Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

GCSE MATHEMATICS

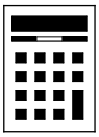
F

Foundation Tier Paper 2 Calculator

Thursday 8 November 2018 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.



Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

Advice
In all calculations, show clearly how you work out your answer.

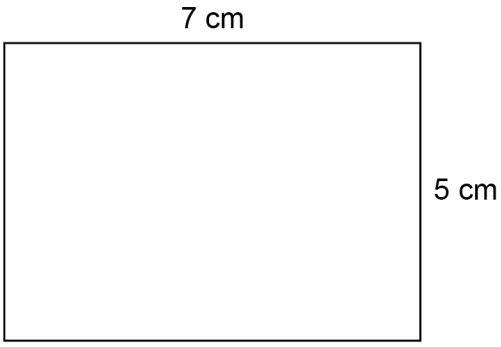
For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
26–27	
TOTAL	

Do not write outside the box

Answer **all** questions in the spaces provided

1 Here is a rectangle.

Not drawn accurately



Work out the perimeter.

Circle your answer.

[1 mark]

12 cm 24 cm 35 cm 70 cm

2 Circle the number **greater** than –0.9

[1 mark]

–0.901 –0.89 –0.91 $-\frac{9}{10}$

Do not write outside the box

3 Simplify $8x - 3 + 6x$

Circle your answer.

[1 mark]

$2x - 3$ $11x$ $5 + 6x$ $14x - 3$

4 What is the angle of turn clockwise from South West to East?

Circle your answer.

[1 mark]

45° 135° 225° 315°

Turn over for the next question

4

Do not write outside the box

5 Lucy works for 37 hours per week.

Her weekly wage is £303.40

She receives a pay increase of 25p per hour.

Work out her new weekly wage.

[2 marks]

Answer £ _____

Do not write outside the box

6 (a) Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/09/18	Starting balance			1140.79
06/09/18	Car repairs		256.00	_____
17/09/18	Gas bill		87.31	_____
24/09/18	Salary	2069.75		_____

6 (b) Write down the meaning of 'Debit' as used in the bank statement.

[1 mark]

_____

_____

_____

Turn over for the next question

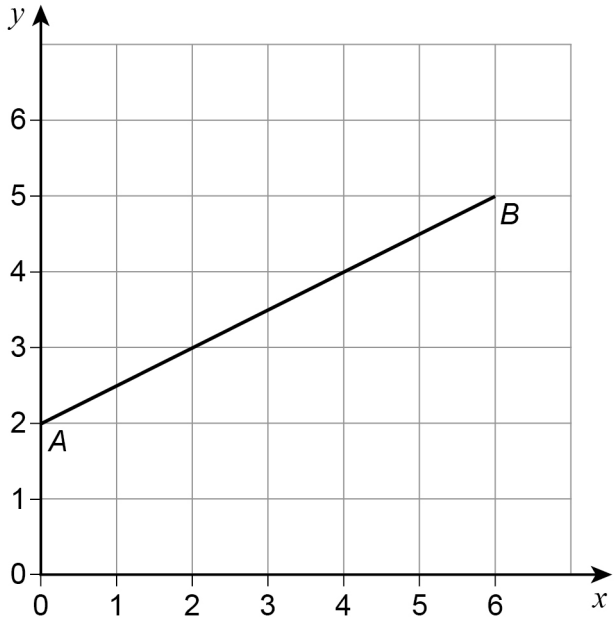
6

Do not write outside the box

7 Line *AB* is shown on the grid.

A is the point (0, 2)

B is the point (6, 5)



7 (a) Work out the coordinates of the midpoint of the line *AB*.

[1 mark]

Answer (_____ , _____)

Do not write outside the box

7 (b) *C* is another point on *AB*.

C is closer to *B* than to *A*.

The coordinates of *C* are whole numbers.

Work out the coordinates of *C*.

[1 mark]

Answer (_____ , _____)

7 (c) On the grid, draw a line from point (0, 0) that is

parallel to *AB*

and

two thirds as long as *AB*.

[2 marks]

Turn over for the next question

4

Do not write outside the box

8 Lena is at the gym.

8 (a) She will use each of these pieces of equipment once.

Rowing machine (R)	Stepper (S)
Treadmill (T)	Bike (B)

Lena will use the rowing machine **first**.

List all the possible orders in which she could use the four pieces of equipment.

[2 marks]

Do not write outside the box

8 (b) The table shows how long Lena spends on each piece of equipment.

Rowing machine	15 minutes
Stepper	13 minutes
Treadmill	35 minutes
Bike	1 hour 30 minutes

Lena starts on the rowing machine at 1.50 pm

She has a break for 4 minutes between pieces of equipment.

What time does she finish on her last piece of equipment?

[3 marks]

Answer _____

5

Turn over ►

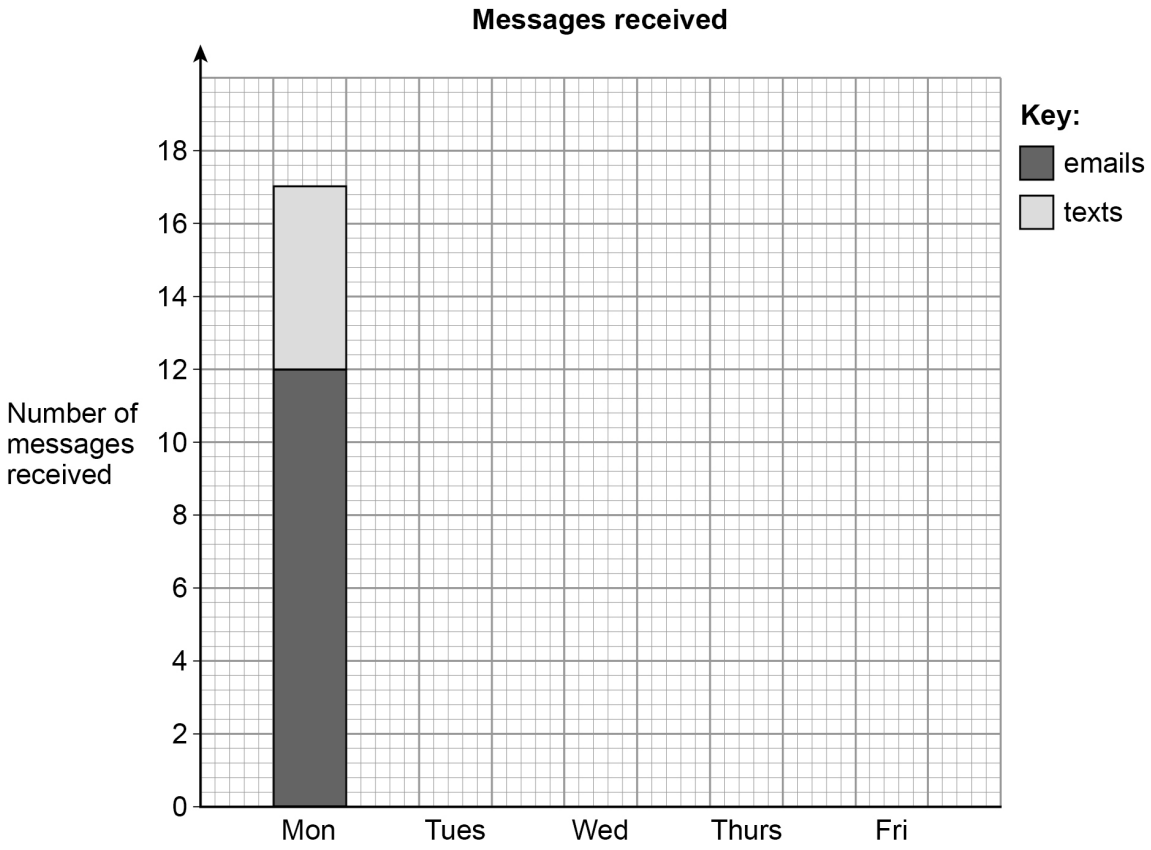
Do not write outside the box

9 The table shows the number of messages Sam received each day for five days.

	Messages	
	Number of emails	**Number of texts**
Monday	12	5
Tuesday	8	6
Wednesday	10	3
Thursday	6	6
Friday	12	4

9 (a) Sam draws a composite bar chart to represent the data.

He has drawn the bar for Monday.



Complete the chart.

[2 marks]

Do not write outside the box

9 (b) In total, what fraction of the messages were emails?

Give your answer in its simplest form.

[3 marks]

Answer _____

10 Each side of a square is made 3 times as long.

What happens to the perimeter?

Circle your answer.

[1 mark]

× 3 × 6 × 9 × 12

Turn over for the next question

6

Do not write outside the box

11 Here is a list of ingredients needed to make 6 pancakes.

Flour	120 grams
Eggs	2
Milk	210 millilitres

11 (a) Complete the list of ingredients needed to make 9 pancakes.

[3 marks]

Flour	_____
Eggs	_____
Milk	_____

11 (b) Convert 210 millilitres to fluid ounces.

Use 1 fluid ounce = 28.4 millilitres

Give your answer to 1 decimal place.

[2 marks]

_____

_____

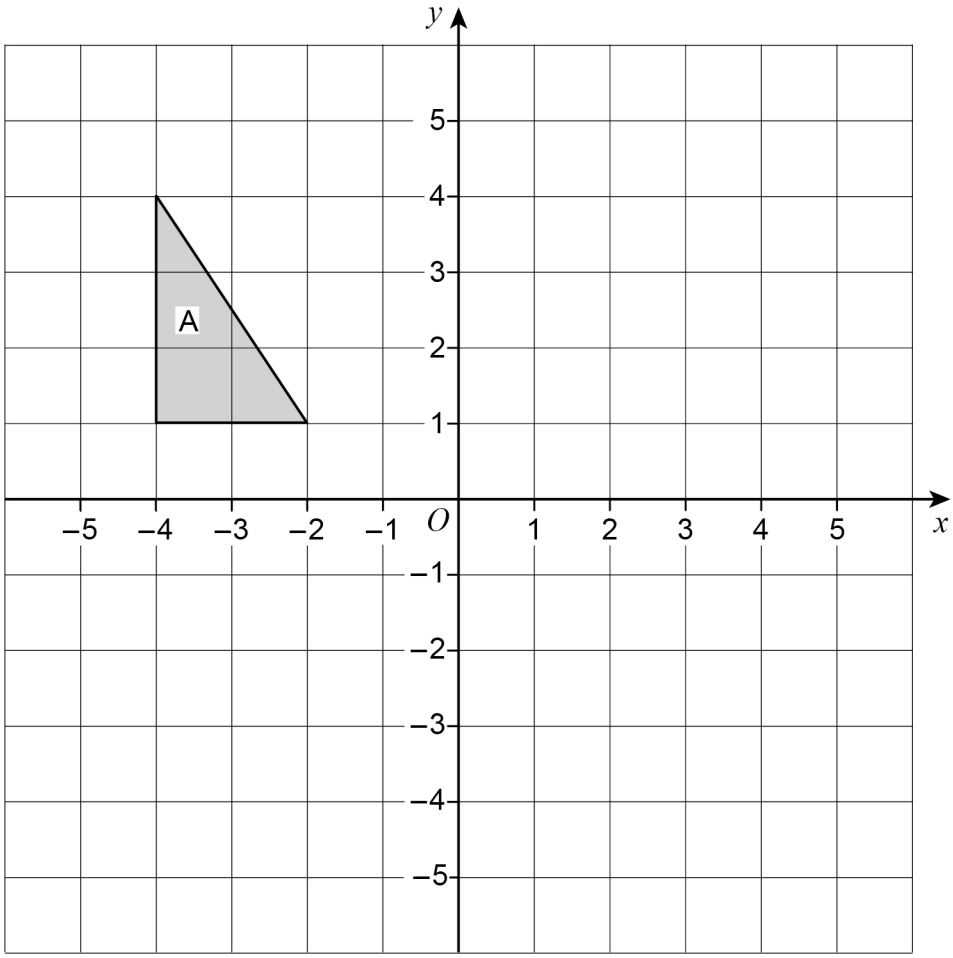
_____

Answer _____ fluid ounces

Do not write outside the box

12 Reflect shape A in the x-axis.

[2 marks]



Turn over for the next question

7

Do not write outside the box

13 A charity sends an appeal letter to 3000 people.

The letter asks for a donation of money.

Here is some information about the last appeal letter the charity sent out.

$\frac{1}{2}$ of the people who were sent the letter made a donation.
The average donation was £8.60
$\frac{1}{3}$ of the people who made a donation filled in a tax form. The government adds 25% to the donations of these people.

13 (a) Using this information,

work out the amount the charity can expect to receive from this appeal.

[6 marks]

Answer £_____

Do not write outside the box

13 (b) The average donation from the people who filled in a tax form was more than £8.60

How does this affect your answer to part (a)?

Tick **one** box.

☐ It should be lower

☐ It should be higher

☐ It should stay the same

Give a reason.

[1 mark]

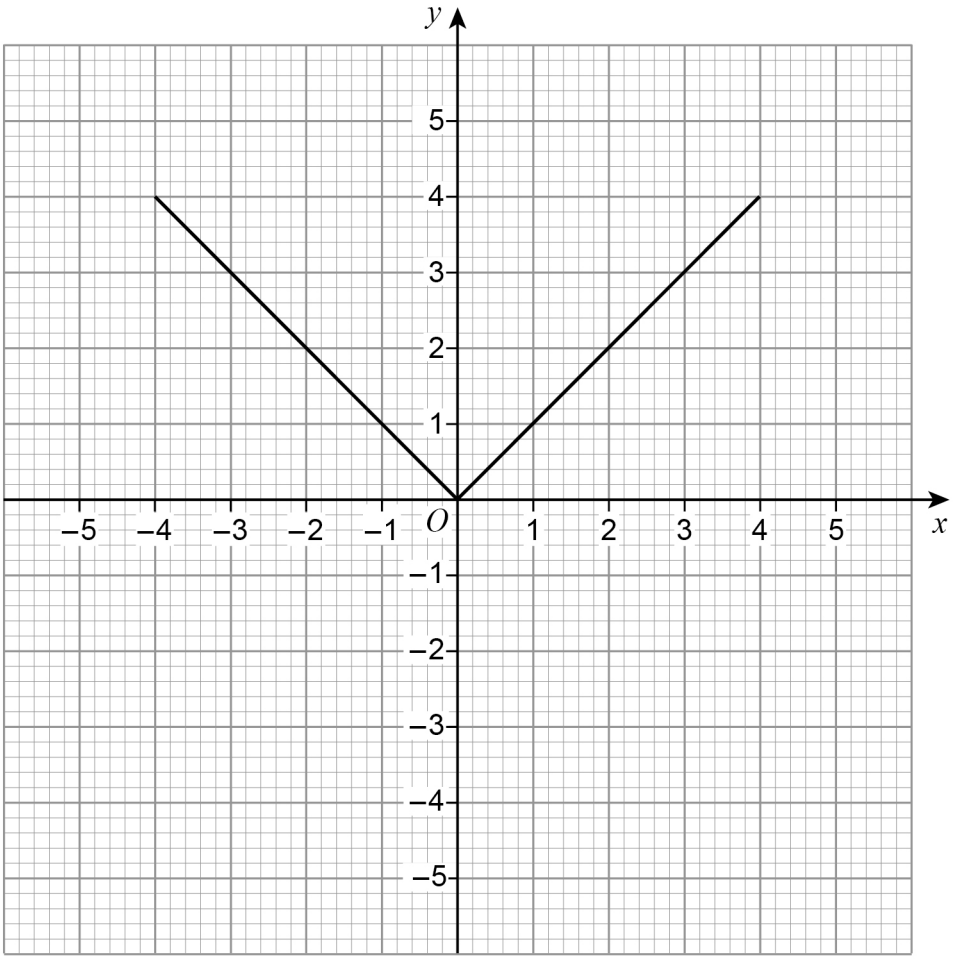
Turn over for the next question

7

Do not write outside the box

14 Lee wants to draw the graph of $y = x$ for values of x from –5 to 5

Here is his graph.



Make two **different** criticisms of his graph.

[2 marks]

Criticism 1 _____

_____

_____

Criticism 2 _____

_____

_____

Do not write outside the box

15 A company uses this formula to work out the cost, £A, of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

m is the number of miles travelled

£b is a charge for booking online

15 (a) Clare books a taxi online and travels 8 miles.

She pays £20 altogether.

How much is the charge for booking online?

[3 marks]

Answer £ _____

15 (b) A different company

has a fixed charge of £3

charges £1.90 per mile

has no charge for booking online.

Write a formula for the cost, £C, of a taxi ride with this company.

[1 mark]

Answer _____

6

Turn over ►

Do not write outside the box

16 What does $(A \cap B)$ represent in $P(A \cap B)$?

Circle your answer.

[1 mark]

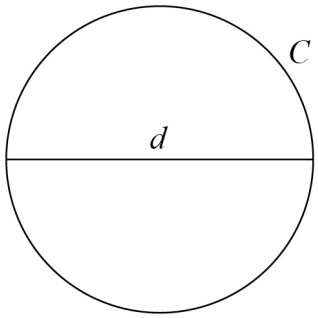
A or B or both

A but not B

not A and not B

A and B

17 A circle has circumference C and diameter d.



$C = kd$

What **value** does the constant k represent?

[1 mark]

Answer _____

Do not write outside the box

18 There are 240 cows on a farm.

18 (a) On the farm,

number of bulls : number of cows = 1 : 30

How many bulls are there?

[1 mark]

Answer _____

18 (b) Assume

the 240 cows produce milk for 10 months each year

each cow produces an average of 25 litres of milk per **day**.

Estimate the total milk production, in litres, of the 240 cows in one year.

You **must** show your working.

[4 marks]

Answer _____ litres

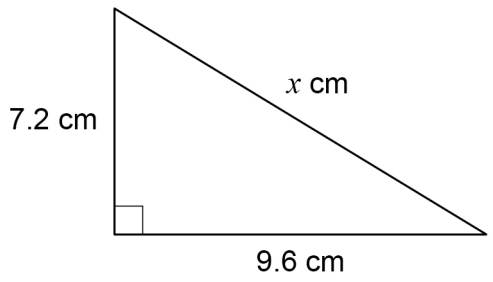
7

Turn over ►

Do not write outside the box

19 Here is a right-angled triangle.

Not drawn accurately



Show that $x = 12$

[2 marks]

Do not write outside the box

20 Work out the values of a and b in the identity

$$5(7x + 8) + 3(2x + b) \equiv ax + 13$$

[4 marks]

a = _____ b = _____

21 The first four terms of a linear sequence are

7 11 15 19

Circle the expression for the nth term.

[1 mark]

$n + 6$ $4n + 3$ $7n + 4$ $n + 4$

7

Turn over ►

Do not write outside the box

22 Here is some information about 20 trains leaving a station.

Number of minutes late, t	**Number of trains**	**Midpoint**	
$0 \leqslant t < 5$	12		
$5 \leqslant t < 10$	7		
$10 \leqslant t < 15$	1		
$t \geqslant 15$	0		

22 (a) Work out an estimate of the mean number of minutes late.

[3 marks]

Answer _____ minutes

Do not write outside the box

22 (b) The station manager looks at the information in more detail.

Number of minutes late, t	Number of trains
$0 \leqslant t < 2$	12
$2 \leqslant t < 4$	0
$4 \leqslant t < 6$	7
$6 \leqslant t < 8$	0
$8 \leqslant t < 10$	0
$10 \leqslant t < 12$	1

He works out an estimate of the mean using this information.

How does his estimate compare with the answer to part (a)?
Tick **one** box.

[1 mark]

☐ Higher than part (a)

☐ Same as part (a)

☐ Lower than part (a)

☐ Not possible to tell

4

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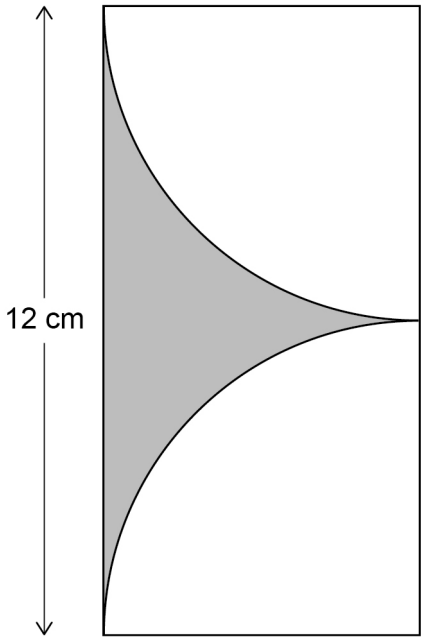
23 Two identical quarter circles are cut from a rectangle as shown.



Not drawn accurately

Work out the shaded area.

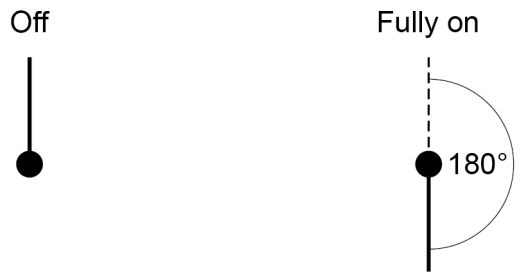
[4 marks]

Answer _____ cm^2

Do not write outside the box

24 The diagrams show the position of a tap when off and fully on.

The tap is fully on when the angle of turn is 180°



When fully on, water flows out of the tap at 14 litres per minute.

The rate at which water flows out is in direct proportion to the angle of turn.

The tap is turned 135°

The water flows into a tank with a capacity of 79.8 litres.

Will it take **less than** $7\frac{1}{2}$ minutes to fill the tank?

You **must** show your working.

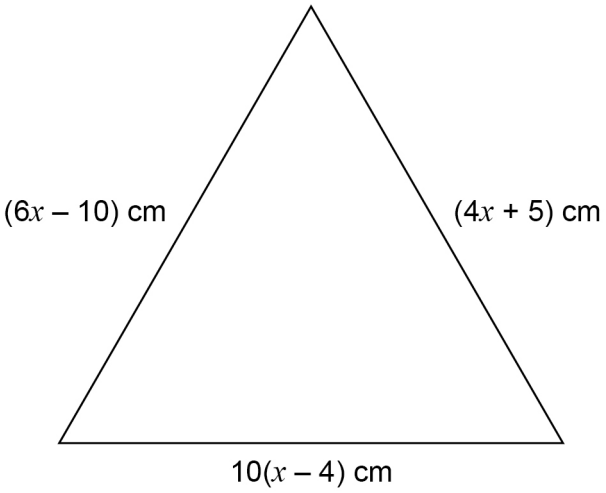
[4 marks]

8

Turn over ►

Do not write outside the box

25 This triangle is equilateral.



Not drawn accurately

Is the perimeter of the triangle greater than one metre?

You **must** show your working.

[5 marks]

Do not write outside the box

26 An approximation for the value of π is given by

$$4\left(1 - \frac{22}{57} + \frac{22}{85} - \frac{22}{105} + \frac{22}{117} - \frac{22}{242}\right)$$

Use your calculator to show that this approximation is within 0.1 of 3.14

[2 marks]

27 Work out $\dfrac{9.12 \times 10^{10}}{3.2 \times 10^{4}}$

Give your answer in standard form.

[2 marks]

Answer _____

END OF QUESTIONS

9

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There are no questions printed on this page

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