MathsMadeEasy

GCSE Mathematics

Non-Calculator
Higher Tier
Mock 2, paper 1
ANSWERS

1 hour 45 minutes

Legend used in answers

Blue dotted boxes – instructions or key points

Start with a column or row that has only one number missing

Green Box - Working out

5b means five times b
b = -3 so 5 x -3 = -15

Red Box and ✓ - Answer

48 % ✓

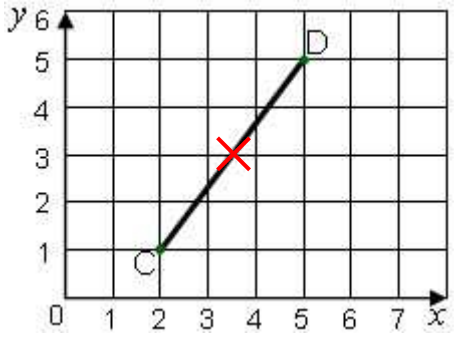
24

Marks shown in brackets for each question (2)

Authors Note

Every possible effort has been made to ensure that everything in this paper is accurate and the author cannot accept responsibility for any errors.

1.



(a) Write down the coordinates of the point

(i) **C** (2 , 1)

(ii) **D** (5 , 5)

(2)

(b) On the grid, mark with a cross (×) the midpoint of the line *CD*

(1)

2. (a) Write the number **twelve thousand, six hundred and ninety-four** in figures.

..... 12 694 ..

(1)

(b) Write down the value of the 6 in the number 746 824

... 6 thousand ..

(1)

(c) Write the number 5173 correct to the nearest hundred.

... 5200 ..

(1)

3. There were some marbles in a bag.

Luke took 19 out and Harry put 17 back.

Now there are 40 marbles left in the bag.

How many were there to start with

overall 2 have been taken out

42

.....

(2)

4. Here are the first five terms of a number sequence.

180 174 168 162 156

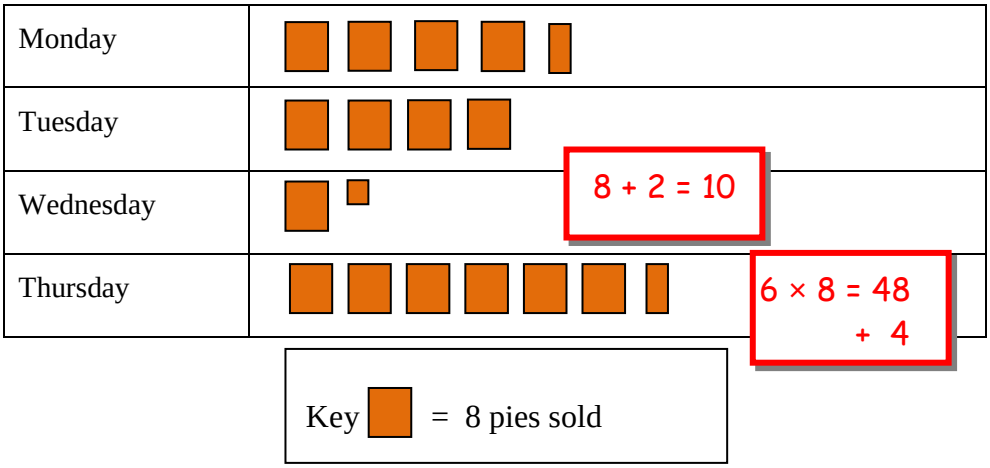
going down by 6

Write down the next two terms of the number sequence.

150 ... 144 ...

(1)

5. Look at the pictogram.
It shows how many pies were sold in a shop during some weekdays.



a) Which day do you think was half day closing?

Wednesday

(1)

b) How many pies were sold on Thursday

52 ...

(1)

c) Pies cost £2.50 each.
Look at the sales on Wednesday. What was the value of the pies sold

£25 .....

(2)

6. The table shows the temperature at midday on each day of a week .

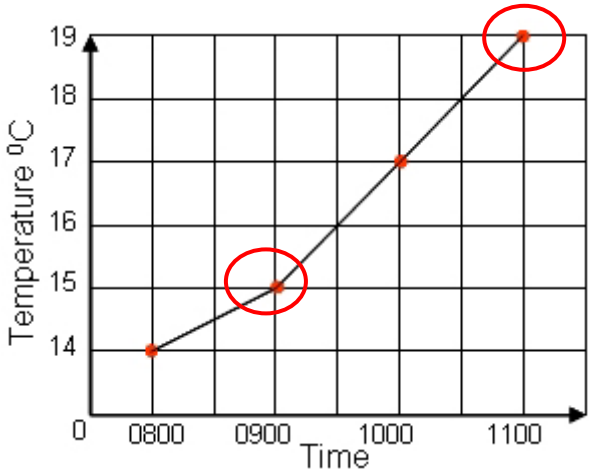
(a) Work out the median temperature.

Day	Mon	Tue	Wed	Thur	Fri	Sat	Sun
Temperature	20	21	23	24	25	23	22

put them in order then it's the middle one

..23.....°C **(2)**

(b) The graph shows the temperature from 0800 to 1100 during one day.



(b) What was the temperature at 0900?

.....15..... °C **(1)**

(c) What was the temperature at 1100?

.....19.....°C **(1)**

7. Here are five numbered counters:

a) What is the mode of these numbers

mode is the most Often number

13 .... **(1)**

b) What is the mean of these numbers

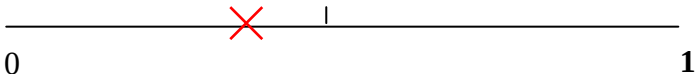
mean = (3+7+13+13+9)/5

9 ..... **(2)**

The counters were placed in a bag and Matt took one out without looking

c) On the probability scale, mark with a cross (×) the probability that he will take a counter with the number 13.

2/5 or 0.4



(1)

8. Work out

a) $4 - 2 \div \frac{1}{2} + 1$

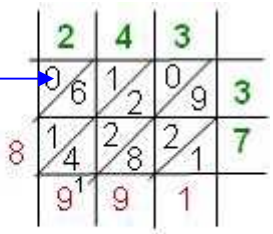
$BODMAS\ do\ 2 \div \frac{1}{2} = 4\ \ first$

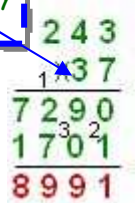
$4 - 4 + 1 = 1$

(1)

b) 243×37

Try the grid method or the old fashion way





8991 ✓

..... **(2)**

9. A gardener planted five different types of vegetable seeds.
The table shows in which months the vegetables were ready to eat.

		Month					
		July	August	Sept	Oct	Nov	Dec
Type of seed	Beetroot	✓	✓	✓	✓	✓	
	Broccoli		✓	✓			
	Sprouts				✓	✓	✓
	Carrots	✓	✓	✓	✓		
	Runner Bean			✓			

(a) In which months are Broccoli ready to eat?

August or Sept

…… **(1)**

(b) In which month are most vegetables ready to eat?

September

…… **(1)**

(c) Which vegetables are ready in the same month as sprouts?

… Beetroot or carrots . **(1)**

10. Laura drove to her mum's house.

She expected to arrived by 14 40

But the motorway had a traffic jam and she was 1 hour 30 minutes late.

a) At what time did get to her mum's house.

16:10 or 4:10pm

…… **(1)**

It took Laura 2 hours to get to her mum's house and the distance was 44 miles.

b) What was her average speed in miles per hour.

44/2 = 22mph

…… **(1)**

11. (a) Complete the table by writing a sensible metric unit on each dotted line.
The first one has been done for you.

The distance from London to Grimsby	285 kilometres
The volume of milk in a glass	320... Cm^3 or millilitres or ml
The height of a man	180 .. cm or centimetres
The weight of a ten pence coin	9 .... g or grams

(3)

(b) Change 8 kilograms to grams.

1 kg = 1000g so multiply by 1000

… 8,000 ..g **(1)**

12. The table can be used to convert pounds (£) to Euros (€)

Pounds (£)	Euros (€)
0.10	0.14
0.20	0.28
0.50	0.70
1.00	1.40
2.00	2.80

(a) Change £3 to Euros (€).

1.40+2.80 = €4.20

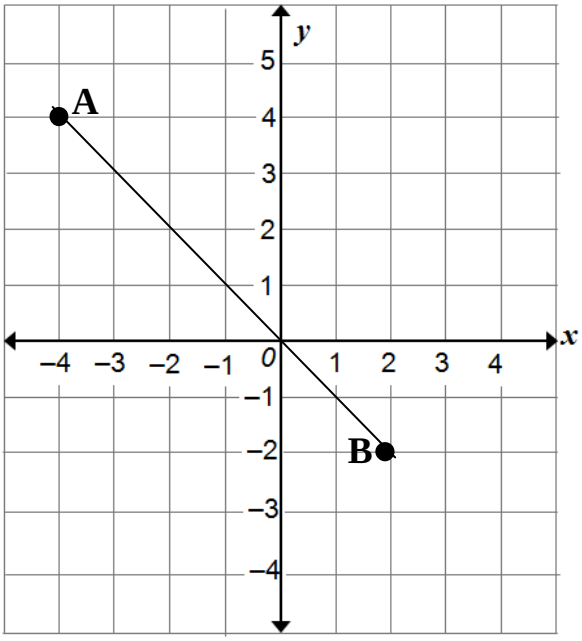
(€)..... **(1)**

(b) Change €2.10 to pounds (£)

£1.50

(£)..... **(1)**

13.



a) Write down the co-ordinates of point

i) A

(–4, 4)

(……, …….) **(1)**

ii) B

(2 , –2)

(……, …….) **(1)**

b) Write down the co-ordinates of midpoint of the line AB

(– 1, 1)

(……, …….) **(1)**

14. Here is a list of 8 numbers.

8 12 25 32 49 55 60 80

Sum means two numbers that add to make 81

(a) Write down **two** numbers from the list with a sum of 81

32 + 49 = 81

(b) Write down a number from the list which is **(1)**

(i) a multiple of 6

Multiple means 6 will go into your number

12 or 60

(ii) a square number. **(2)**

Square number means it is a number squared

$5^2 = 25$ or $7^2 = 49$

(c) Use a word from the box to complete this sentence correctly.

product	Cube	factor	multiple

12 is a ..... factor ..... of 60

A factor is a number that will go into another number

(1)

36 88 33 11

28 81 69 39

(d) From the numbers above write down a number which has

(i) exactly **one** line of symmetry, 33 or 81 **(1)**

..... **(1)**

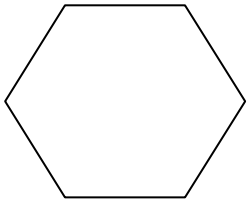
(ii) 2 lines of symmetry **and** rotational symmetry of order 2, 88 or 11

..... **(1)**

(iii) rotational symmetry of order 2 but **no** lines of symmetry 69

.....

15. The diagram shows a shape.
The shape is a 6-sided polygon.
(a) Write down the mathematical name for a 6-sided polygon.

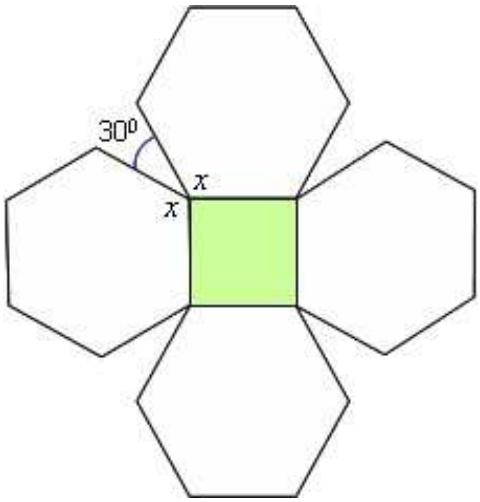


Hexagon

....

(1)

The diagram below shows how four of the shapes fit round a square. An angle of 30° is shown.



The size of each of the angles marked x is 120°
(b) Give reasons why.

.....

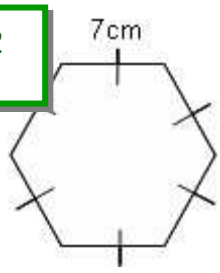
.....

.....

1. 360 degree in a circle
2. Angle in green square is 90
3. 360 – 30 - 90 = 240
4. $2x = 240$ so $x = 120$

(2)

Each side = 7, 6 sides = 6x7 = 42



The **perimeter** is the distance around a given two-dimensional object. The word perimeter is a Greek root meaning measure around, or literally "around measure".

The diagram shows the lengths of one of the sides of the shape.
(c) Work out the perimeter of the shape.

42

.....cm

(2)

16. A supermarket gave some vouchers to its customers.

The supermarket used the rule below to work out the value of the vouchers for each customer.

Find 25% of the amount spent Then round this **up** to the next whole number of pounds This is the value of the voucher

Jane spent £34.32 at the supermarket

a) What is 25% as a fraction

1/4 ..... **(1)**

b) Work out 25% of £34.32

£..... 8.58 .. **(2)**

c) How much was Jane's voucher worth.

£... 9 .... **(1)**

17. A shape has been drawn on a grid of one centimetre squares.

(a) Work out the area of the shape.

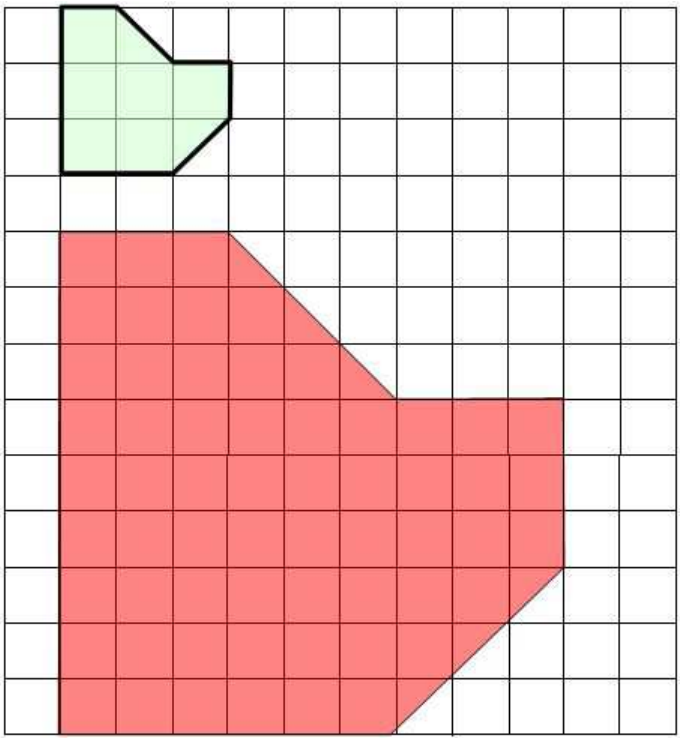
Count up squares and two half squares

7

..... cm^2

(2)

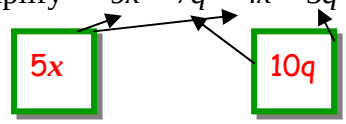
(b) On the grid, enlarge the shape with a scale factor of 3.



(2)

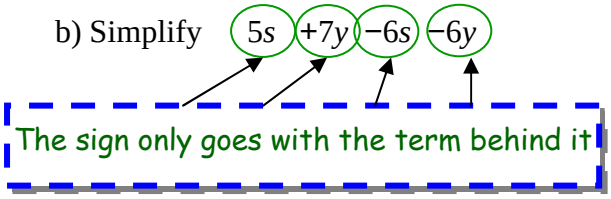
18.

a) Simplify $9x + 7q - 4x + 3q$



5x + 10q ..... **(2)**

b) Simplify $5s + 7y - 6s - 6y$



..... – s + y ✓ **(2)**

(1)

c) Simplify $6x^2 - 4x^2$

You have 6 lots of x^2 and take four lots away so we have two lots

..... $2x^2$ ✓ **(2)**

d) Expand $y(y^3 - 3y)$

..... $y^4 - 3y^2$ **(1)**

e) $-3 \leq y < 2$

Write down the integer values of y

..... –3, –2, –1, 0, 1 **(2)**

f) Solve $5 - 7a = 3a - 3$

$5 - 7a = 3a - 3$

$8 = 10a$

$a = \frac{4}{5}$

a = ... **(1)**

g) Factorise $7y + 21$

..... 7(y + 3) .....

19. a) Work out $3\frac{2}{3} \div 1\frac{1}{2}$

$$\frac{11}{3} \times \frac{2}{3} = \frac{22}{9}$$

..... $\frac{22}{9}$ ... **(2)**

b) Work out $3\frac{2}{3} \times 2\frac{1}{4}$

Give your answer in its simplest form

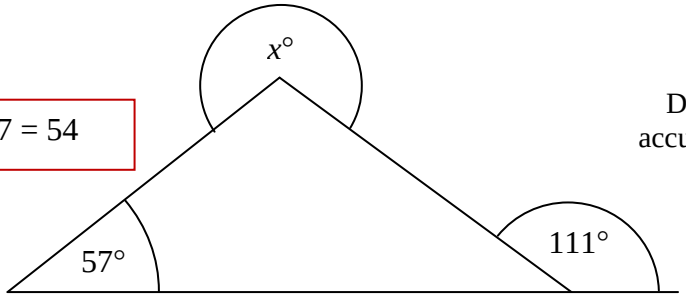
$$\frac{11}{3} \times \frac{9}{4} = \frac{33}{4}$$

(2)

$\frac{33}{4}$

.....

20



This is 180 – 69 – 57 = 54

Diagram **NOT** accurately drawn

This is 180 – 111 = 69

Work out the value of *x*.

x= ... 306 **(3)**

21. Sylvia had to cancel her holiday and paid a cancellation charge.
The cancellation charge depends on the number of days before the departure date that the holiday is cancelled and it is a percentage of the cost of the holiday.

The table shows the percentages.

Number of days before the departure date the customer cancels the holiday	Percentage of the cost of the holiday
over 28 days	40%
22–28	60%
15–21	80%
4–14	90%
3 or less	100%

The cost of Sylvia's holiday was £1240.
She cancelled her holiday 24 days before the departure date.

How much was her cancellation charge .

60% of 1240 = 6 ×124 = **£744**

or 50% = £620
and 10% = £124

£..... **(2)**

22. Here are the ingredients needed to make 6 pancakes

150 g flour
120 ml milk
3 large eggs
25 gm lard
Pinch salt

(a) Work out the amount of flour needed to make 15 pancakes.

375

.....g. **(2)**

15 pancakes is 2 ½ times as many pancakes (15÷6) so we multiply 150g by 2 ½
150 x 2 ½ = 300 + 75 = 375

(b) Work out the amount of milk needed to make nine pancakes.

180

9 pancakes is 1 ½ times as many pancakes (9÷6) so we multiply 120ml by 1 ½ 120 x 1 ½ = 120 + 60 = 180

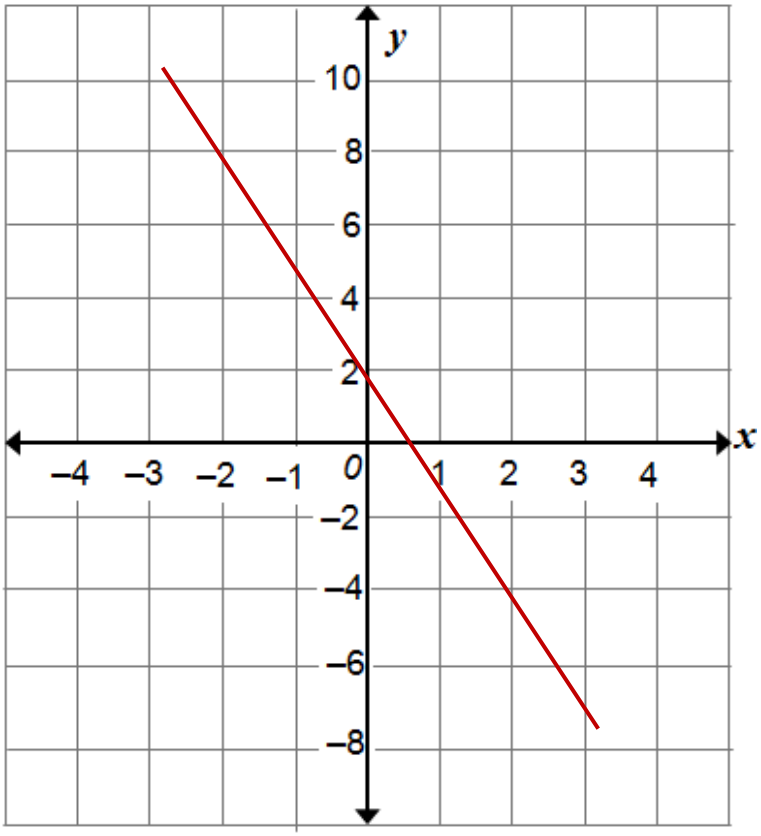
.....ml **(2)**

23. Complete this table of values for $y = 2 - 3x$

(2)

x	– 3	– 2	– 1	0	1	2
y	11	8	5	2	– 1	– 4

On the grid draw the graph of $y = 2 - 3x$



(2)

23. A school had 200 pupils in Year 11.
Each pupil needed a copy of a Maths, English and Science text book.

Book	In stock now	Cost per book
Maths	140	£1.25
English	80	£2
Science	200	£3

order 60 more

order 120 more

order none

A 25% discount was given for any book where more than 100 copies were ordered.

What was the total cost of the book order the school needed to make.

Maths: 60 × £1.25 = £75

English: 120 × £2.00 = £240
get 25% off = £60 so pay £180

£255

..... **(4)**

24. a) Express 48 and 60 as a product of their prime factors by drawing a prime factor tree

$48 = 2 \times 2 \times 2 \times 2 \times 3$

$60 = 2 \times 2 \times 3 \times 5$

…….....……. **(3)**

b) What is the highest common factor of 48 and 60

12

…….....……. **(1)**

25. Estimate the following:

$$\frac{476}{2.3 \times 10.1}$$

$$\frac{480}{2.4 \times 10}$$

20

…….....…. **(2)**

26. Cyril had a 6 sided dice and a spinner marked with the numbers 1 to 5.
He threw the dice and spun the spinner once and added up the two scores to get a total.
What is the probability of getting a total score of 8 or more.

Draw a table of outcomes

Spinner/die	1	2	3	4	5	6
1						
2						✓
3					✓	✓
4				✓	✓	✓
5			✓	✓	✓	✓

Probability of getting total of 8 or more $= \frac{10}{30} = \frac{1}{3}$

(2)

.....

Now Cyril threw the dice and spun the spinner 90 times.
Work out an estimate for the number of times he gets a total score of exactly 8.

Probability of getting total of exactly 8 $= \frac{4}{30} \times 90 = 12$

(2)

.....