

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier

Paper 1 Non-Calculator

Shadow paper based on November 2021 question paper

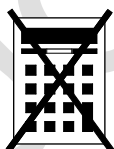
Time allowed: 1 hour 30 minutes

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.

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	
TOTAL	

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

Do not write
outside the
box

- 1** Circle the answer to 0.6×10 **[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 _____


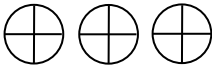
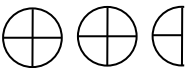
Turn over for the next question

[4 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Answer _____ pence

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

	Key:  represents 4 pieces of furniture
Table	
Chair	
Sideboard	

- 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]

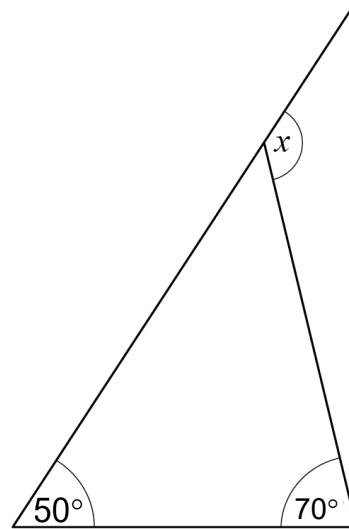
Answer _____ hours _____ minutes

[4 marks]

[illegible]

Answer _____

- 9 One side of a triangle is extended.



Not drawn
accurately



Circle the size of angle x .

[1 mark]

120°

60°

70°

50°

- 10 Paul uses his calculator to work out 456×5634

Circle the **last** digit in the answer.

[1 mark]

2

4

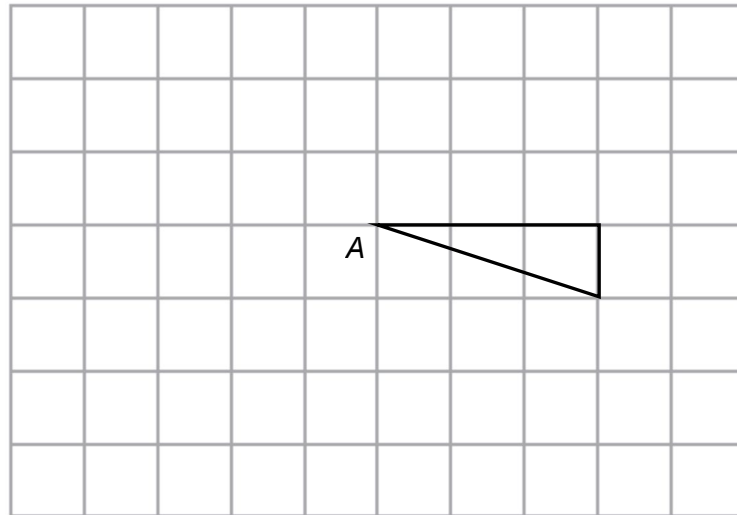
6

8

Turn over for the next question

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

[2 marks]



12

10% of 3500 is 350

Work out 23% of 3500

[3 marks]

Answer _____

Turn over for the next question

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	

Turn over for the next question**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 5.3×7.2

[1 mark]

Answer _____

15 (c) Work out 53×73

[2 marks]

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]

Answer _____ : _____ : _____

17

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

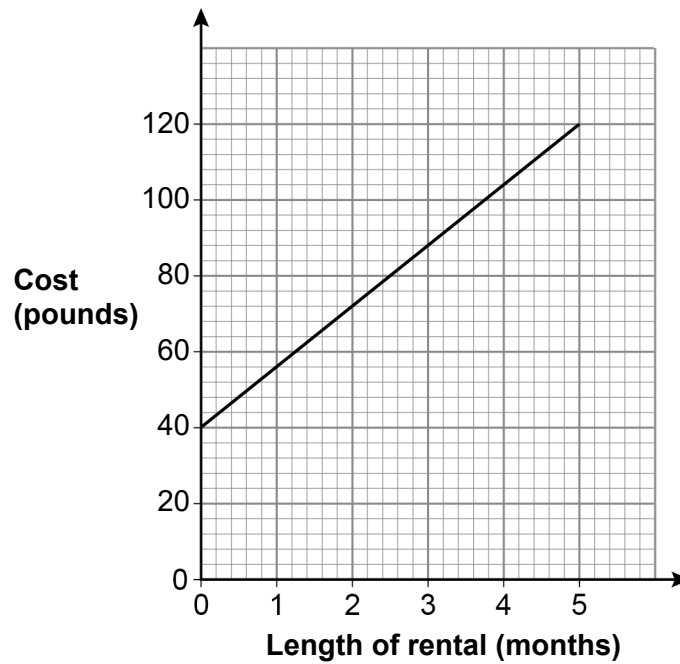
Give your answer as a mixed number.

[3 marks]

Answer _____

- 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]

Answer _____ pounds

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

[2 marks]

Answer _____ pounds

Turn over for the next question

19

A company sells boxes of bolts and boxes of washers.

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

Tick a box for bolts.

☐

Yes

☐

No

Washers

Tick a box for washers.

☐

Yes

☐

No

20

Firoz tries to work out

$$\frac{39.17 + 76.78}{19.84}$$

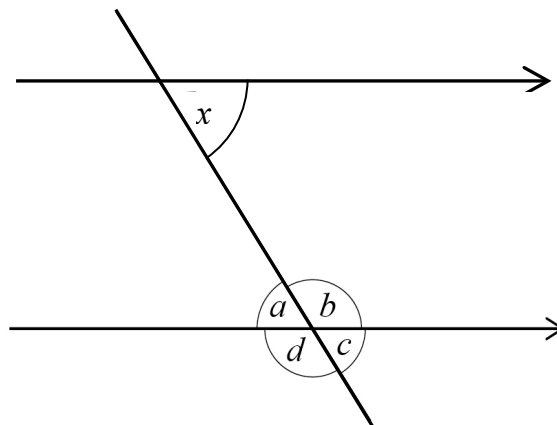
His answer is 14.92

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
accuratelyCircle the angle that is **alternate** to angle x .**[1 mark]** a b c 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]

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]

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]

Answer _____

24

Working alone, it takes Kai 3 hours to concrete an area of 8 m^2

Kai and Jade are going to concrete an area of 24 m^2

Jade says,

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

Is she correct?

Tick a box.

☐

Yes

☐

No

Give a reason for your answer.

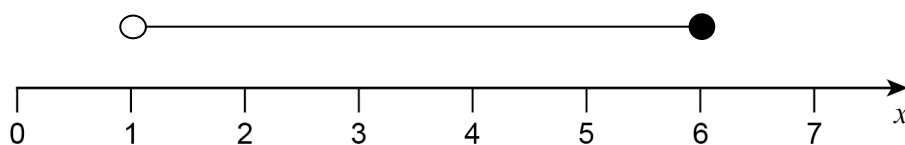
[1 mark]

25 (a) Solve $7x + 3 > 5x + 10$

[3 marks]

Answer _____

25 (b) Write down the inequality represented by the number line.

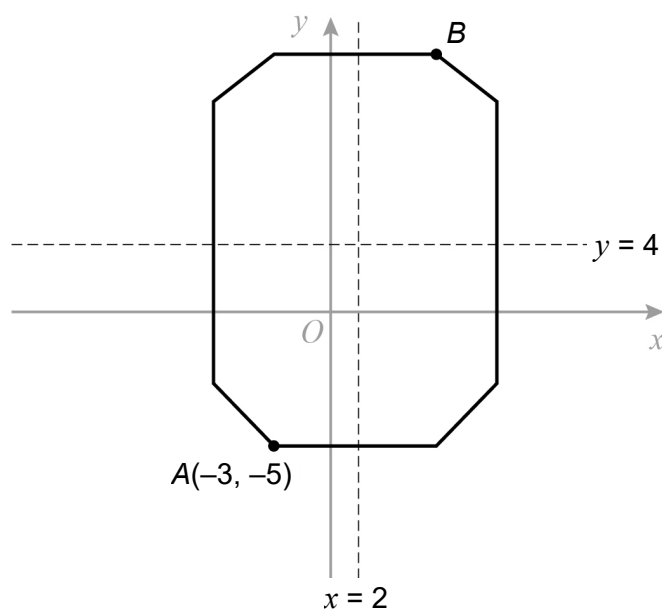


[2 marks]

Answer _____

26

The diagram shows an octagon.

Not drawn
accurately $x = 2$ and $y = 4$ are lines of symmetry.Work out the coordinates of point B .**[2 marks]**

Answer (_____ , _____)

- 27 (a)** Work out $3000 \times 60\,000$
Give your answer in standard form.

[2 marks]

Answer _____

- 27 (b)** Work out $\frac{2.1 \times 10^3}{3 \times 10^{-2}}$
Give your answer as an ordinary number.

[2 marks]

Answer _____

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 .

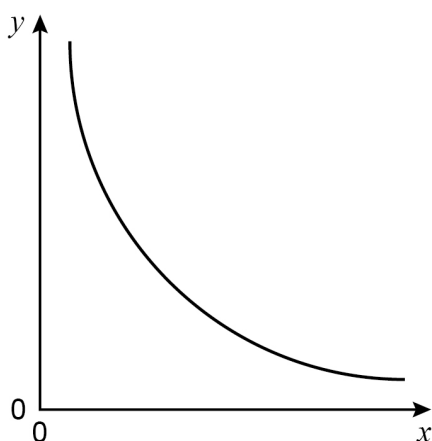
She runs for 30 minutes at an average speed of 14 km per hour.

Work out the distance AD .

[4 marks]

Answer _____ km

- 29 Here is a sketch of a graph.



Circle the equation of the graph.

[1 mark]

$$y = x$$

$$y = 1 + x$$

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

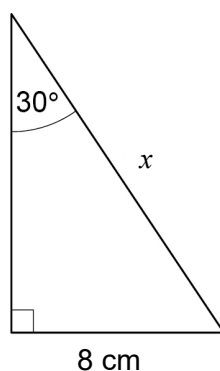
$$y = 1 - x$$

- 30 Write 360 as a product of prime factors.
Give your answer in index form.

[3 marks]

Answer _____

- 31 Here is a right-angled triangle.



Not drawn
accurately

Use trigonometry to work out the value of x .

[3 marks]

Answer _____ cm

- 32 Factorise $x^2 + 10x + 21$

[2 marks]

Answer _____

END OF QUESTIONS

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[illegible]

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