Name	Class

MATHS TEACHER HUB

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Simultaneous equations

(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 **1H** question you are not allowed to use a calculator.
•If the question is a **2H** or a **3H** 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.

2 Solve the simultaneous equations

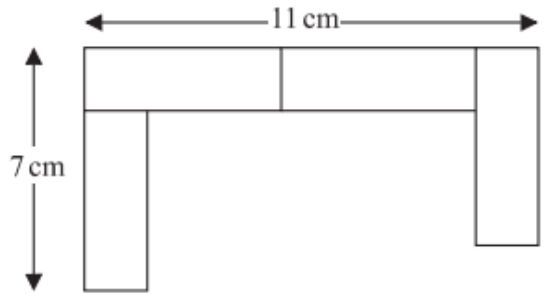
$$3x + y = -4$$
$$3x - 4y = 6$$

$x =$ .....

$y =$ .....

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

4 A pattern is made using identical rectangular tiles.

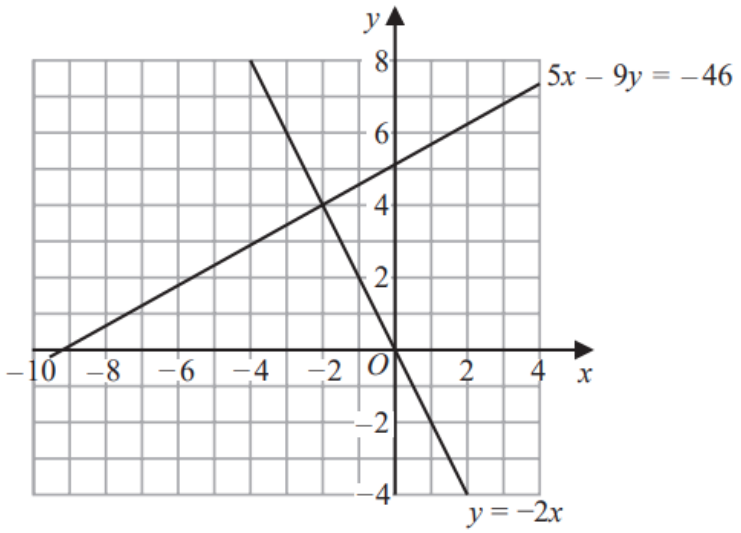


Find the total area of the pattern.

..... cm^2

 (Total for Question 4 is 4 marks)

6



Use these graphs to solve the simultaneous equations

$$5x - 9y = -46$$
$$y = -2x$$

$x =$ .....

$y =$ .....

(1)

November 2020 – Paper 3H

(Total for Question 6 is 1 mark)

6 Solve the simultaneous equations

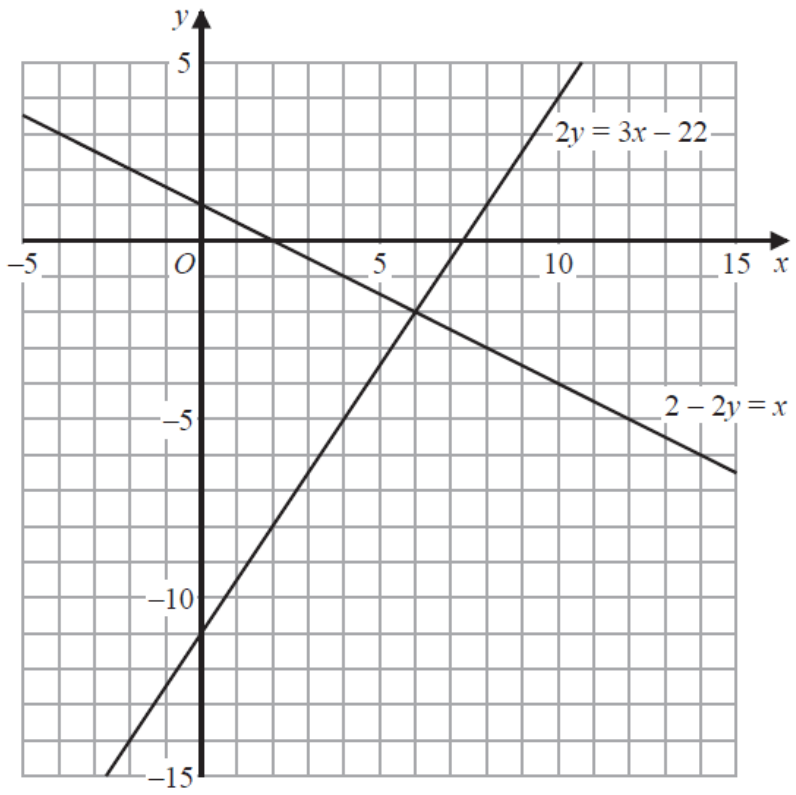
$$5x + y = 21$$
$$x - 3y = 9$$

$x =$ .....

$y =$ .....

November 2018 – Paper 1H **(Total for Question 6 is 3 marks)**

9



Use these graphs to solve the simultaneous equations

$$2 - 2y = x$$
$$2y = 3x - 22$$

$x =$ .....

$y =$ .....

(Total for Question 9 is 1 mark)

10 Solve the simultaneous equations

$$5x - 2y = 23$$
$$2x - 3y = 18$$

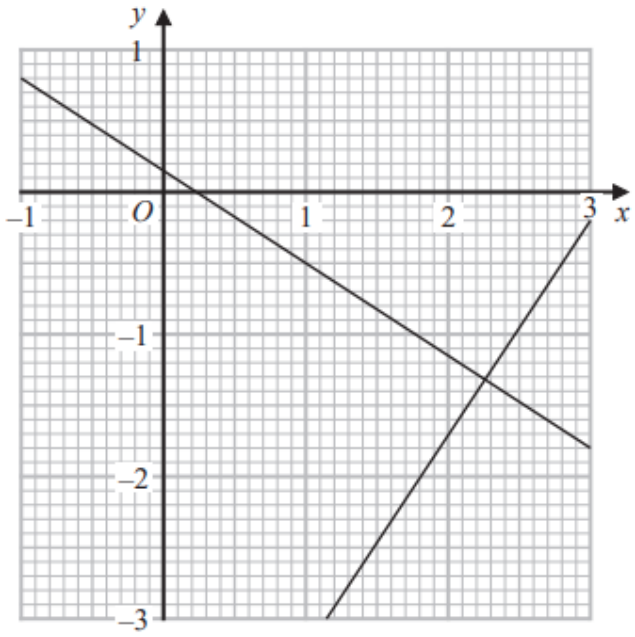
$x =$ .....

$y =$ .....

May 2024 – Paper 1H

(Total for Question 10 is 4 marks)

10 The graphs with equations $3y + 2x = \frac{1}{2}$ and $2y - 3x = -\frac{113}{12}$ have been drawn on the grid below.



Using the graphs, find estimates of the solutions of the simultaneous equations

$$3y + 2x = \frac{1}{2}$$

$$2y - 3x = -\frac{113}{12}$$

$x =$ .....

$y =$ .....

June 2019 – Paper 1H **(Total for Question 10 is 2 marks)**

11 3 teas and 2 coffees have a total cost of £7.80
5 teas and 4 coffees have a total cost of £14.20

Work out the cost of one tea and the cost of one coffee.

tea £.....

coffee £.....

(Total for Question 11 is 4 marks)

11 Use algebra to solve the simultaneous equations

$$2x + 6y = 5$$
$$3x - 4y = -12$$

$x =$ .....

$y =$ .....

(Total for Question 11 is 4 marks)

11 Solve the simultaneous equations

$$2x - 4y = 19$$
$$3x + 5y = 1$$

$x =$ .....

$y =$ .....

(Total for Question 11 is 4 marks)

12 Solve the simultaneous equations

$$5x + 2y = 11$$
$$4x + 3y = 6$$

$x =$ .....

$y =$ .....

November 2022 – Paper 1H **(Total for Question 12 is 4 marks)**

16 The curve **C** has equation $y = x^2 + 3x - 3$

The line **L** has equation $y - 5x + 4 = 0$

Show, algebraically, that **C** and **L** have exactly one point in common.

(Total for Question 16 is 4 marks)

19 Solve algebraically the simultaneous equations

$$2x^2 - y^2 = 17$$
$$x + 2y = 1$$

(Total for Question 19 is 5 marks)

20 Solve algebraically the simultaneous equations

$$x^2 - 4y^2 = 9$$
$$3x + 4y = 7$$

(Total for Question 20 is 5 marks)

20 Solve algebraically the simultaneous equations

$$x^2 + y^2 = 25$$
$$y - 3x = 13$$

(Total for Question 20 is 5 marks)

20 Solve algebraically the simultaneous equations

$$x^2 + y^2 = 25$$
$$y - 2x = 5$$

(Total for Question 20 is 5 marks)

22 **L** is the straight line with equation $y = 2x - 5$

C is a graph with equation $y^2 = 6x^2 - 25x - 8$

Using algebra, find the coordinates of the points of intersection of **L** and **C**.
You must show all your working.

(..... , ...)

(..... , ...)

(Total for Question 22 is 5 marks)