

Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

I declare this is my own work.

# GCSE MATHEMATICS

Foundation Tier

Paper 1 Non-Calculator

**F**

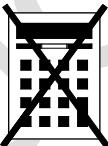
Shadow paper based on November 2021 question paper

Time allowed: 1 hour 30 minutes

**Materials**

For this paper you must have:

- mathematical instruments.

You must **not** use a calculator.**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.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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.

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	
<b>TOTAL</b>	

**Advice**

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

Answer **all** questions in the spaces provided.

**1** Circle the answer to  $0.6 \times 10$

**[1 mark]**

0.6

6

60

600

**2** Circle the expression that is equal to  $y - y + y$

**[1 mark]**

$y$

$2y$

$3y$

$-y$

**3** What is 260 centimetres in metres?

Circle your answer.

**[1 mark]**

0.26 m

2.6 m

26 m

260 m

4 Which shape **can** have sides with lengths that are all different?  
Circle your answer.

[1 mark]

square

triangle

parallelogram

rectangle

5 Work out  $6 \times (-7)$

[1 mark]

Answer

\_\_\_\_\_

**Turn over for the next question**

5

**Turn over ►**

6 Louisa buys 3 apples and 4 pears.

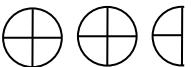
The total cost is £3.40

Each pear costs 55p

Work out the cost in pence of each apple.

[4 marks]

7 Zahid counted the pieces of three types of furniture he had repaired at his workshop. He draws a pictogram to show the results.

	<b>Key:</b>  <b>represents 4 pieces of furniture</b>
<b>Table</b>	
<b>Chair</b>	
<b>Sideboard</b>	

7 (a) Zahid had repaired 7 sideboards.

Show this information on the pictogram.

[1 mark]

7 (b) Zahid spent 45 minutes repairing each chair.

Work out the **total** time he spent repairing chairs.

Give your answer in hours and minutes.

[3 marks]

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Answer \_\_\_\_\_ hours \_\_\_\_\_ minutes

8 A travel company is taking some passengers on a sea trip. They can use sailing boats or speedboats.

Each sailing boat can carry 41 passengers.

Each speedboat can carry 7 passengers.

The passengers going on the trip would exactly fill two sailing boats.

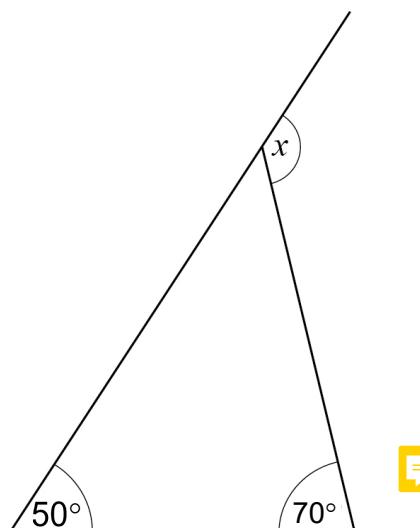
If the company uses only speedboats, how many will they need?

[4 marks]

### Answer

**9**

One side of a triangle is extended.

Not drawn  
accuratelyCircle the size of angle  $x$ .**[1 mark]**

120°

60°

70°

50°

**10**Paul uses his calculator to work out  $456 \times 5634$ Circle the **last** digit in the answer.**[1 mark]**

2

4

6

8

**Turn over for the next question**

6

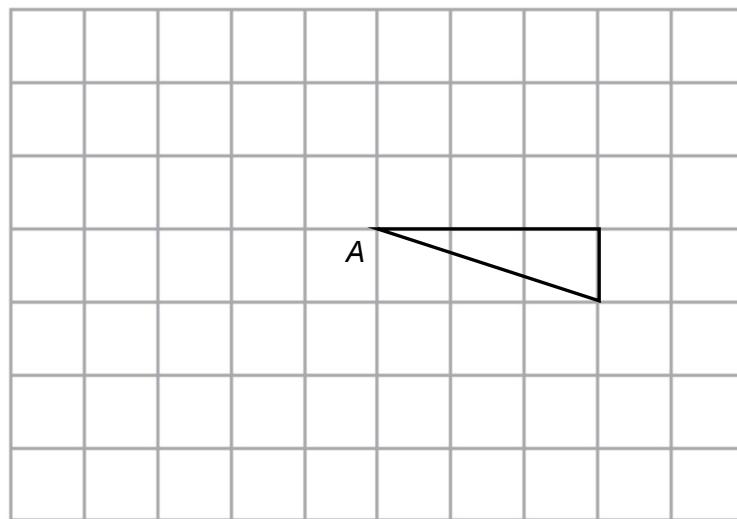
**Turn over ►**

**11**

Complete the diagram so that it has  
rotational symmetry of order 4  
centre of rotation at point A.

**[2 marks]**

*Do not write  
outside the  
box*



12

10% of 3500 is 350

Work out 23% of 3500

[3 marks]

*Do not write outside the box*

## Answer

**Turn over for the next question**

5

Turn over ►

13

Karen records the number of lorries boarding a ferry each hour for 24 hours.  
Here are the results.

46	30	47	63	52	41	34	28	49	45	40	57
48	27	23	28	23	45	20	17	6	28	41	67

Karen makes this tally and frequency chart to put the data into groups.

Number of lorries	Tally	Frequency
0 to 10		
10 to 20		
20 to 30		
30 to 40		
40 to 50		
50 to 60		

Make **two** criticisms of Karen's tally and frequency chart.

You do **not** need to complete the chart.

**[2 marks]**

Criticism 1 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Criticism 2 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14

Counters in a bag are yellow, green or red.

A counter is picked at random.

Complete the table.

[2 marks]

	Yellow	Green	Red
Probability	0.45	0.3	

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**Turn over for the next question**

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4

**Turn over ►**

15 Here is a calculation.

$$53 \times 72 = 3816$$

You can use the calculation to help answer the following questions.

15 (a) Work out  $3816 \div 72$

[1 mark]

Answer \_\_\_\_\_

15 (b) Work out  $5.3 \times 7.2$

[1 mark]

Answer \_\_\_\_\_

15 (c) Work out  $53 \times 73$

[2 marks]

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Answer \_\_\_\_\_

**16**

A security code has 60 characters.

It is made up of 30 letters, 12 numbers and some symbols.

Work out the ratio letters : numbers : symbols

Give your answer in its simplest form.

**[2 marks]**


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Answer \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

**17**

Work out  $\frac{7}{8} + \frac{9}{16}$

Give your answer as a mixed number.

**[3 marks]**


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Answer \_\_\_\_\_

9

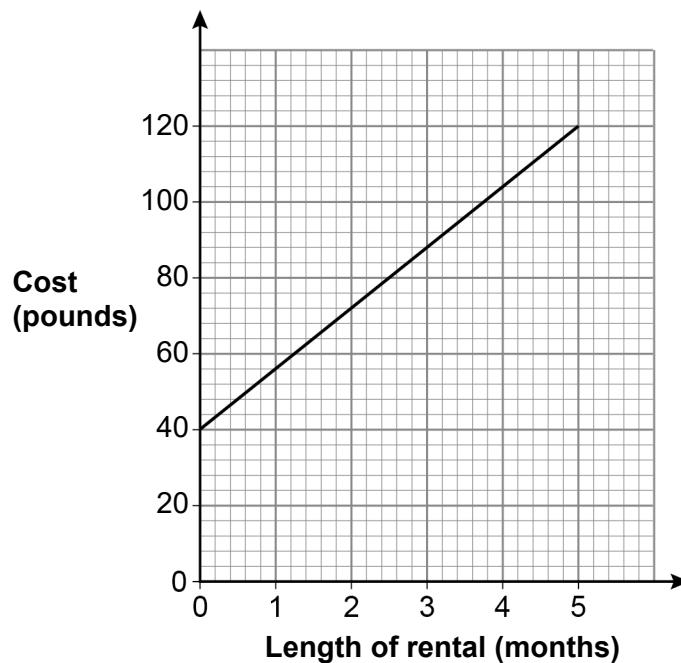
**Turn over ►**

**18**

The cost of renting a storage unit is

- a fixed charge
- and
- a charge per month.

The costs of renting a storage unit up to 5 months are represented by the graph.



**18 (a)** Write down the fixed charge.

**[1 mark]**

Answer \_\_\_\_\_ pounds

18 (b) Work out the charge per month.

[2 marks]

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Answer \_\_\_\_\_ pounds

18 (c) Work out the cost of a renting a storage unit for 7 months.

[2 marks]

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Answer \_\_\_\_\_ pounds

**Turn over for the next question**

19

A company sells boxes of bolts and boxes of washers.

Do not write  
outside the  
box

Here are the numbers of items in 11 boxes of bolts.

65      60      59      61      65      57      64      60      59      65      67

Here are the numbers of items in 10 boxes of washers.

56      57      57      58      58      60      63      64      64      64

The company claims that the average number of items per box is at least 60

Using medians, is the company's claim correct for each type of item?

You **must** work out the median for bolts and the median for washers.

**[4 marks]**

Bolts

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Tick a box for bolts.

Yes

No

Washers

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Tick a box for washers.

Yes

No

20

Firoz tries to work out

$$\begin{array}{r} 39.17 + 76.78 \\ \hline 19.84 \end{array}$$

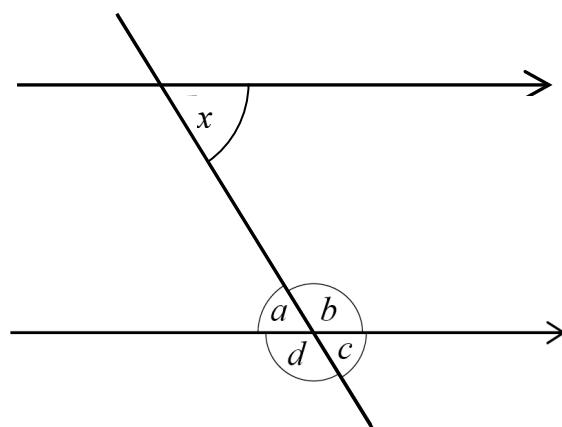
His answer is 14.92

By rounding each number to the nearest 10, show that his answer is incorrect.

**[3 marks]**

21

A straight line passes through two parallel lines.



Not drawn accurately

Circle the angle that is **alternate** to angle  $x$ .

[1 mark]

a

b

6

d

22 (a) Jackie wants to simplify  $7p - (5q - 3p)$

She writes  $4p - 5q$

Is she correct?

Tick a box.

Yes

No

Give a reason for your answer.

[1 mark]

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22 (b) Jackie also wants to simplify  $4a^3 \times 7a^5$

She says,

“Multiply 4 and 7, then multiply 3 and 5”

Her answer is  $28a^{15}$

Tick a box for each part of her method.

[1 mark]

Correct

Not correct

Multiply 4 and 7



Multiply 3 and 5

22 (c) Jackie thinks of a number.

$20 \times \text{the number} = 80 \div \text{the number}$

Give a possible value of the number.

**[1 mark]**

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Answer \_\_\_\_\_

23 Adam's age is 3 years and 6 months.

Zara's age is 2 years and 11 months.

Write Adam's age in months as a fraction of Zara's age in months.

Give your fraction in its simplest form.

**[2 marks]**

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Answer \_\_\_\_\_

—  
5

**Turn over ►**

**24**

Working alone, it takes Kai 3 hours to concrete an area of  $8 \text{ m}^2$

Kai and Jade are going to concrete an area of  $24 \text{ m}^2$

Jade says,

“Working together at the same rate it will take us 9 hours, because  $24$  is  $3 \times 8$ ”

Is she correct?

Tick a box.

Yes

No

Give a reason for your answer.

**[1 mark]**

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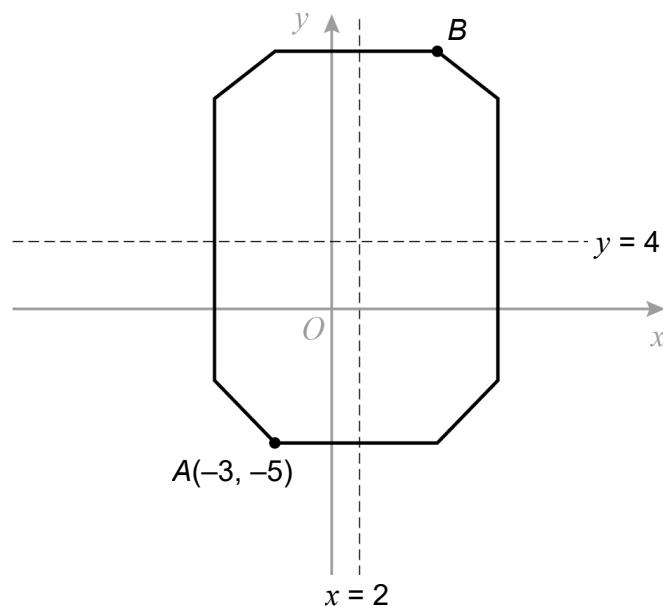
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26

The diagram shows an octagon.

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outside the  
box



$x = 2$  and  $y = 4$  are lines of symmetry.

Work out the coordinates of point B.

**[2 marks]**

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Answer ( \_\_\_\_\_, \_\_\_\_\_ )

27 (a) Work out  $3000 \times 60\,000$

Give your answer in standard form.

**[2 marks]**

*Do not write outside the box*

### Answer

$$27 \text{ (b)} \quad \text{Work out} \quad \frac{2.1 \times 10^3}{3 \times 10^{-2}}$$

Give your answer as an ordinary number.

[2 marks]

### Answer

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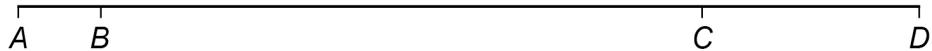
6

**Turn over ►**

28

*A, B, C and D are markers on a park run route.*

Not drawn accurately



distance  $CD = 2 \times$  distance  $AB$

distance  $BC = 4$  km

Sheena runs from A to C.

She runs for 30 minutes at an average speed of 14 km per hour.

Work out the distance  $AD$ .

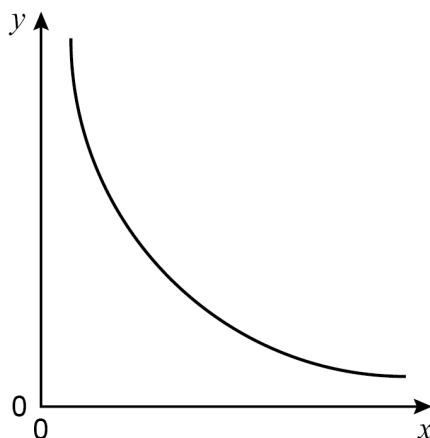
[4 marks]

Answer km

29

Here is a sketch of a graph.

Do not write  
outside the  
box



Circle the equation of the graph.

[1 mark]

$$y = x$$

$$y = 1 + x$$

$$y = \frac{1}{x}$$

$$y = 1 - x$$

30

Write 360 as a product of prime factors.

Give your answer in index form.

[3 marks]

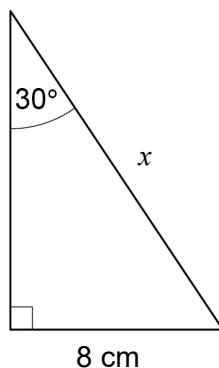
Answer \_\_\_\_\_

—  
8

Turn over ►

31

Here is a right-angled triangle.

Not drawn  
accuratelyUse trigonometry to work out the value of  $x$ .

[3 marks]

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Answer \_\_\_\_\_ cm

32

Factorise  $x^2 + 10x + 21$ 

[2 marks]

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Answer \_\_\_\_\_

END OF QUESTIONS

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