JustMaths

Inequalities (H)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	@mhorley
Total Marks:	

1. Solve $5x - 2 > 3x + 11$

$5x > 3x + 13$ ↓ $+2$

$2x > 13$ ↓ $-3x$

$x > 13/2$

[2]

2. Solve $x^2 > 3x + 4$

$x^2 - 3x - 4 > 0$

$(x-4)(x+1) > 0$

$x > 4$ or $x < 1$

[3]

3. Solve $6x + 4 > x + 17$

$5x + 4 > 17$ ↓ $-x$

$5x > 13$ ↓ -4

$x > 13/5$ ↓ $\div 5$

[2]

4. n is an integer with $-5 < 2n \leq 6$

Write down all the values of n

-3	-2	-1	0	1	2	3	4
x	✓	✓	✓	✓	✓	✓	x

$-2, -1, 0, 1, 2, 3$

[2]

5. (a) (i) Solve.

$5x + 1 > x + 13$

$4x + 1 > 13$ ↓ $-x$

$4x > 12$ ↓ -1

$x > 3$ ↓ $\div 4$

(a)(i) $x > 3$ ..... [3]

(ii) Write down the largest integer that satisfies $5x - 1 < 10$.

$5x < 11$

$x = 2, 5x = 10$

(ii) $x = 2$ ..... [1]

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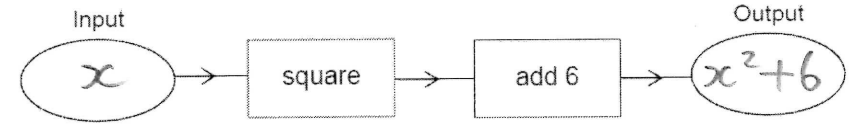
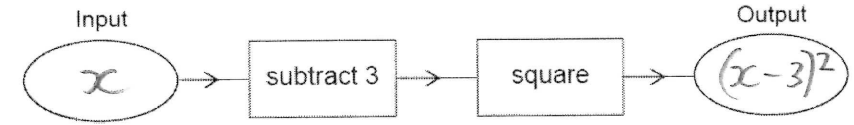
6. Here are two function machines, A and B.

A



B



Both machines have the same input.

Work out the range of input values for which

the output of **A** is less than the output of **B**.

$x^2 + 6 < (x-3)^2$

$x^2 + 6 < x^2 - 6x + 9$

$6x + 6 < 9$

$6x < 3 \rightarrow x < 1/2$

[4]

7. Solve this inequality.

$5x + 9 > 13$

$5x > 4$ ↓ -9

$x > 4/5$ ↓ $\div 5$

$x > 4/5$ ..... [2]

8. Circle the inequality shown by the diagram.

$-7 < x < 6$ $\quad$ $-7 \leq x < 6$ $\quad$ $-7 < x \ll 6$ $\quad$ $-7 \ll x \ll 6$

[1]

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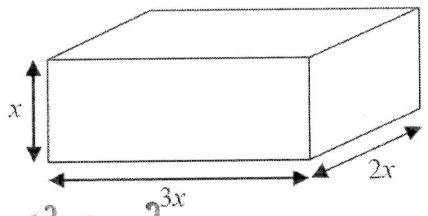
9 Here is a cuboid.



All measurements are in centimetres.

x is an integer.

The total volume of the cuboid is less than 900 cm^3

Show that $x \leq 5$

Volume $= x \times 3x \times 2x$

$= 6x^3$

$6x^3 < 900$ ÷6

$x^3 < 150$

x	x^3
4	64
5	125
6	216

$x \leq 5$

[3]

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

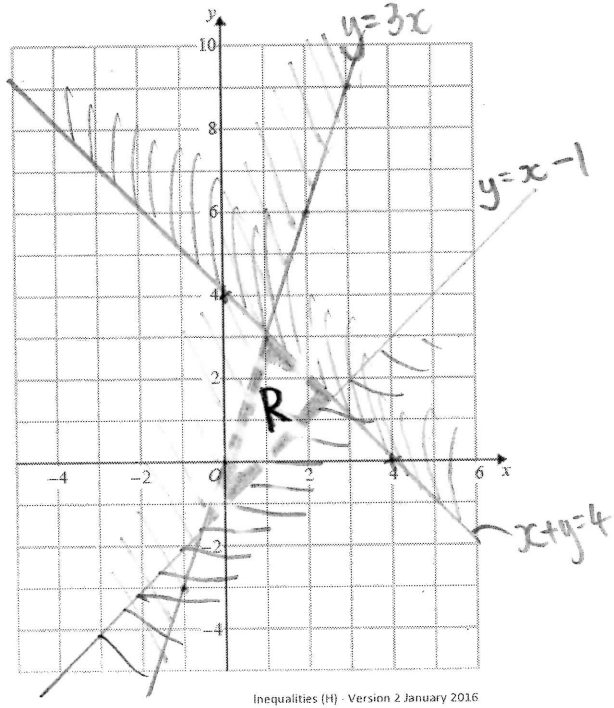
$x + y < 4$ (0,4) (4,0)

$y > x - 1$

$y < 3x$

Label the region **R**.

[4]



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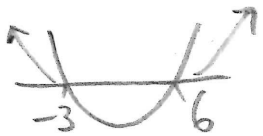
11. Solve the inequality $x^2 > 3(x + 6)$

$x^2 > 3x + 18$

$x^2 - 3x - 18 > 0$

$(x+3)(x-6) > 0$



$x < -3$ or $x > 6$

[4]

12. a) Solve the inequality $\frac{3x}{2} \leq 9$

$3x \leq 18$ ×2

$x \leq 6$ ÷3

[2]

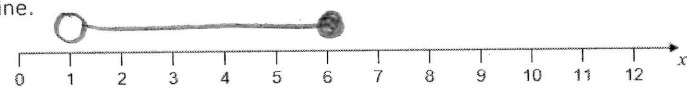
b) Solve the inequality $4(x + 2) > 12$

$x + 2 > 3$ ÷4

$x > 1$ −2

[2]

c) Represent the solution set that satisfies both answers to parts (a) and (b) on the number line.

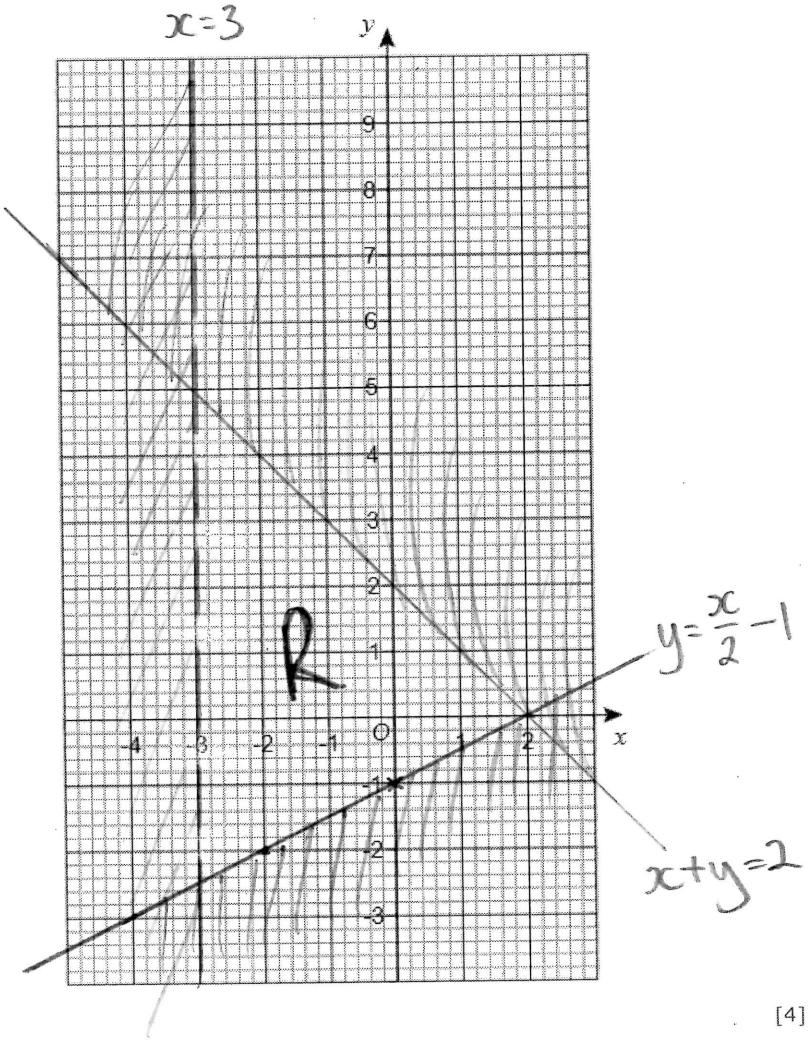


[1]

13. The region R satisfies the three inequalities

$x > -3$ $\quad x + y \leqslant 2$ $\quad y \geqslant \frac{x}{2} - 1$

Show the region R on the grid.



[4]

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CREDITS AND NOTES

Question	Awarding Body	Question	Awarding Body
1	AQA	12	AQA
2	Pearson Edexcel	13	AQA
3	Pearson Edexcel		
4	Pearson Edexcel		
5	OCR		
6	AQA		
7	OCR		
8	AQA		
9	Pearson Edexcel		
10	Pearson Edexcel		
11	Pearson Edexcel		

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

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Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material