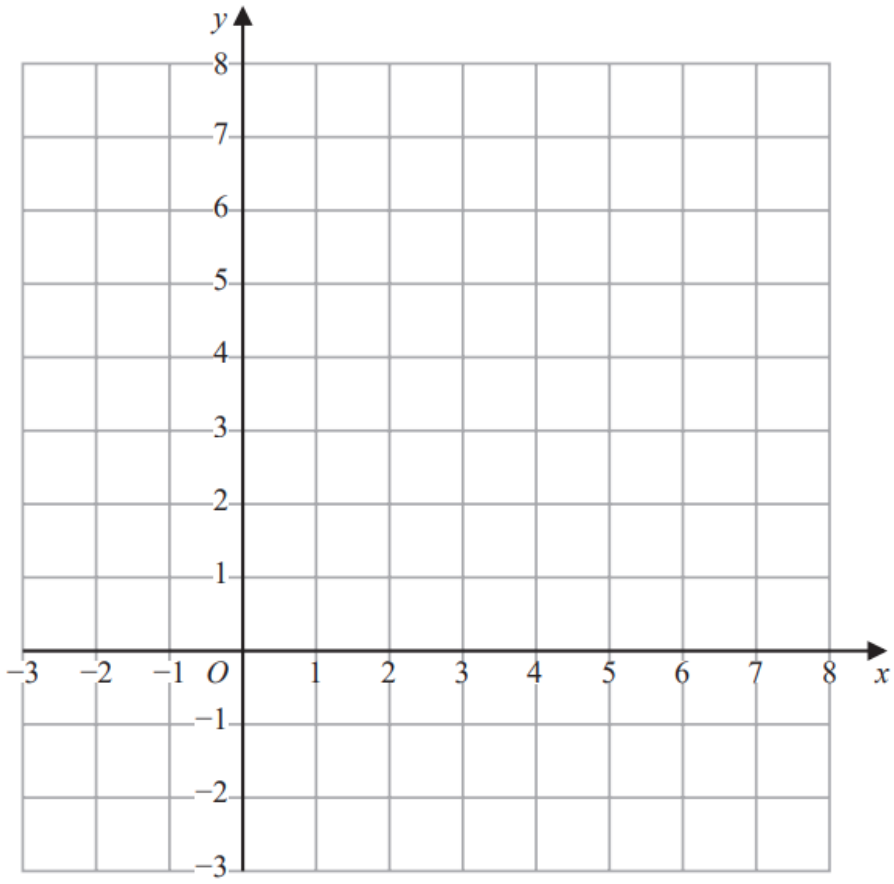
(Total for Question 13 is 4 marks)

13 (a) On the grid show, by shading, the region that satisfies all these inequalities.

$x \geqslant 0$ $x \leqslant 2$ $y \leqslant x + 3$ $2x + 3y \geqslant 6$

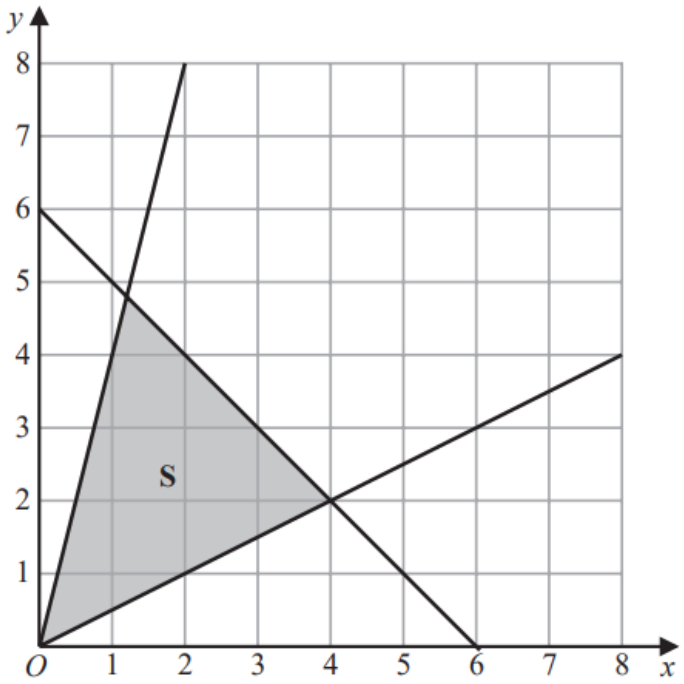
Label the region **R**.



(4)

(b) The diagram below shows the region **S** that satisfies the inequalities

$$y \leqslant 4x \qquad y \geqslant \frac{1}{2}x \qquad x + y \leqslant 6$$



Geoffrey says that the point with coordinates (2, 4) does not satisfy all the inequalities because it does not lie in the shaded region.

Is Geoffrey correct?
You must give a reason for your answer.

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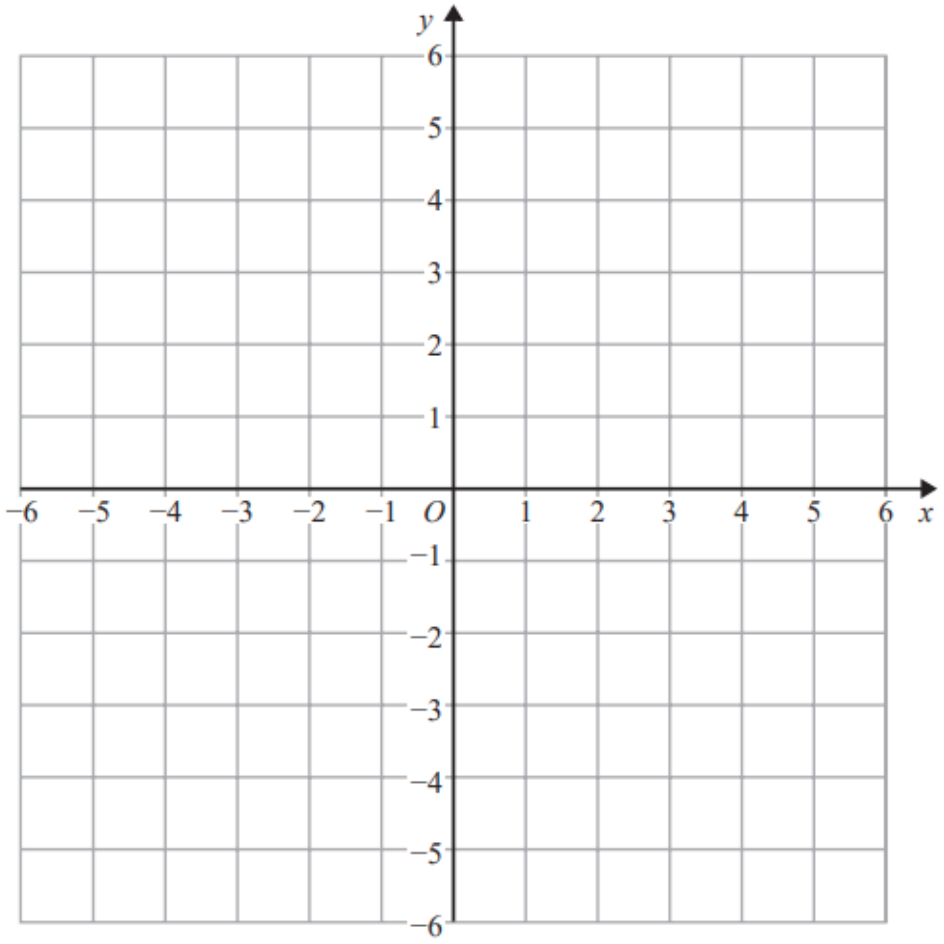
(1)

November 2020 – Paper 3H **(Total for Question 13 is 5 marks)**

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

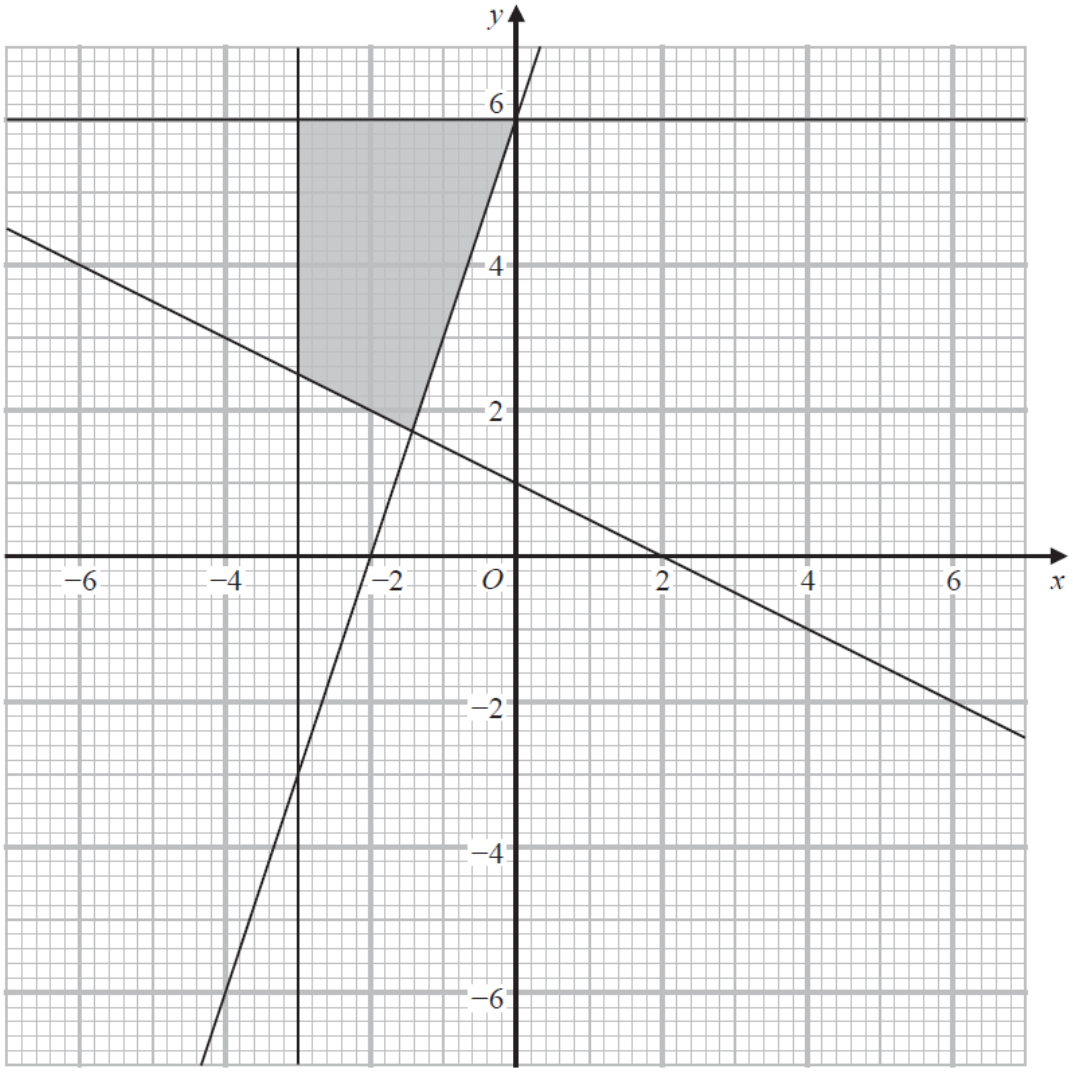
$y > 1$ $x + y < 5$ $y > 2x$

Label the region **R**.



November 2017 – Paper 2H **(Total for Question 14 is 3 marks)**

16 The shaded region shown on the grid is bounded by four straight lines.



Find the four inequalities that define the shaded region.

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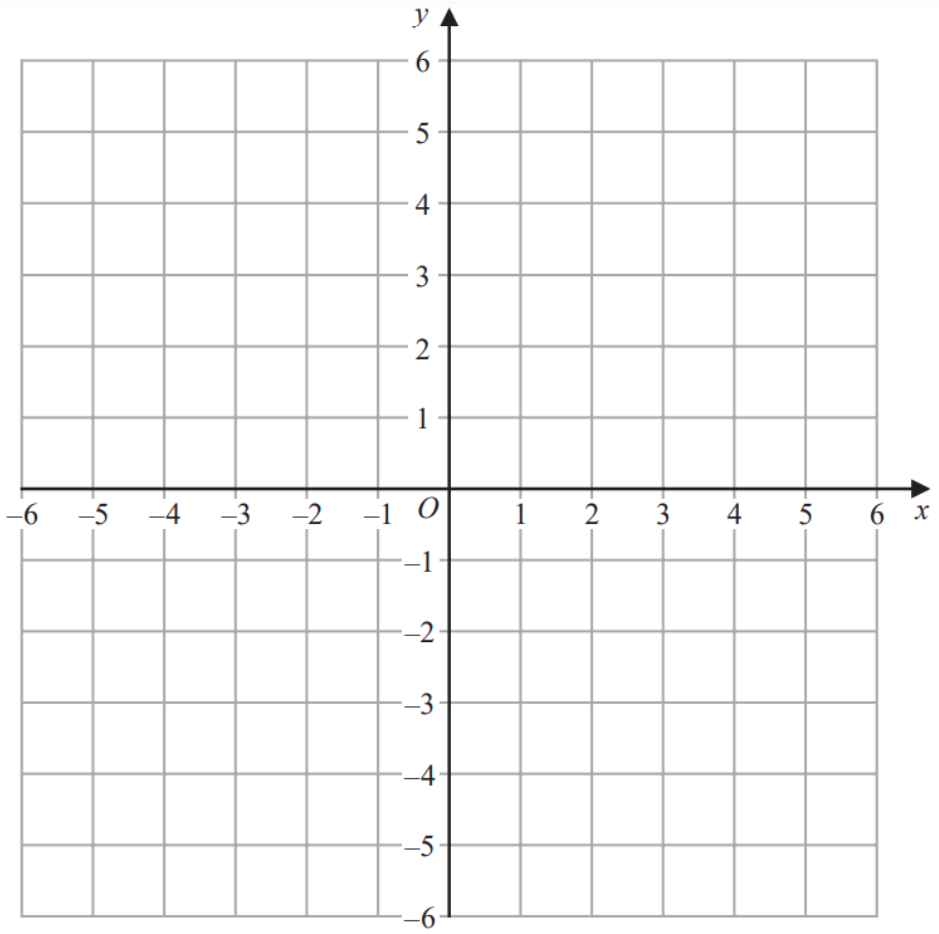
(Total for Question 16 is 4 marks)

17 On the grid show, by shading, the region that satisfies all of these inequalities.

$$2y + 4 < x \qquad x < 3 \qquad y < 6 - 3x$$

Label the region **R**.



(Total for Question 17 is 3 marks)