"Full Coverage": Inequalities

This worksheet is designed to cover one question of each type seen in past papers, for each GCSE Higher Tier topic. This worksheet was automatically generated by the DrFrostMaths Homework Platform: students can practice this set of questions interactively by going to www.drfrostmaths.com/homework, logging on, *Practise* → *Past Papers/Worksheets* (or *Library* → *Past/Past Papers* for teachers), and using the 'Revision' tab.

Question 1

Categorisation: Solve a linear inequality.

[Edexcel IGCSE Nov2009-3H Q9c]
Solve the inequality $5y + 7 < 13$

.....

Question 2

Categorisation: Solve a linear inequality with a negative term.

[Edexcel IGCSE Jan2017-1F Q21c, Jan2017-3H Q5e]
Solve the inequality

$$3 - 7t \geq 31$$

.....

Question 3

Categorisation: Solve a two-ended inequality.

[Edexcel IGCSE Jan2013-3H Q7i]
Solve the inequalities

$$-2 < x + 2 \leq 5$$

.....

Question 4

Categorisation: Determine integer solutions to a two-ended inequality.

[Edexcel IGCSE Jan2012-4H Q10ii]

n is an integer.

Write down all the values of n which satisfy

$$-6 < 4n \leq 8$$

.....

Question 5

Categorisation: As above, but combining division and addition/subtraction.

[Edexcel IGCSE May2016(R)-3H Q6b]

Write down the integer values of x which satisfy

$$-4 < 3x + 5 \leq 11$$

.....

Question 6

Categorisation: Determine the greatest/smallest integer that satisfies an inequality.

[Edexcel IGCSE Jan2014-3H Q7bii Edited]

Write down the lowest **integer** which satisfies the inequality

$$2(y - 3) \geq 1$$

$y =$ .....

Question 7

Categorisation: Solve a linear inequality where the x term appears on both side of the inequality.

[Edexcel GCSE June2010-4H Q15b]

Solve $3x - 2 > x + 7$

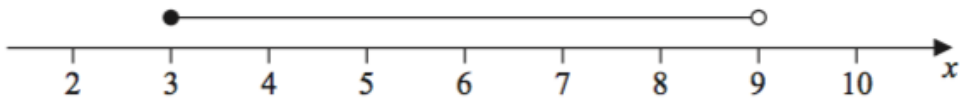
.....

Question 8

Categorisation: Determine an inequality based on its representation on a number line.

[Edexcel IGCSE Jan2017(R)-4H Q7e]

Write down the inequality shown on the number line.



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Question 9

Categorisation: Solve a quadratic inequality of the form $x^2 > a$ or $x^2 < a$

[Edexcel IGCSE Jan2012-4H Q15]

Solve the inequality

$$x^2 < 16$$

.....

Question 10

Categorisation: As above but requiring prior manipulation first.

[Edexcel IGCSE May2014-4H Q18b Edited]

Solve the inequality

$$\frac{m^2 + 3}{4} > 21$$

.....

Question 11

Categorisation: Solve an inequality of the form $x^2 + bx + c < 0$ or > 0

Solve $x^2 - 13x + 40 < 0$

.....

Question 12

Categorisation: Solve a quadratic inequality where the coefficient of x^2 is not 1.

[Edexcel GCSE(9-1) Mock Set 2 Spring 2017 3H Q19]

Solve $2x^2 - 5x - 12 > 0$

.....

Question 13

Categorisation: Solve a quadratic inequality of the form $x^2 + bx + c > 0$ where prior manipulation is first required.

[Edexcel Specimen Papers Set 2, Paper 1H Q21]

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

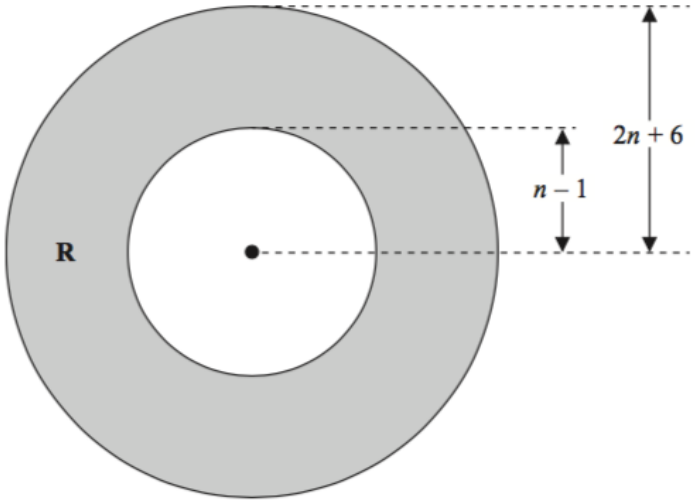
.....

Question 14

Categorisation: Form quadratic inequalities from a geometric context.

[Edexcel GCSE(9-1) Mock Set 3 Autumn 2017 1H Q12]

The region **R**, shown shaded in the diagram, is the region between two circles with the same centre.



The outer circle has radius $(2n + 6)$

The inner circle has radius $(n - 1)$ All measurements are in centimetres.

The area of **R** is greater than the area of a circle of radius $(n + 13)$ cm.

n is an integer. Find the least possible value of .

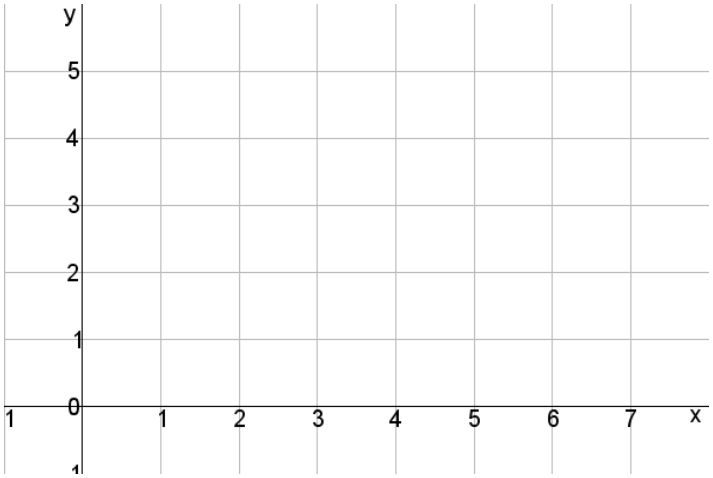
.....

Question 15

Categorisation: Draw a region represented by multiple inequalities in terms of x and y.

[Edexcel IGCSE Nov2009-4H Q9b Edited]

On the grid, show by shading the region which satisfies the inequalities $3 \leq x \leq 6$ and $2 \leq y \leq 4$



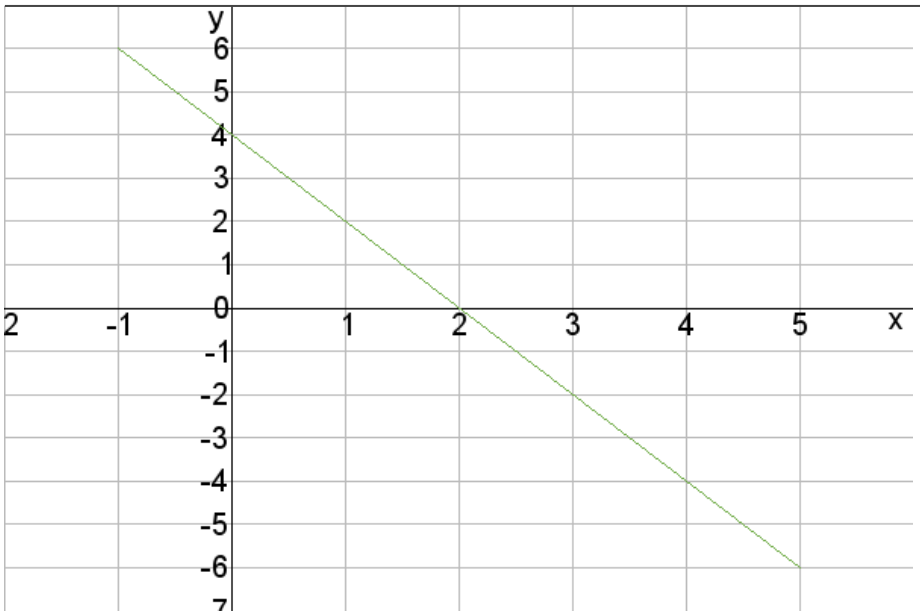
Question 16

Categorisation: As above, but with diagonal lines.

[Edexcel IGCSE Jan2017-1F Q20b, Jan2017-3H Q8b Edited]

Show by shading on the grid, the region defined by all three of the inequalities

$y \leq -2x + 4$ $y \geq -4$ $x \geq 1$



Question 17

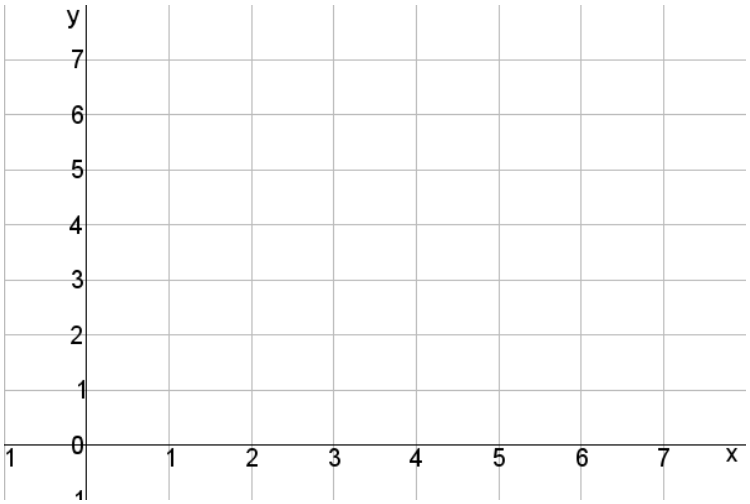
Categorisation: As above.

[Edexcel GCSE June2008-4H Q18 Edited]

The region R satisfies the inequalities

$x \geq 2 \qquad y \geq 1 \qquad x + y \leq 6$

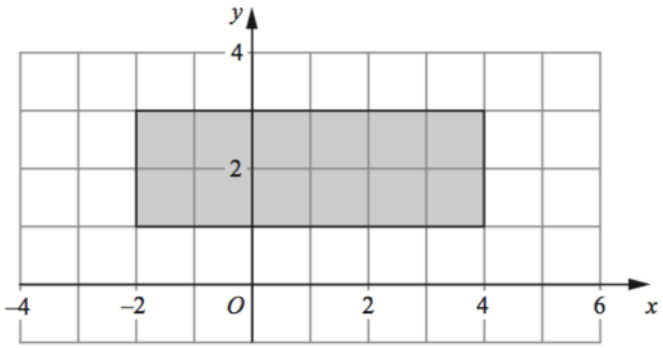
On the grid below, draw the region R.



Question 18

Categorisation: Write inequalities in terms of x and y represented by a region.

[Edexcel IGCSE Jan2013-4H Q13]



Write down inequalities to define fully the shaded region.

Answers

Question 1

$y < \frac{6}{5}$

Question 2

$t \leq -4$

Question 3

$-4 < x \leq 3$

Question 4

-1 , 0 , 1 , 2

Question 5

-2 , -1 , 0 , 1 , 2

Question 6

$y =$ 4

Question 7

$x > \frac{9}{2}$

Question 8

$3 \leq x < 9$

Question 9

$-4 < x < 4$

Question 10

$m > 9$ or $m < -9$

Question 11

$5 < x < 8$

Question 12

$x < -\frac{3}{2}$ or $x > 4$

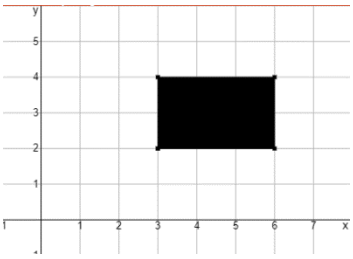
Question 13

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

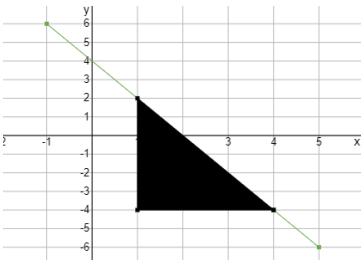
Question 14

$n = 9$

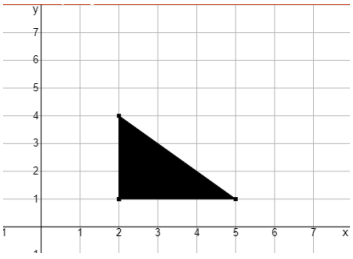
Question 15



Question 16



Question 17



Question 18

$-2 \leq x \leq 4$
and $1 \leq y \leq 3$