Write your name here

Surname	Other names

In the style of:
Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Algebra

Foundation Tier

GCSE style questions arranged by topic

Paper Reference
1MA1/1F

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.*
- **Calculators may not be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

Information

- The total mark for this paper is
- 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.

Turn over ▶

1 Peter thinks of a number.

He multiplies the number by 3
He then adds 2

His answer is 20

(a) What number did Peter think of?

.....

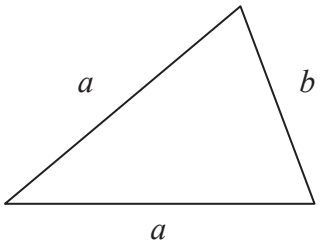
(2)

Sophie uses the formula $P = 2a + b$

to find the perimeter P of this triangle.

(b) Find the value of P when

$a = 6$ and $b = 4$



$P =$ .....

(2)

(Total for Question 1 is 4 marks)

---

2 (a) Work out the value of

(i) 4^2

.....

(ii) $\sqrt{64}$

.....

(iii) 3×2^3

.....

(3)

(b) Work out

(i) $-3 + 5$

.....

(ii) $-2 - 3$

.....

(2)

(Total for Question 2 is 5 marks)

3 The cost of hiring a car can be worked out using this rule.

Cost = £80 + 50p per mile

Bill hires a car and drives 90 miles.

(a) Work out the cost.

£ .....

(2)

The cost of hiring a car and driving m miles is C pounds.

(b) Complete the formula for C in terms of m.

C = ...

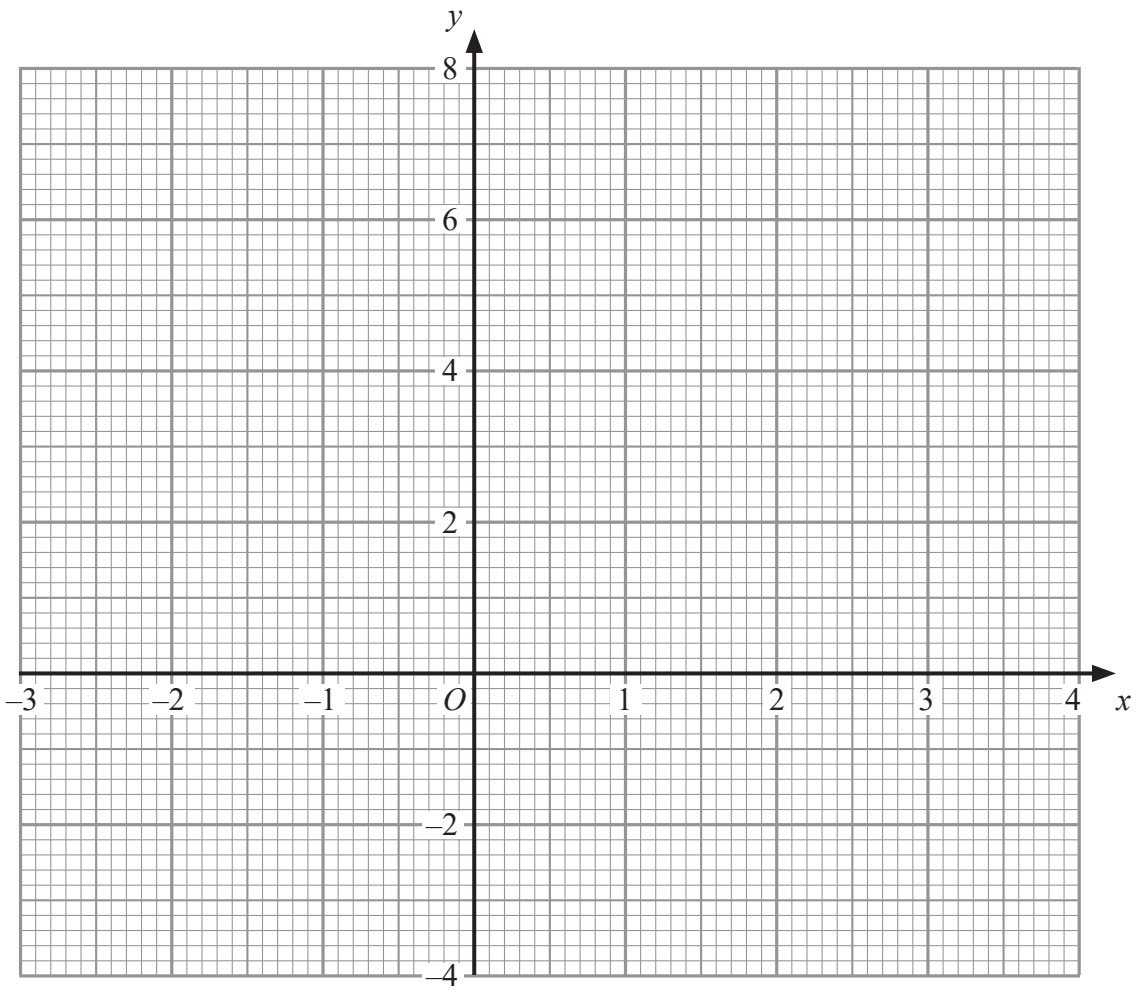
(2)

(Total for Question 3 is 4 marks)

4 (a) Complete this table of values for $y = 2x - 1$

x	–1	0	1	2	3	
y		–1		3	5	

(2)



(2)

(b) On the grid, draw the graph of $y = 2x - 1$

(Total for Question 4 is 4 marks)

5 Work out an estimate for the value of $\dfrac{31 \times 4.92}{0.21}$

.....

(Total for Question 5 is 2 marks)

---

6 (a) Expand $y(2y - 3)$

.....

(1)

(b) Factorise $x^2 - 4x$

.....

(2)

k is an integer such that $-1 \leqslant k < 3$

(c) List all the possible values of k.

.....

(2)

(Total for Question 6 is 5 marks)

7 (a) Factorise $x^2 - 5x$

.....

(2)

(b) Expand $3(5x - 2)$

.....

(1)

(Total for Question 7 is 3 marks)

---

8 A hotel has 64 guests.
40 of the guests are male.

(a) Work out 40 out of 64 as a percentage.

..... %

(2)

40% of the 40 male guests wear glasses.

(b) Write the number of male guests who wear glasses as a fraction of the 64 guests.
Give your answer in its simplest form.

.....

(2)

(Total for Question 8 is 4 marks)

9 (a) Simplify $8x - 4x$

.....

(1)

(b) Simplify $y \times y \times y$

.....

(1)

(c) Simplify $5y + 4x - 2x + 5x$

.....

(2)

(Total for Question 9 is 4 marks)

10 The two-way table gives some information about how 100 children travelled to school one day.

	Walk	Car	Bike	Total
Boy	15		14	54
Girl		8	16	
Total	37			100

(a) Complete the two-way table.

(3)

One of the children is picked at random.

(b) Write down the probability that this child walked to school that day.

.....

(1)

One of the girls is picked at random.

(c) Work out the probability that this girl did **not** walk to school that day.

.....

(2)

(Total for Question 10 is 6 marks)

---

11 Apples cost a pence each

Bananas cost b pence each.

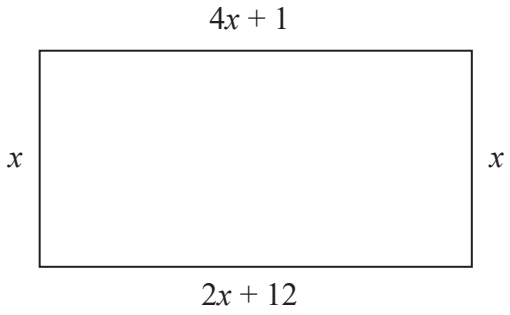
Write down an expression for the total cost, in pence, of 2 apples and 4 bananas.

..... pence

(Total for Question 11 is 2 marks)

12

Diagram **NOT** accurately drawn



The diagram shows a rectangle.

All the measurements are in centimetres.

(a) Explain why $4x + 1 = 2x + 12$

.....

(1)

(b) Solve $4x + 1 = 2x + 12$

$x =$ .....

(2)

(c) Use your answer to part (b) to work out the perimeter of the rectangle.

..... cm

(1)

(Total for Question 12 is 5 marks)

13 (a) Simplify $5 + 2 - 4cd$

.....

(1)

(b) Simplify $4c + 3d - 2c + 2d$

.....

(2)

(c) Simplify $x \times x \times x$

.....

(1)

(d) Simplify $3q \times 2r$

.....

(1)

(e) Factorise $5x + 10$

.....

(1)

(Total for question 13 is 6 marks

14 Expand and simplify $(x + 7)(x + 3)$

.....

(Total for Question 14 is 2 marks)

---

15 Solve $4x + 5 = x + 26$

$x =$ .....

(Total for Question 15 is 2 marks)

---

16 (a) Tara buys p packets of plain crisps and c packets of cheese crisps.

Write down an expression for the total number of packets of crisps Tara buys.

.....

(1)

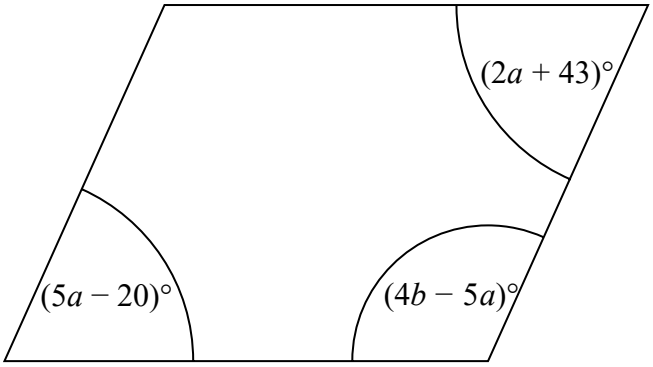
(b) Solve $3y - 5 = 9$

$y =$ .....

(2)

(Total for Question 16 is 3 marks)

17 Here is a parallelogram.



Work out the value of a and the value of b.

$a =$ .....

$b =$ .....

(Total for Question 17 is 5 marks)

18 (a) Factorise $3f + 9$

.....

(1)

(b) Factorise $x^2 - 2x - 15$

.....

(2)

(Total for Question 18 is 3 marks)

---

19 $q = \frac{p}{r} + s$

Make p the subject of this formula.

.....

(Total for Question 19 is 2 marks)

---

20 $f = 5x + 2y$

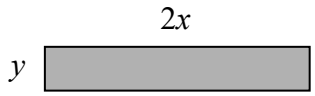
$x = 3$ and $y = -2$

Find the value of f.

.....

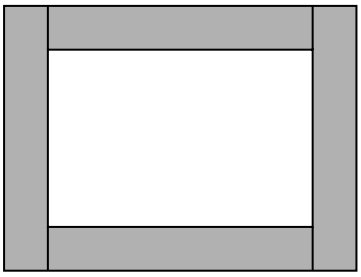
(Total for Question 20 is 2 marks)

21 Here is a rectangle made of card.



The measurements in the diagram are in centimetres.

Sophie fits four of these rectangles together to make a frame.



The perimeter of the inside of the frame is P cm.

(a) Show that $P = 8x - 4y$

(2)

Georgina says,

"When x and y are whole numbers, P is always a multiple of 4."

Is Georgina correct?

You must give a reason for your answer.

.....

.....

(2)

(Total for Question 21 is 4 marks)

22 You should use a calculator for this question.

The value of a motorhome £V is given by

$$V = 20\,000 \times 0.9^{t}$$

where t is the age of the motorhome in complete years.

(a) Write down the value of V when $t = 0$.

(a) £ .....

(1)

(b) What is the value of V when $t = 3$?

(b) £ .....

(2)

(c) After how many complete years will the motorhome's value drop below £10 000?

(c) .....

(2)

(Total for Question 22 is 4 marks)

23 Six equations are shown below, each labelled with a letter.

A	B	C
$y = -6x$	$x = \frac{1}{6}y$	$y = \frac{-3}{x}$

D	E	F
$x = \frac{6}{y}$	$y = 6x$	$y = \frac{2}{x} + 2$

Choose the correct letters to make each statement true.

(a) Equation B and equation ..... are equivalent. **(1)**

(b) Equation ..... and equation ..... each show x is inversely proportional to y. **(2)**

(Total for Question 23 is 3 marks)

---

24 Joe went for a bike ride one evening.

He travelled x kilometres in 5 hours.

Show that his average speed can be written as $\frac{x}{18}$ m/s. **(4)**

(Total for Question 24 is 4 marks)

25 (a) Simplify.

$x \times x \times x \times x \times x$

(a) .....

(1)

(b) Solve.

$3x + 7 = 19$

(b) $x =$ .....

(2)

(c) Here is a formula.

$T = 5r + 3u$

Work out the value of T when $r = 8$ and $u = 9$.

(c) .....

(2)

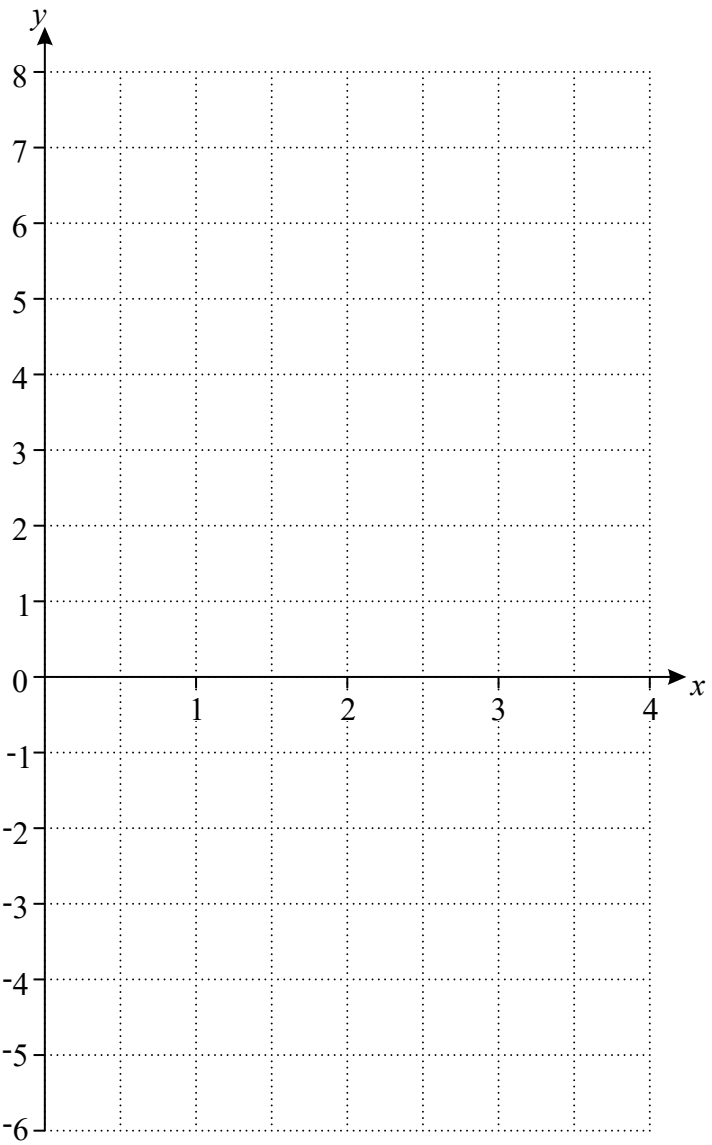
(Total for Question 25 is 5 marks)

26 (a) Complete this table for $y = 2x - 3$.

x	0	1	2	3	4
y	-3		1		5

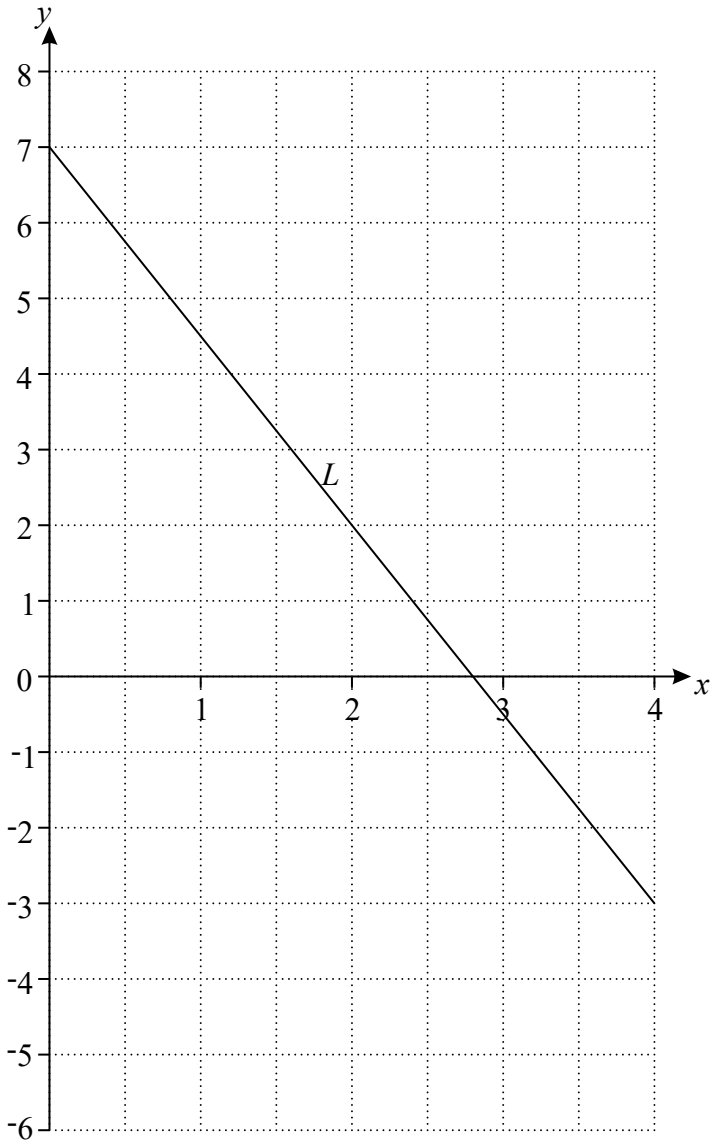
(1)

(b) On the grid below, draw the graph of $y = 2x - 3$ for values of x from 0 to 4.



(2)

(c) Line L is drawn on the grid below.



Work out the equation of line L.

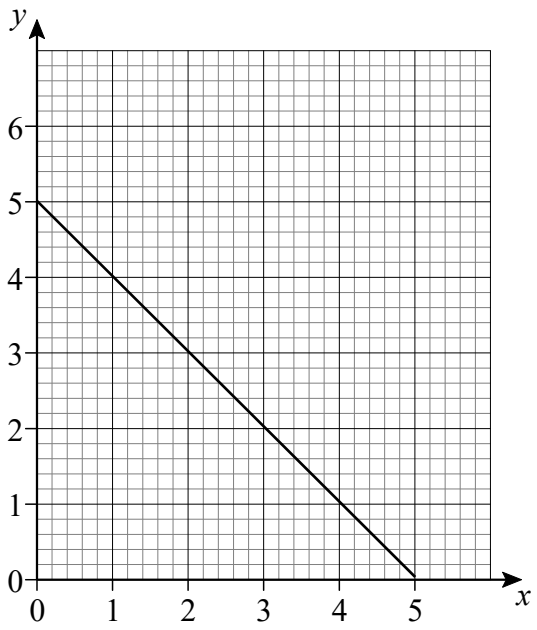
(c) .....

(3)

(Total for Question 26 is 6 marks)

27

Here is the graph of $y = 5 - x$ for values of x from 0 to 5



(a) On the same grid, draw the graph of $y = x + 1$ for values of x from 0 to 5

(2)

(b) Use the graphs to solve the simultaneous equations

$y = 5 - x$ and $y = x + 1$

$x =$ .....

$y =$ .....

(1)

(Total for Question 27 is 3 marks)

28 Here are three expressions.

$$\frac{y}{x} \qquad x - yx - y \qquad xy$$

When $x = 2$ and $y = -6$ which expression has the smallest value?

You **must** show your working..

.....

(2)

(Total for Question 28 is 2 marks)

---

29 Simplify $5x - (2x + 6)$

Circle your answer.

$3x + 6$ $9x$ $-3x$ $3x - 6$

(Total for Question 29 is 1 mark)

---

30 Helen is trying to work out the two values of w for which $3w - w^3 = 2$

Her values are 1 and -1. Are her values correct?

You **must** show your working.

(2)

(Total for Question 11 is 2 marks)

31

JKLQ is a square.

QLOP is a rectangle.

LMNO is a square.

They are joined to make an L-shape.

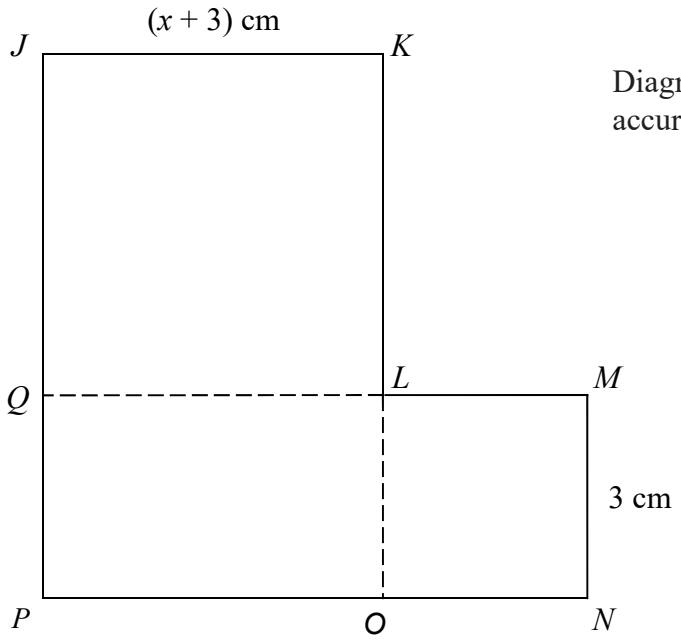


Diagram **NOT** accurately drawn

Show that the total area of the L-shape, in cm^2, is $x^2 + 9x + 27$

(4)

(Total for Question 31 is 4 marks)

---

32 Circle the equation with roots 4 and –8

$4x(x - 8) = 0$

$(x - 4)(x + 8) = 0$

$x^2 - 32 = 0$

$(x + 4)(x - 8) = 0$

(Total for Question 32 is 1 mark)