Name ANSWERS	Class

MATHS TEACHER HUB

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Simultaneous equations

(9 – 1) Topic booklet

Foundation

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.

16 Solve the simultaneous equations

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

$$5y = -10$$

$$y = \frac{-10}{5}$$

$$y = -2$$

$$3x + (-2) = -4$$

$$3x - 2 = -4$$

$$3x = -2$$

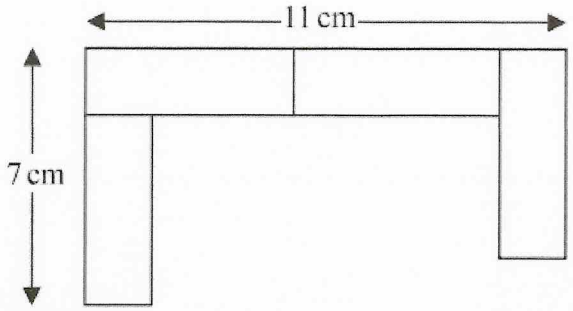
$$x = \frac{-2}{3}$$

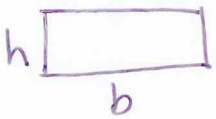
$x =$ $\frac{-2}{3}$

$y =$ -2

(Total for Question 16 is 3 marks)

23 A pattern is made using identical rectangular tiles.





Find the total area of the pattern.

$2b + 1h = 11$

$- \quad 1b + 1h = 7$

$b \quad = 4$

$h = 3$

$3 \boxed{12\text{cm}^2} \times 4$

4

48 cm²

(Total for Question 23 is 4 marks)

25 Solve the simultaneous equations

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

(×5)

$5x + y = 21$
$-\quad 5x - 15y = 45$

$16y = -24$

$y = \frac{-24}{16}$

$y = -1.5$

$5x + (-1.5) = 21$

$5x - 1.5 = 21$

$5x = 22.5$

$x = \frac{22.5}{5}$

$x = 4.5$

$x =$ 4.5

$y =$ −1.5

(Total for Question 25 is 3 marks)

27 Solve the simultaneous equations

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

(×5)

$5x + 15y = 60$
$-\ 5x - y = 4$

$16y = 56$

$y = \frac{56}{16}$

$y = 3.5$

$x + 3(3.5) = 12$

$x + 10.5 = 12$

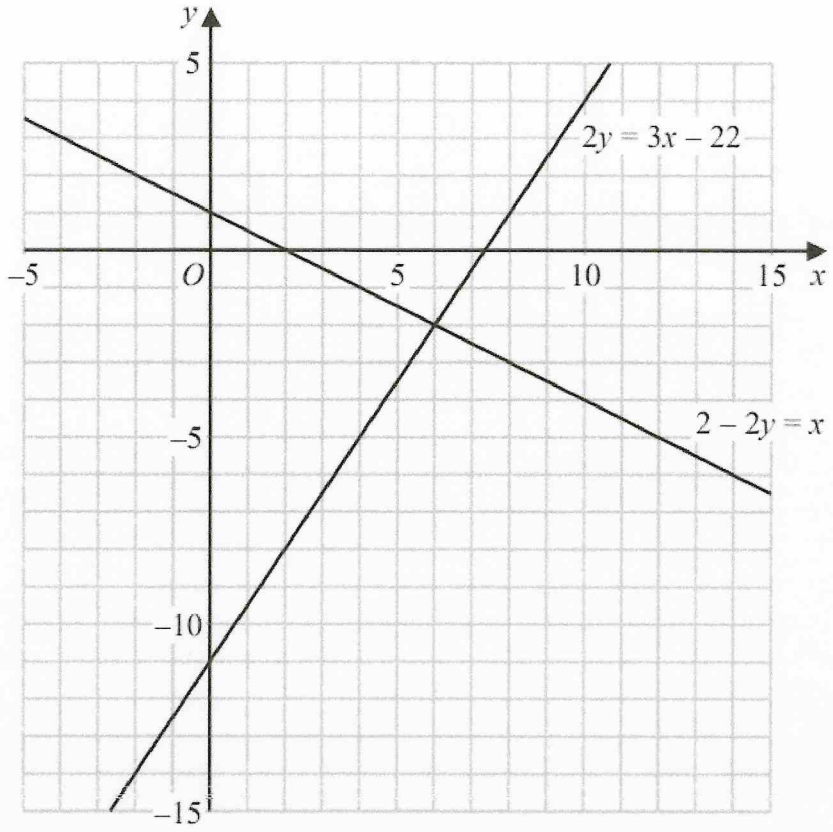
$x = 1.5$

$x =$ 1.5

$y =$ 3.5

(Total for Question 27 is 3 marks)

28



Use these graphs to solve the simultaneous equations

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

$x =$ 6

$y =$ -2

June 2023 – Paper 1F

(Total for Question 28 is 1 mark)

28 Solve the simultaneous equations

(×2) $5x + 2y = 27$

$6x + 4y = 28$

$10x + 4y = 54$

$- \quad 6x + 4y = 28$

$4x = 26$

$x = \frac{26}{4}$

$x = 6.5$

$5x + 2y = 27$

$5(6.5) + 2y = 27$

$32.5 + 2y = 27$

$2y = -5.5$

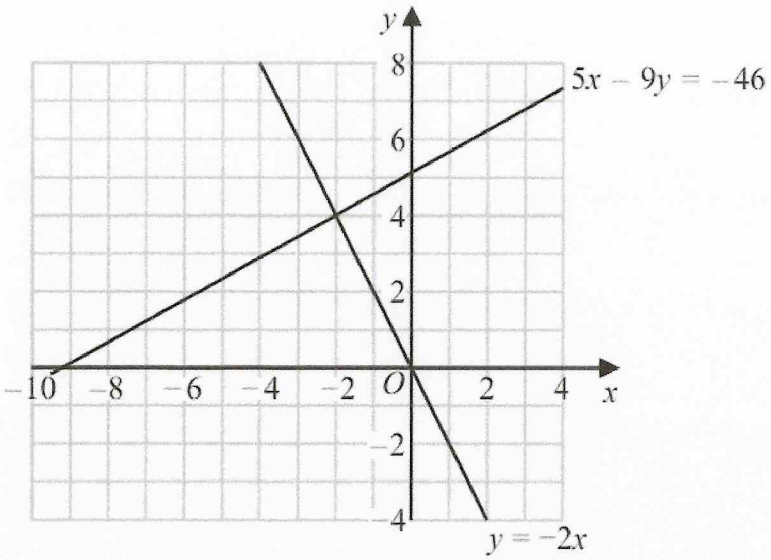
$y = -2.75$

$x =$ 6.5

$y =$ -2.75

(Total for Question 28 is 3 marks)

28



(a) Use these graphs to solve the simultaneous equations

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

$x =$ −2

$y =$ 4

(1)

(Total for Question 28 is 1 mark)

29 Solve the simultaneous equations

$4x + y = 25$
$x - 3y = 16$

(×4)

$4x + y = 25$
$-\ 4x - 12y = 64$

$13y = -39$

$y = \frac{-39}{13}$

$y = -3$

$4x + (-3) = 25$

$4x - 3 = 25$

$4x = 28$

$x = 7$

$x =$ 7 , $y =$ -3

(Total for Question 29 is 3 marks)

30 Solve the simultaneous equations

$3x + y = -4.5$

$4x + 3y = -3.5$

(x3)

$9x + 3y = -13.5$

$-\ 4x + 3y = -3.5$

$5x = -10$

$x = \frac{-10}{5}$

$x = -2$

$3x + y = -4.5$

$3(-2) + y = -4.5$

$-6 + y = -4.5$

$y = 1.5$

$x =$ −2

$y =$ 1.5

November 2023 – Paper 2F

(Total for Question 30 is 3 marks)

30 Solve the simultaneous equations

$3x - 4y = 11$
$9x + 2y = 5$

(×3)

$9x - 12y = 33$
$-\ 9x + 2y = 5$

$-14y = 28$

$14y = -28$

$y = \frac{-28}{14}$

$y = -2$

$3x - 4(-2) = 11$

$3x + 8 = 11$

$3x = 3$

$x = 1$

$x =$ 1

$y =$ -2

June 2019 – Paper 3F

(Total for Question 30 is 3 marks)