

Please write clearly in block capitals.

Centre number

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# GCSE MATHEMATICS

# F

Foundation Tier      Paper 1 Non-Calculator

Tuesday 6 November 2018

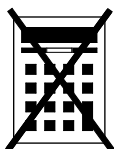
Morning

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.
- 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 graph paper, tracing paper and more answer 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	
<b>TOTAL</b>	

## Advice

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



Answer **all** questions in the spaces provided

- 1** Work out  $(-3) + (-8)$   
Circle your answer.

**[1 mark]**

-5

5

-11

11

- 2** What does the longest bar in a bar chart represent?  
Circle your answer.

**[1 mark]**

mean

median

mode

range

- 3** Work out  $1.1 - 0.15$   
Circle your answer.

**[1 mark]**

0.95

1.05

0.85

1.085



- 4 On a circle, which of these is **always** longer than the diameter?  
Circle your answer.

[1 mark]

chord

arc

radius

circumference

- 5 Work out  $83 \times 26$

[3 marks]

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Answer \_\_\_\_\_

7

Turn over ►



**6** The cost of 3 calendars is £18

Work out the cost of 5 calendars.

**[2 marks]**

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Answer £ \_\_\_\_\_

**7** A helicopter blade does 3206 full turns in 7 minutes.

Work out the number of full turns per minute.

**[2 marks]**

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Answer \_\_\_\_\_



8

At a cinema, films are shown on Screen 1 and Screen 2

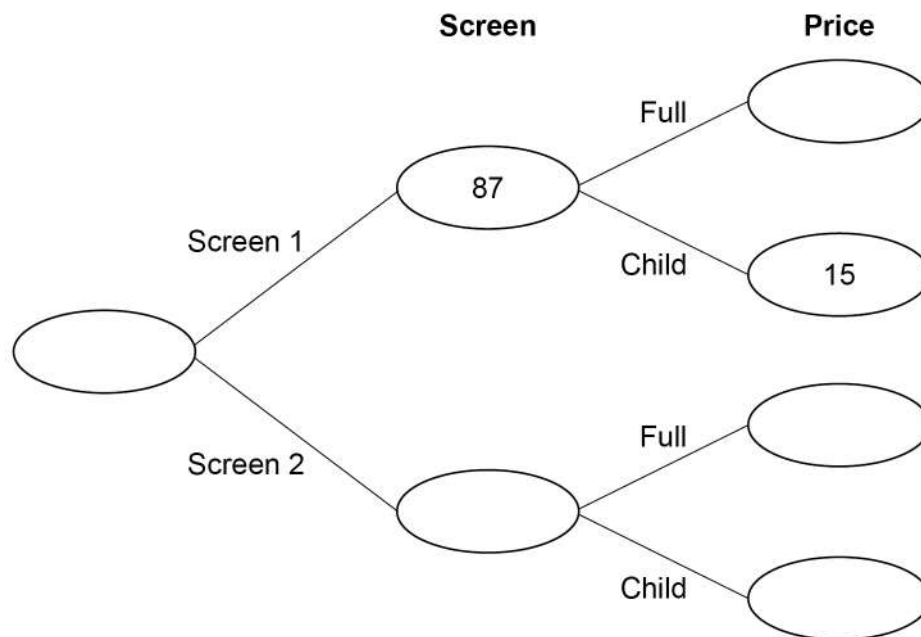
Customers pay full price or child price.

There are three times as many customers in Screen 2 as Screen 1

68 customers paid child price.

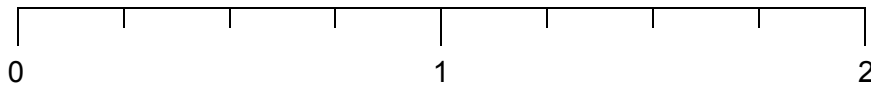
Complete the frequency tree.

[5 marks]



9

Work out the fraction that is halfway between  $\frac{1}{2}$  and  $1\frac{1}{4}$



[3 marks]

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Answer \_\_\_\_\_

10

$x$  is a positive integer.

$35 \div x$  is a positive integer.

Work out the **four** possible values of  $x$ .

[2 marks]

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Answer \_\_\_\_\_



**11** A fair dice has six sides, numbered 1 to 6  
After it is rolled, five of the numbers can be seen.

**11 (a)** Write down the probability that one of these five numbers is 2

**[1 mark]**

Answer \_\_\_\_\_

**11 (b)** Work out the **greatest** possible sum of the five numbers.

**[2 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question**



12 Work out  $\frac{2}{7} + \frac{6}{7}$

Circle your answer.

[1 mark]

$1\frac{1}{7}$

$\frac{8}{14}$

$\frac{8}{49}$

$1\frac{5}{7}$

13 Work out  $4 + 3 \times 5 - 1$

Circle your answer.

[1 mark]

16

18

28

34

14 The  $n$ th term of a sequence is  $5n - 2$

Work out the 3rd term.

Circle your answer.

[1 mark]

51

5

123

13

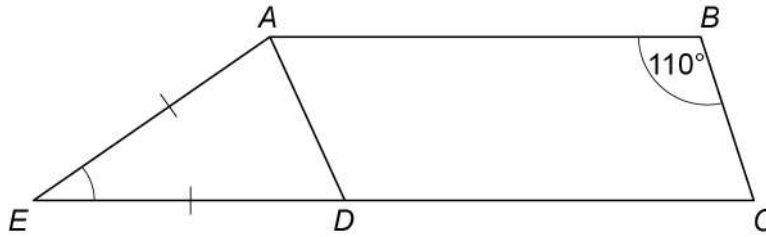




15

Trapezium  $ABCE$  is made from parallelogram  $ABCD$  and isosceles triangle  $ADE$ .

$AE = DE$

Not drawn  
accuratelyWork out the size of angle  $AED$ .**[3 marks]**


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Answer \_\_\_\_\_ degrees

16

$a : b = 1 : 6$

$a : c = 3 : 1$

How many times bigger is  $b$  than  $c$ ?**[2 marks]**


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Answer \_\_\_\_\_

Turn over ►



**17 (a)** Laura wants to work out 3% of 1700

Her method is  $1700 \times 0.3$

Is her method correct?

Tick a box.

Yes

No

Give a reason for your answer.

[1 mark]

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**17 (b)** Laura also wants to work out  $\frac{30}{29}$  of 60

Her answer is 58

Is her answer correct?

Tick a box.

Yes

No

Give a reason for your answer.

[1 mark]

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18 Here are five shapes, A to E.

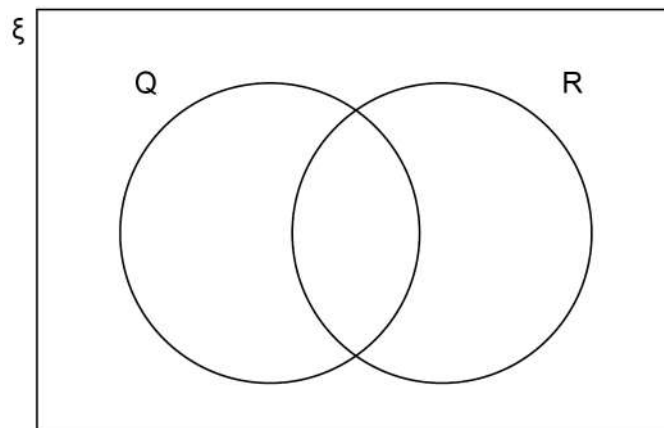
A	Parallelogram
B	Regular pentagon
C	Rhombus
D	Scalene triangle
E	Trapezium

In the Venn diagram,

$\xi$  is the set of all shapes

Q is the set of quadrilaterals

R is the set of shapes which **always** have rotational symmetry.



Complete the Venn diagram with the letters A to E.

[3 marks]



19  $a = 7$  and  $b = 2$

Work out the value of  $\frac{a}{b} - a^b$

[3 marks]

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Answer \_\_\_\_\_

20 Solve  $3x - 8 = 19$

[2 marks]

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$x =$  \_\_\_\_\_



21

Here are five number cards.

17

12

23

15

16

Two of the five cards are picked at random.

Work out the probability that the total of the two numbers is **more than 30****[3 marks]**

Answer \_\_\_\_\_

8

Turn over ►



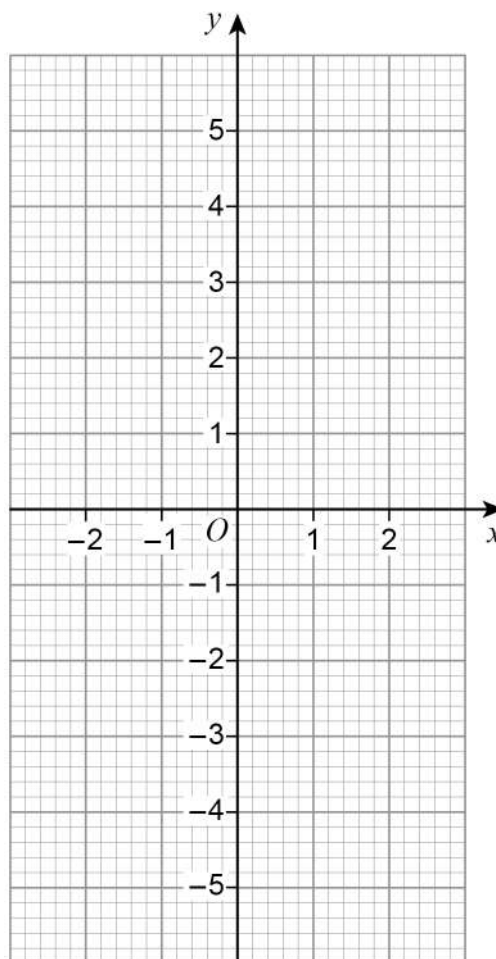
22 (a) Complete the table of values for  $y = x^2$

[1 mark]

$x$	-2	-1	0	1	2
$y$					

22 (b) Draw the graph of  $y = x^2$  for values of  $x$  from -2 to 2

[2 marks]



22 (c) Use your graph to estimate the value of  $\sqrt{2.6}$

[2 marks]

Answer \_\_\_\_\_



**23** Two consecutive whole numbers are  $n$  and  $n + 1$

**23 (a)** Simplify  $n - (n + 1)$

**[1 mark]**

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Answer \_\_\_\_\_

**23 (b)** Multiply out  $n(n + 1)$

**[1 mark]**

Answer \_\_\_\_\_

**23 (c)** The two numbers are added.

Show that the answer must be an odd number.

**[2 marks]**

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24 Circle the value of  $\cos 30^\circ$

[1 mark]

$$\frac{1}{2}$$

$$\frac{\sqrt{3}}{2}$$

0

1

25 Work out  $8\frac{1}{2} \div 2\frac{2}{3}$

Give your answer as a mixed number.

[4 marks]

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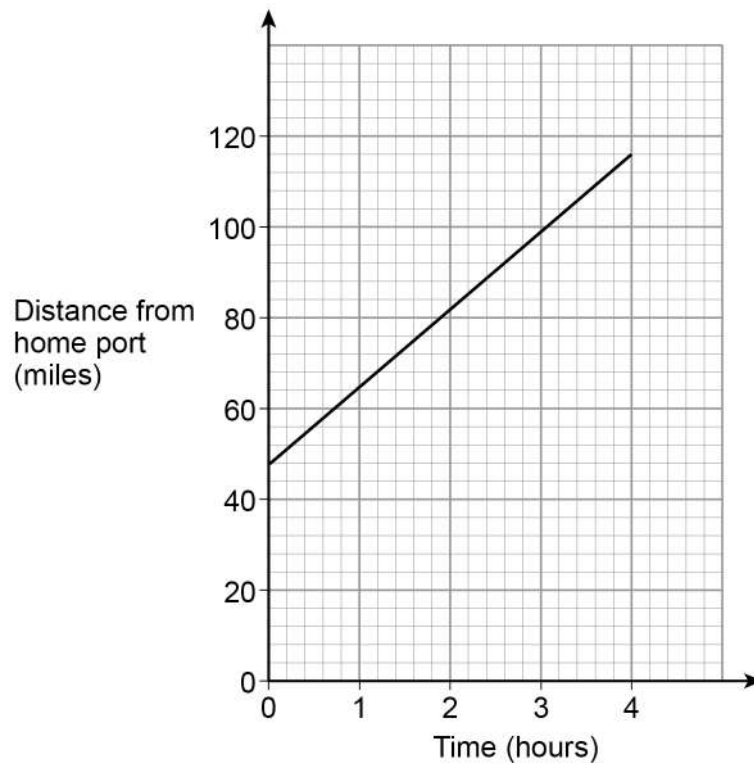
Answer \_\_\_\_\_





26

A ship is sailing in a straight line from its home port.  
The distance-time graph shows 4 hours of the journey.



Work out the speed of the ship during these 4 hours.

[3 marks]

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Answer \_\_\_\_\_ mph



- 27** Kim works at an airport in the UK.  
She records the number of planes landing between 10 am and 2 pm each day.  
The table shows the data for the first 10 days in January.

Day	1	2	3	4	5	6	7	8	9	10
Number of planes	148	151	147	155	153	147	155	102	151	154

- 27 (a)** The airport was affected by fog on one of the days.

Which day do you think it was?  
Give a reason for your answer.

**[1 mark]**

Day \_\_\_\_\_

Reason \_\_\_\_\_

\_\_\_\_\_

- 27 (b)** Kim uses the data to predict how many planes will land at the airport in a year.

In her method, she

uses an estimate of 150 planes in each 4-hour period throughout the day  
assumes the same number of planes each day.

Work out her prediction.

**[3 marks]**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_



**27 (c)**

In fact,

fewer planes land in winter than in summer

fewer planes land at night than during the day.

What does this tell you about Kim's prediction?

Tick **one** box.

Her prediction is too low

Her prediction is too high

Her prediction could be too low or too high

Give a reason for your answer.

**[2 marks]**

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**Turn over for the next question****Turn over ►**

28

The sum of the angles in any quadrilateral is  $360^\circ$

For example, in a rectangle  $4 \times 90^\circ = 360^\circ$

Zak writes,

$5 \times 90^\circ = 450^\circ$  so the sum of the angles in any pentagon must be  $450^\circ$

Is he correct?

Tick a box.

Yes

No

Show working to support your answer.

[2 marks]

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29

$$\sqrt{6^2 + 8^2} = \sqrt[3]{125a^3}$$

Work out the value of  $a$ .**[4 marks]**

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Answer \_\_\_\_\_

30

Work out the percentage increase from 80 to 280

**[3 marks]**

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Answer \_\_\_\_\_ %

**Turn over for the next question**

31 Solve  $x^2 - x - 12 = 0$

[3 marks]

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Answer \_\_\_\_\_

**END OF QUESTIONS**



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