

FREE SAMPLE

GCSE Maths: Algebra

Grade 4 starter questions

Questions	20
Total marks	69
Sub-topics covered	13
Papers drawn from	19
Years	2017 to 2024

Expressions, equations, formulae, graphs and sequences.

Every question is taken from the opening section of a real Edexcel Higher paper - the part where grade 4 marks are won - and is worth five marks or fewer.

The mark schemes are in a separate booklet, so you can work through these without the answers in front of you.

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Question 1

November 2019 · Paper 2 · Q8

3 marks

- 8 The number of days, d , that it will take to build a house is given by

$$d = \frac{720}{n}$$

where n is the number of workers used each day.

Ali's company will take 40 days to build the house.

Hayley's company will take 30 days to build the house.

Hayley's company will have to use more workers each day than Ali's company.

How many more?

.....
(Total for Question 8 is 3 marks)

A4 Manipulating Algebraic Expressions

Question 2

November 2019 · Paper 3 · Q1

4 marks

1 (a) Expand and simplify $(x + 5)(x - 9)$

.....
(2)

(b) Factorise fully $9x^2 + 6x$

.....
(2)

(Total for Question 1 is 4 marks)

Question 3

June 2018 · Paper 2 · Q1

5 marks

1 (a) Simplify $m^3 \times m^4$

.....
(1)

(b) Simplify $(5np^3)^3$

.....
(2)

(c) Simplify $\frac{32q^9r^4}{4q^3r}$

.....
(2)

.....
(Total for Question 1 is 5 marks)

A5 Formulae and Changing the Subject

Question 4

November 2022 · Paper 3 · Q1

2 marks

1 Make a the subject of the formula $p = 3a - 9$

.....
(Total for Question 1 is 2 marks)

A8 Coordinates in Four Quadrants

Question 5

June 2022 · Paper 2 · Q5

4 marks

- 5 The points L , M and N are such that LMN is a straight line.

The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

find the coordinates of N .

(.....,)

(Total for Question 5 is 4 marks)

A9 Straight-Line Graphs

Question 6

November 2018 · Paper 2 · Q6

3 marks

- 6 A is the point with coordinates $(5, 9)$
 B is the point with coordinates $(d, 15)$

The gradient of the line AB is 3

Work out the value of d .

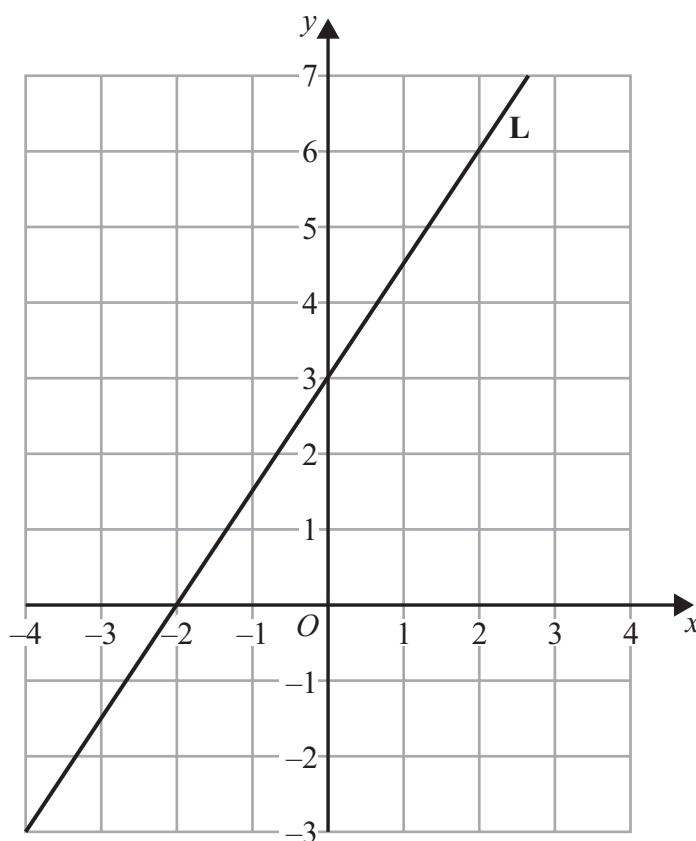
.....
(Total for Question 6 is 3 marks)

Question 7

June 2024 · Paper 1 · Q6

4 marks

- 6 Here is a straight line **L** drawn on a grid.



- (a) Find an equation for **L**.

.....
(3)

M is a different straight line with equation $y = 5x$

- (b) Write down the equation of a straight line parallel to **M**.

.....
(1)

(Total for Question 6 is 4 marks)

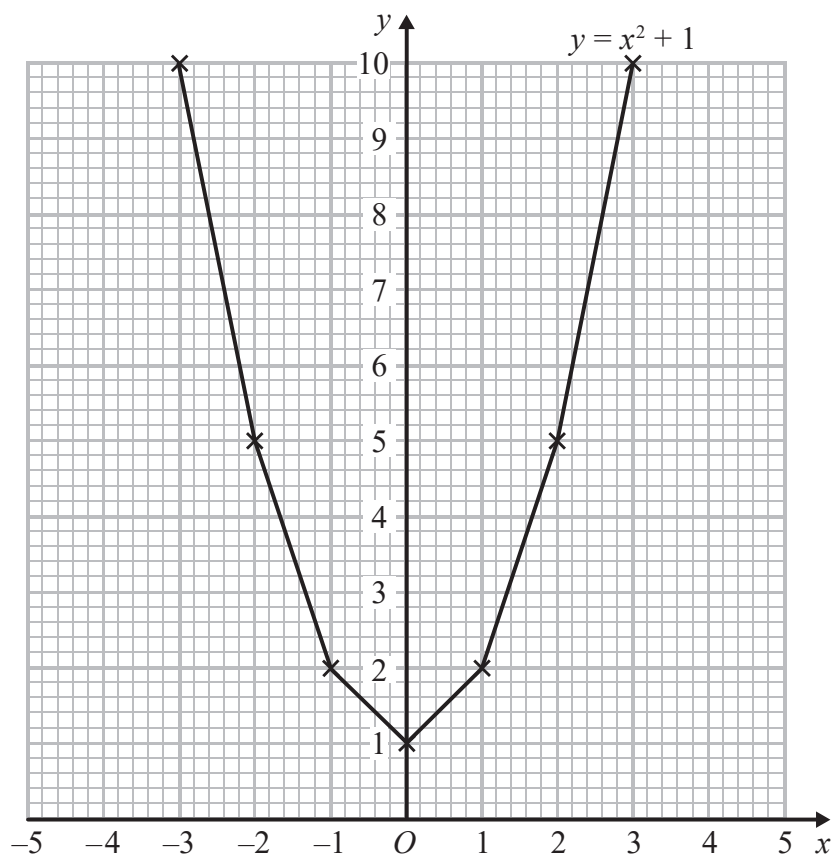
Question 8

November 2017 · Paper 1 · Q7

1 mark

7 Brogan needs to draw the graph of $y = x^2 + 1$

Here is her graph.



Write down one thing that is wrong with Brogan's graph.

.....

.....

(Total for Question 7 is 1 mark)

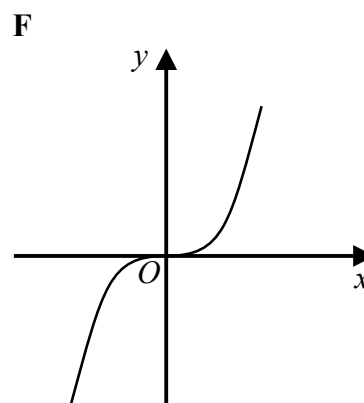
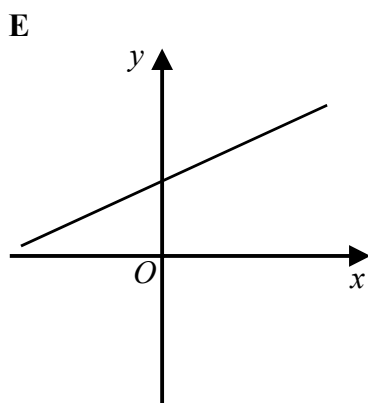
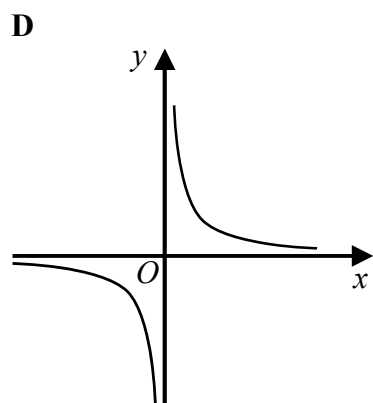
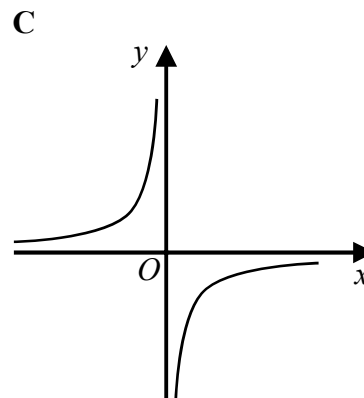
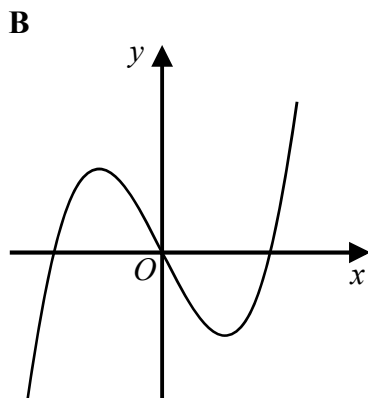
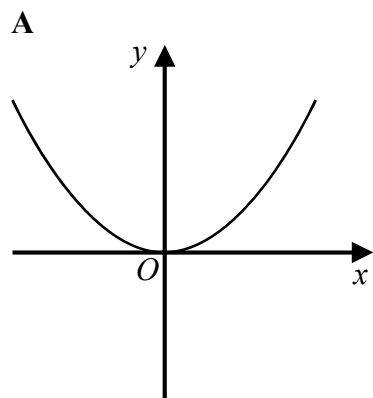
A12 Recognising and Sketching Standard Graphs

Question 9

November 2019 · Paper 2 · Q5

2 marks

5 Here are six graphs.



Write down the letter of the graph that could have the equation

(a) $y = x^3$

.....
(1)

(b) $y = \frac{1}{x}$

.....
(1)

(Total for Question 5 is 2 marks)

Question 10

November 2020 · Paper 2 · Q4

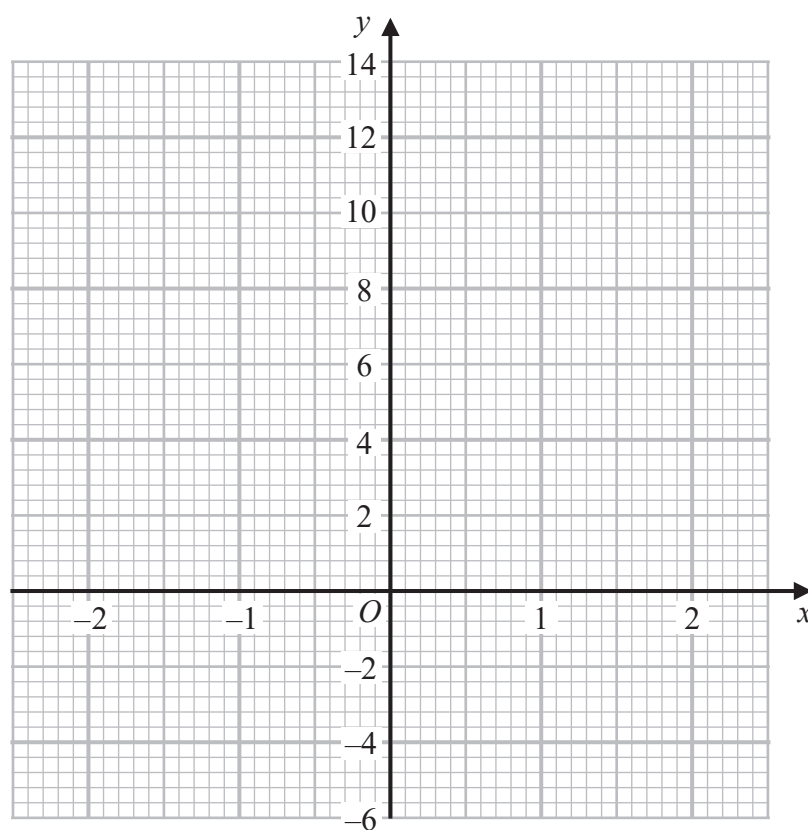
4 marks

- 4 (a) Complete the table of values for $y = 5 - x^3$

x	-2	-1	0	1	2
y		6			

(2)

- (b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from -2 to 2



(2)

(Total for Question 4 is 4 marks)

A17 Solving Linear Equations

Question 11

November 2017 · Paper 2 · Q1

3 marks

1 Solve $5x - 6 = 3(x - 1)$

$x =$

(Total for Question 1 is 3 marks)

Question 12

June 2018 · Paper 3 · Q7

3 marks

7 Solve $\frac{5 - x}{2} = 2x - 7$

$x =$

(Total for Question 7 is 3 marks)

Question 13

November 2017 · Paper 3 · Q6

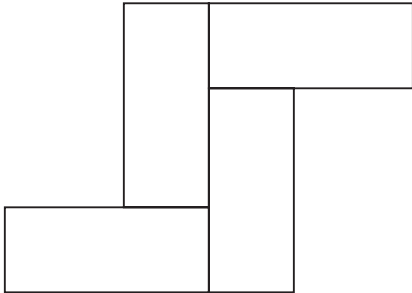
5 marks

6 Here is a rectangle.



The length of the rectangle is 7 cm longer than the width of the rectangle.

4 of these rectangles are used to make this 8-sided shape.



The perimeter of the 8-sided shape is 70 cm.

Work out the area of the 8-sided shape.

..... cm²

(Total for Question 6 is 5 marks)

Question 14

June 2022 · Paper 3 · Q3

5 marks

- 3 Rick, Selma and Tony are playing a game with counters.

Rick has some counters.

Selma has twice as many counters as Rick.

Tony has 6 counters less than Selma.

In total they have 54 counters.

the number of counters Rick has : the number of counters Tony has = $1 : p$

Work out the value of p .

$p = \dots\dots\dots$

(Total for Question 3 is 5 marks)

Question 15

November 2021 · Paper 3 · Q5

3 marks

- 5 The first four terms of a Fibonacci sequence are

$$a \quad 2a \quad 3a \quad 5a$$

The sum of the first five terms of this sequence is 228

Work out the value of a .

.....
(Total for Question 5 is 3 marks)

Question 16

November 2020 · Paper 1 · Q1

2 marks

- 1 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n , for the n th term of this sequence.

.....
(Total for Question 1 is 2 marks)

Question 17

November 2022 · Paper 2 · Q3

4 marks

3 Here are the first five terms of an arithmetic sequence.

7 13 19 25 31

(a) Find an expression, in terms of n , for the n th term of this sequence.

.....
(2)

The n th term of a different sequence is $8 - 6n$

(b) Is -58 a term of this sequence?
You must show how you get your answer.

(2)

(Total for Question 3 is 4 marks)

A19.1 Simultaneous Equations: Linear and Linear

Question 18

June 2017 · Paper 3 · Q2

3 marks

2 Solve the simultaneous equations

$$3x + y = -4$$

$$3x - 4y = 6$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 2 is 3 marks)

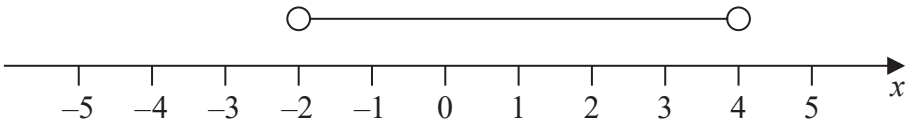
Question 19

November 2023 · Paper 3 · Q4

4 marks

4 Jenna is asked to show the inequality $-3 < x \leq 4$ on a number line.

Here is her answer.



(a) Write down two mistakes Jenna has made.

1.....

.....

2.....

.....

(2)

(b) Work out the greatest integer that satisfies the inequality

$5y - 7 < 16$

.....

(2)

(Total for Question 4 is 4 marks)

Question 20

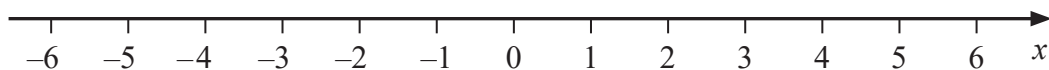
June 2019 · Paper 2 · Q1

5 marks

- 1 (a) Solve $14n > 11n + 6$

.....
(2)

- (b) On the number line below, show the set of values of x for which $-2 < x + 3 \leq 4$



(3)

(Total for Question 1 is 5 marks)