Additional Assessment Materials
Summer 2021

Pearson Edexcel

GCSE (9-1) in Mathematics 1MA1 Foundation (Calculator) (Public release version)

Topic 2: Algebra (Test 1)

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Additional Assessment Materials, Summer 2021

General guidance to Additional Assessment Materials for use in 2021

Context

- Additional Assessment Materials are being produced for GCSE, AS and A levels (with the exception of Art and Design).
- The Additional Assessment Materials presented in this booklet are an optional part of the range of evidence teachers may use when deciding on a candidate's grade.
- 2021 Additional Assessment Materials have been drawn from previous examination materials, namely past papers.
- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.

Purpose

- The purpose of this resource to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the mapping guidance which will map content and/or skills covered within each set of questions.
- These materials are only intended to support the summer 2021 series.

Subject Specific Guidance

This booklet contains questions on the topic given on the front cover. .

The questions in the should take approximately 45-60 minutes to complete.

This topic test is part of a suite of 10 topic tests. As there is some overlap between the topics of number and ratio; these were grouped together and both a non-calculator and calculator assessment produced at each tier level. The topics of probability and statistics go hand-in-hand so these were also grouped together.

Topic	**Tier**	**Calculator/Non-Calculator**
Number & Ratio	Foundation	Calculator
Number & Ratio	Foundation	Non-Calculator
Number & Ratio	Higher	Calculator
Number & Ratio	Higher	Non-Calculator
Algebra	Foundation	Calculator
Algebra	Higher	Calculator
Probability & Statistics	Foundation	Calculator
Probability & Statistics	Higher	Calculator
Geometry	Foundation	Calculator
Geometry	Higher	Calculator

1 (*a*) Simplify $3m - m - m + 3m$

$= 3m - 2m + 3m$

.....4m.....

(1)

(*b*) Simplify $2 \times n \times p \times 4$

$2 \times 4 \times n \times p$

$= 8np$

.....8np.....

(1)

(Total for Question 1 is 2 marks)

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2 Here are the first 4 terms of a sequence.

2 , 9 , 16 , 23 (+7 between each pair)

(*a*) (i) Write down the next term in the sequence.

.....30.....

(1)

(ii) Explain how you got your answer.

.....each term increases by +7.....

(1)

(*b*) Work out the 10th term of the sequence.

$7n - 5 \Rightarrow 7(10) - 5 = 70 - 5 = 65$

.....

(1)

(Total for Question 2 is 3 marks)

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3 (*a*) Solve $x + x + x = 51$

$3x = 51$

$x = \frac{51}{3} = 17$

$x =$ ....17....

(1)

(*b*) Solve $\frac{y}{4} = 3$

$\times 4$

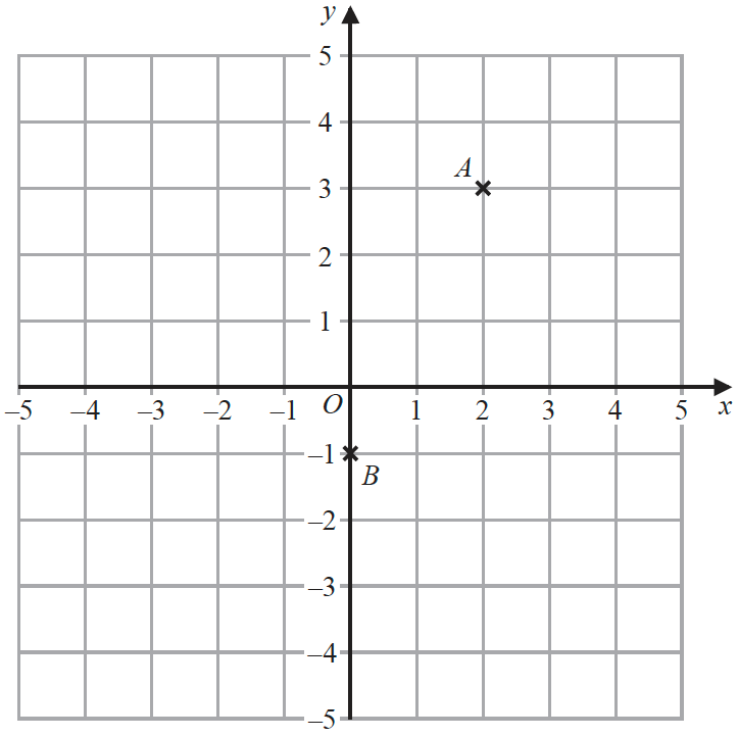
$\Rightarrow y = 12$

$y =$ ....12....

(1)

(Total for Question 3 is 2 marks)

4



(*a*) Write down the coordinates of the point *A*.

(2 , 3)

(1)

(*b*) Write down the coordinates of the point *B*.

(0 , –1)

(1)

(Total for Question 4 is 2 marks)

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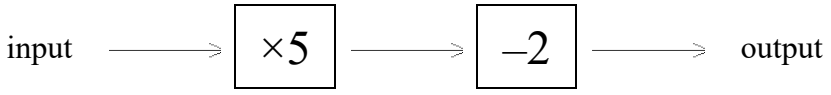
5 Here is a number machine.



(*a*) Work out the **output** when the input is 8

$(8 \times 5) - 2$

38

(1)

(*b*) Work out the **input** when the output is 28

$(x \times 5) - 2 = 28$

$x \times 5 = 30$

$x = 30 \div 5 \Rightarrow 6$

6

(2)

(Total for Question 5 is 3 marks)

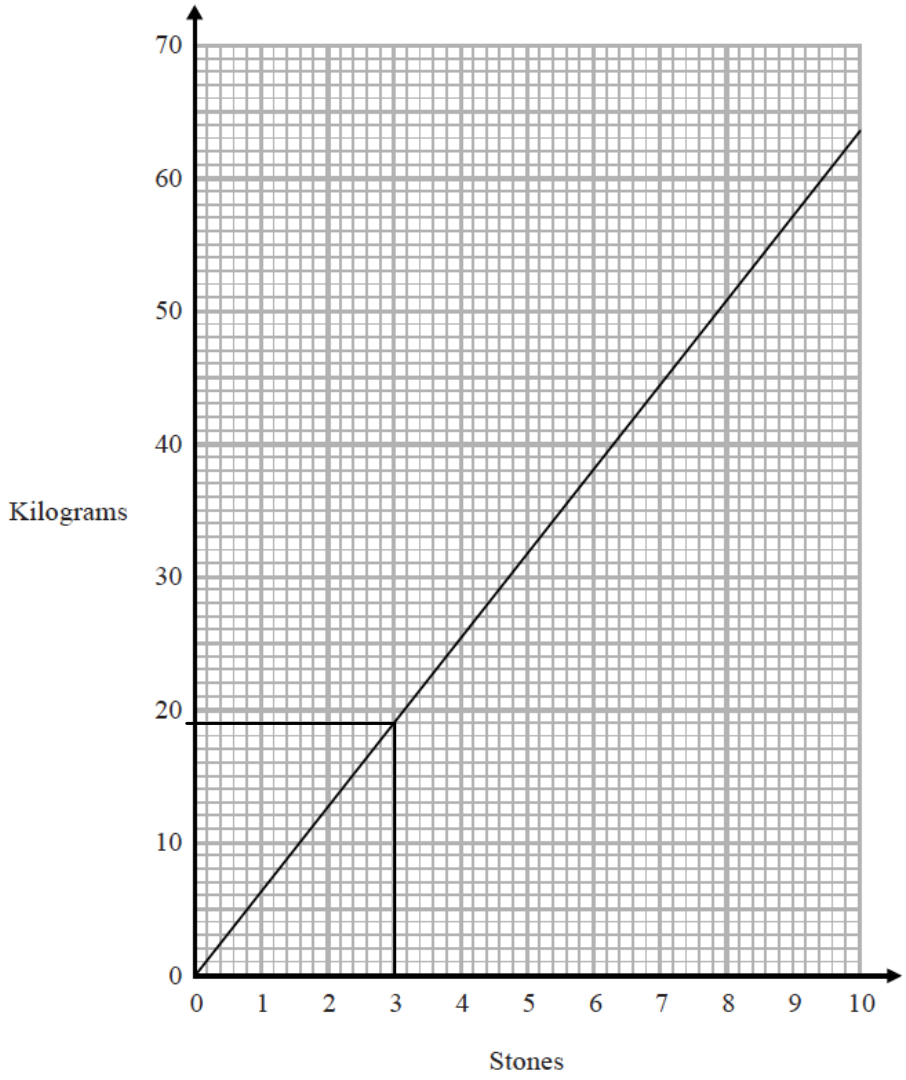
6 Simplify $10 + 3c + 5d - 7c + d$

$-4c + 5d + 10 + d$

$6d - 4c + 10$

(Total for Question 6 is 2 marks)

7 You can use this graph to change between stones and kilograms.



(*a*) Change 3 stones to kilograms.

19 kilograms

(1)

(*b*) Change 80 kilograms to stones.

$1\text{ kg} = 0.2$ stone

$80\text{kg} = 0.2 \times 80 = 16$

16 stones

(2)

(Total for Question 7 is 3 marks)

8 (*a*) $P = 7r + 3q$

Work out the value of P when $r = 5$ and $q = -4$

$P = 7(5) + 3(-4) = 35 - 12$

$= 23$

.....23.....

(2)

(*b*) Solve $14n > 11n + 6$

$14n - 11n > 11n + 6 - 11n$

$3n > 6$

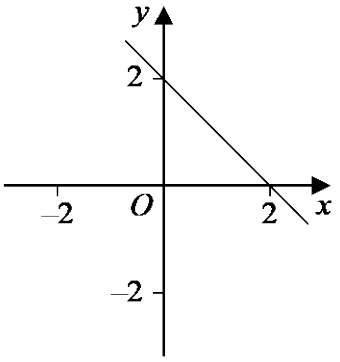
$n > 2$

.....$n > 2$.....

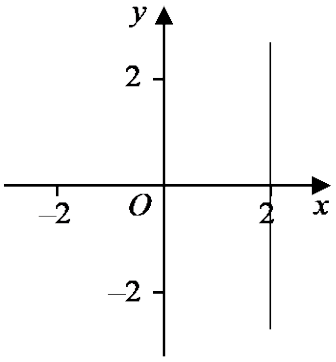
(2)

(Total for Question 8 is 4 marks)

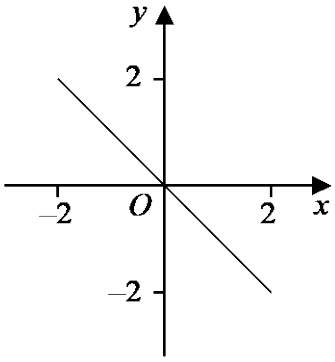
9 Here are six straight line graphs.



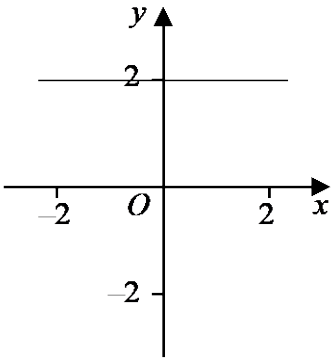
Graph A



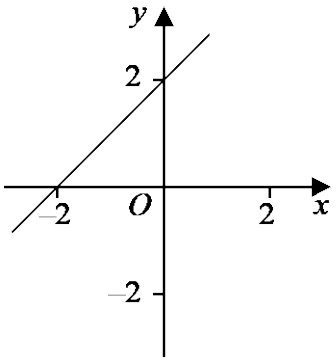
Graph B



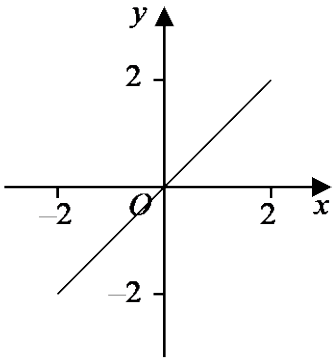
Graph C



Graph D



Graph E



Graph F

Match each equation in the table to the correct graph.
Write the letter of the graph in the table.

Equation	Graph
$y = 2$	D
$y = x$	F
$x + y = 2$	A

(Total for Question 9 is 2 marks)

10 Ben is n years old.
Chloe is twice as old as Ben.
Dan is five years younger than Ben.

The total of Ben's age, Chloe's age and Dan's age is T years.

Find a formula for T in terms of n.

Ben = n

Chloe = 2n

Dan = n − 5

T = n + 2n + n − 5

T = 4n − 5

T = 4n − 5

(Total for Question 10 is 3 marks)

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11 (*a*) Expand $x(x - 4)$

$x^2 - 4x$

$x^2 - 4x$

(1)

(*b*) Factorise $15y - 10$

$5(3y - 2)$

$5(3y - 2)$

(1)

(*c*) Solve $7(f - 5) = 28$

$7f - 35 = 28$

$7f = 63$

$f = 9$

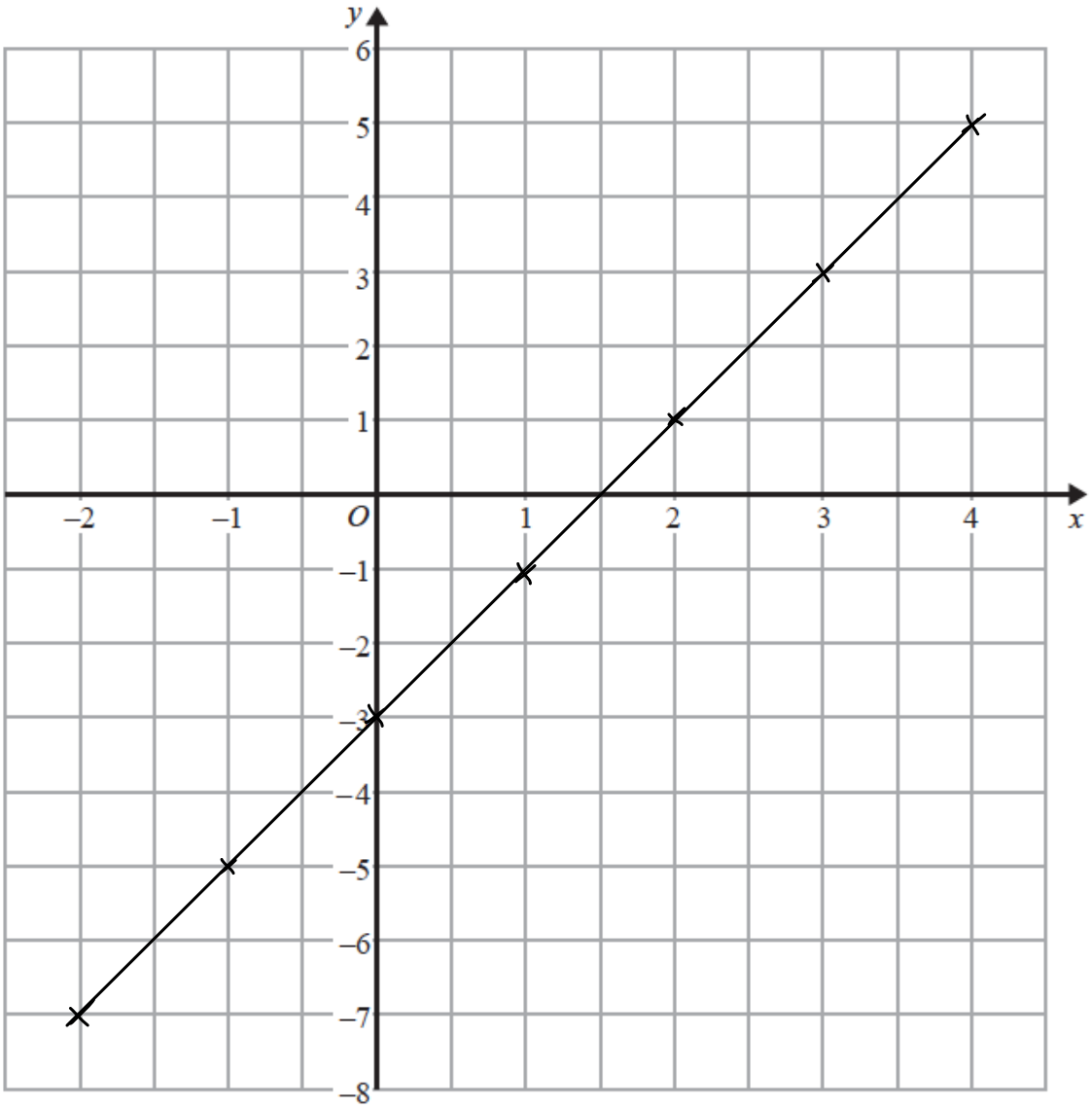
$f =$ 9

(2)

(Total for Question 11 is 4 marks)

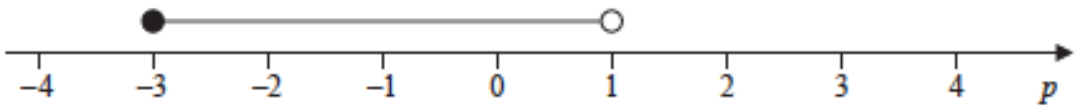
12 On the grid below, draw the graph of $y = 2x - 3$ for values of x from –2 to 4

x	-2	-1	0	1	2	3	4
y	-7	-5	-3	-1	1	3	5



(Total for Question 12 is 3 marks)

13 (*a*) Here is a number line.



Write down the inequality shown on the number line.

$-3 \leqslant x < 1$

(2)

$3 < y \leqslant 7$ where y is an integer.

(*b*) Write down all the possible values of y.

4, 5, 6, 7

(2)

(Total for Question 13 is 4 marks)

14 Here are the first six terms of an arithmetic sequence.

−2 , 3 , 8 , 13 , 18 , 23 , 28

Find an expression, in terms of n, for the nth term of this sequence.

$5n - 2$

(Total for Question 14 is 2 marks)

15 (*a*) Simplify $(p^2)^5$

p^{10}

(1)

(*b*) Simplify $12x^7y^3 \div 6x^3y$

$$\frac{12x^7y^3}{6x^3y} \Rightarrow \frac{12}{6} \cdot \frac{x^7}{x^3} \cdot \frac{y^3}{y} = 2x^4y^2$$

$2x^4y^2$

(2)

(Total for Question 15 is 3 marks)

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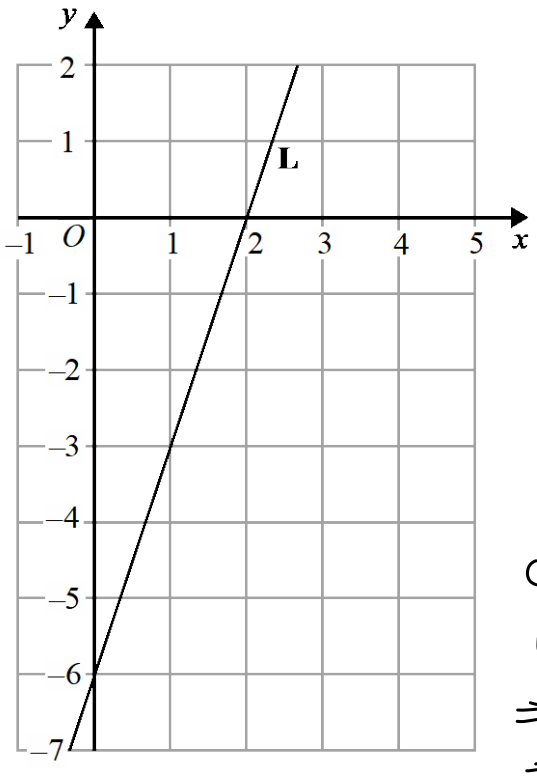
16 The line **L** is shown on the grid.



$y = mx + c$

$c = -6$ (y intercept)

when $y = 0$, $x = 2$

$\Rightarrow 0 = m(2) + -6$

$\Rightarrow 2m = 6$

$m = 3$

$\Rightarrow y = 3x - 6$

Find an equation for **L**.

.....

(Total for Question 16 is 3 marks)

17 Make x the subject of the formula $y = 2x + 4$

$$y - 4 = 2x$$

$$\Rightarrow \quad x = \frac{y-4}{2}$$

.....

(Total for Question 17 is 2 marks)

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18 Solve the simultaneous equations

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

$x = 12 - 3y$ → substitute into second equation

$$5(12-3y) - y = 4$$

$$\Rightarrow \quad 60 - 15y - y = 4$$

$$\Rightarrow \quad 60 - 16y = 4$$

$$16y = 56$$

$$y = \frac{56}{16} = \frac{28}{8} = \frac{14}{4} = \frac{7}{2}$$

$$x = 12 - 3y$$

$$x = 12 - 3\left(\frac{7}{2}\right)$$

$$x = 12 - \frac{21}{2}$$

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

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

$y = \frac{7}{2}$

(Total for Question 18 is 3 marks)

TOTAL FOR PAPER IS 50 MARKS