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# GCSE MATHEMATICS

# F

Foundation Tier      Paper 2 Calculator

Monday 6 November 2017

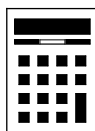
Morning

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.
- 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.

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	
<b>TOTAL</b>	

## Advice

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



Answer **all** questions in the spaces provided

**1** How many minutes are there in  $2\frac{1}{4}$  hours?

Circle your answer.

[1 mark]

135

145

215

225

**2** Which of these numbers is **half** of a square number?

Circle your answer.

[1 mark]

1

2

3

4

**3** Circle the value of the digit 3 in the number 17.03

[1 mark]

$\frac{3}{10}$

$\frac{1}{30}$

$\frac{3}{100}$

$\frac{1}{300}$



- 4 The value of  $A$  is double the value of  $B$ .  
Circle the correct formula.

[1 mark]

$$A = B + 2$$

$$A = 2B$$

$$A = \frac{B}{2}$$

$$A = B^2$$

- 5 (a) Simplify  $y \times y$

[1 mark]

Answer \_\_\_\_\_

- 5 (b) Simplify  $5a + 2 - a + 9$

[2 marks]

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Answer \_\_\_\_\_

Turn over for the next question

7

Turn over ►

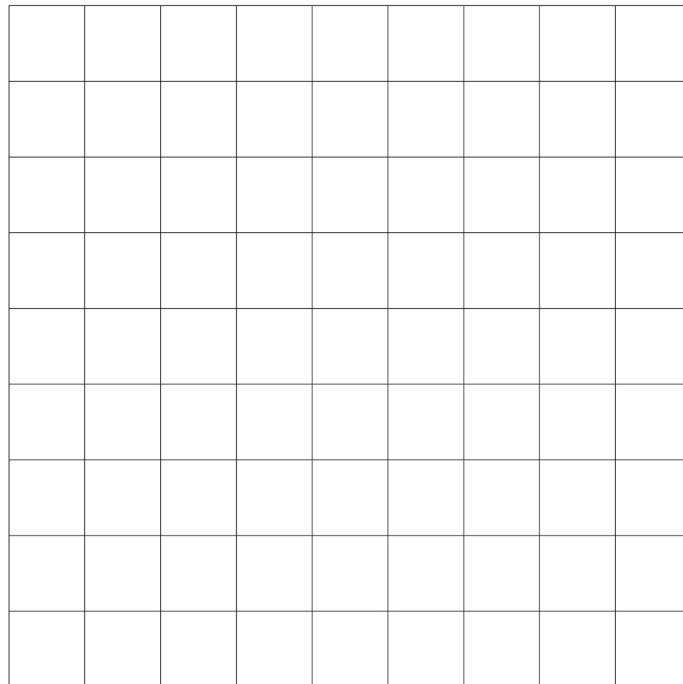


**6** The table shows information about the birds in a garden.

<b>Bird</b>	<b>Number</b>
Robin	2
Sparrow	5
Wren	3
Lark	1

Draw a bar chart to show the information.

**[3 marks]**



7

Eve has these coins.



Ola has these coins.



Eve gives **three** of her coins to Ola.

Now, Ola has the same amount of money as Eve.

Which coins does Eve give to Ola?

[3 marks]

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Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

Turn over for the next question

Turn over ►



8 A dry cleaning shop has the following offers.

**Suit**



**Normal price £12.50**  
1st suit normal price  
2nd suit half price

**Dress**



**Normal price £9.75**  
Three for the price of two

Work out the **total** price for 2 suits and 6 dresses.

**[4 marks]**

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Answer £ \_\_\_\_\_



**9** Karl has twin sisters.

The sum of the ages of Karl and his twin sisters is 39

In 4 years' time the twins will be 18

How old will Karl be in 4 years' time?

**[3 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question**

7

**Turn over ►**



**10** One of the angles in a triangle is  $60^\circ$

Tick a box for each statement.

	Must be true	Cannot be true	Might be true
The triangle is equilateral			
The triangle has at least one other acute angle			
The triangle is right-angled			
The other two angles are each less than $60^\circ$			

**[4 marks]**





**11** Which of these numbers has **exactly** two factors?

Circle your answer.

[1 mark]

6

7

8

9

**12** Work out  $\sqrt{7.5^2 + 18^2}$

Circle your answer.

[1 mark]

19.5

25.5

331.5

380.25

**13 (a)** Use your calculator to work out the exact value of  $\frac{18\,953 \times 437}{11}$

[1 mark]

Answer \_\_\_\_\_

**13 (b)** Use approximations to 1 significant figure to check if your answer to part (a) is sensible.

[3 marks]

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**14** Chris sells lawnmowers.

The table shows the number he sold each quarter for three years.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
2016	17	64	50	5
2015	9	72	61	1
2014	19	58	53	2

**14 (a)** In which year did he sell the most lawnmowers?

You **must** show your working.

**[2 marks]**

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Answer \_\_\_\_\_

**14 (b)** He uses the table to decide the number of lawnmowers to stock each quarter.

At the **start** of which quarter should Chris stock the most lawnmowers?

Circle your answer.

**[1 mark]**

Quarter 1

Quarter 2

Quarter 3

Quarter 4



**15**

In a test,

Section A has 80 marks

Section B has 120 marks.

Riya scores

55% in Section A

70% in Section B.

To pass, Riya needs to score 65% of the **total** marks.

Does she pass?

You **must** show your working.

**[4 marks]**

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Answer \_\_\_\_\_

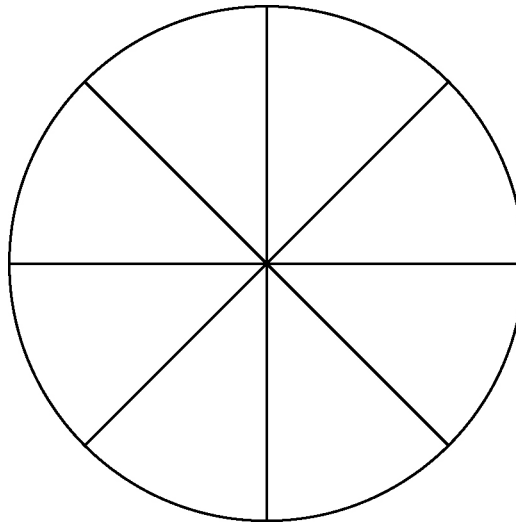
      
**7**

Turn over ►



16

A wheel is made of a circular rim and 8 spokes as shown.



Not drawn  
accurately

The length of each spoke is 37 cm

Work out the **total** length of the rim and spokes.

[3 marks]

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



17 Here is a formula to convert degrees Celsius ( $^{\circ}\text{C}$ ) to degrees Fahrenheit ( $^{\circ}\text{F}$ ).

$$F = 1.8C + 32$$

$F$  is the number of degrees Fahrenheit

$C$  is the number of degrees Celsius

17 (a) Show that  $-40^{\circ}\text{C} = -40^{\circ}\text{F}$

[2 marks]

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17 (b) The temperature is  $-15^{\circ}\text{C}$

Nick says,

“Because the temperature is negative in Celsius, it **must** be negative in Fahrenheit.”

Is he correct?

You **must** show your working.

[1 mark]

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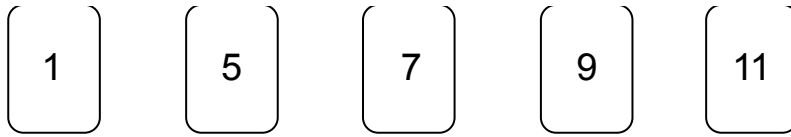
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Answer \_\_\_\_\_



18 Here are five cards.



One of the cards is removed.

The mean of the numbers on the remaining four cards is 6

Which card was removed?

You **must** show your working.

[3 marks]

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Answer \_\_\_\_\_



**19 (a)** Divide 120 in the ratio 1 : 4

**[2 marks]**

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

**19 (b)** Write the ratio 7 : 4 in the form  $n : 1$

**[1 mark]**

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

**Turn over for the next question**



**20** In 2015, Han was paid £1350 per month.  
 In 2016, he  
     had a 2% increase in his monthly pay  
     worked 37.5 hours per week  
     worked for 47 weeks.

Work out Han's average pay **per hour** for 2016

**[5 marks]**

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Answer £ \_\_\_\_\_





- 21** An experiment is carried out 200 times.  
The possible outcomes are K, L and M.

**21 (a)** Complete the table.

**[2 marks]**

<b>Outcome</b>	<b>K</b>	<b>L</b>	<b>M</b>
<b>Frequency</b>	84	54	
<b>Relative frequency</b>	0.42		

- 21 (b)** Altogether, the experiment is carried out 500 times.

How many times would you expect the outcome to be K?

**[2 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question**

**Turn over ►**



**22** The table shows information about the UK and Germany.

	Population	Area (square miles)
UK	64 000 000	95 000
Germany	82 000 000	140 000

$$\text{Population density} = \frac{\text{population}}{\text{area}}$$

Compare the population densities of the UK and Germany.

**[3 marks]**

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**23** Which **one** of the following is discrete data?

Circle your answer.

**[1 mark]**

Mass of a television

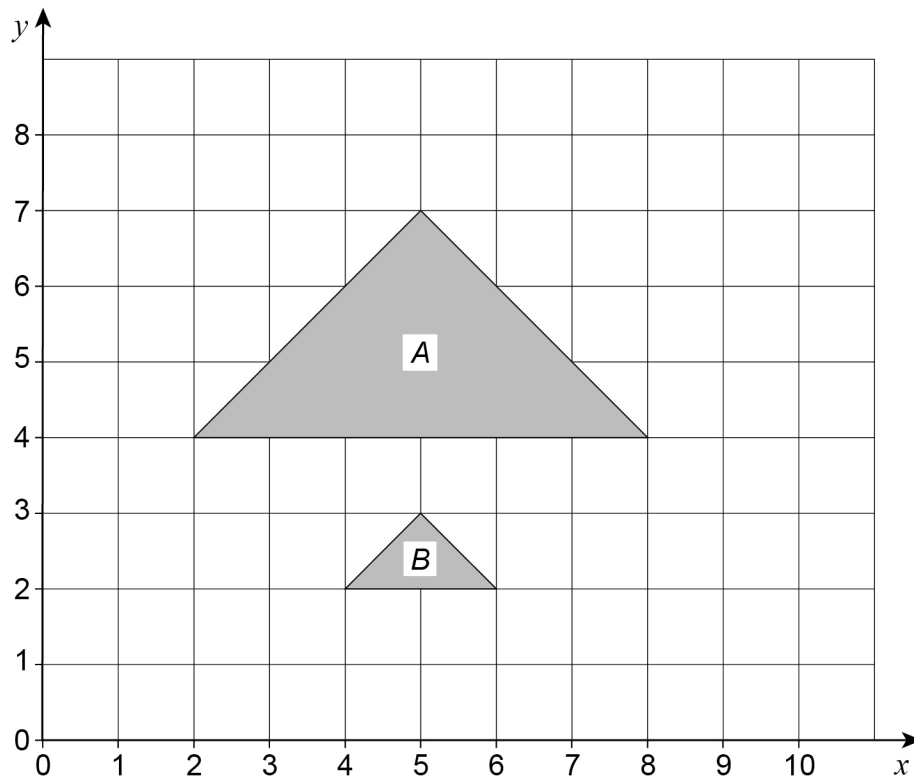
Time taken to deliver a television

Height of a television mast

Number of televisions sold



24

Describe fully the **single** transformation that maps triangle *A* to triangle *B*.**[3 marks]**

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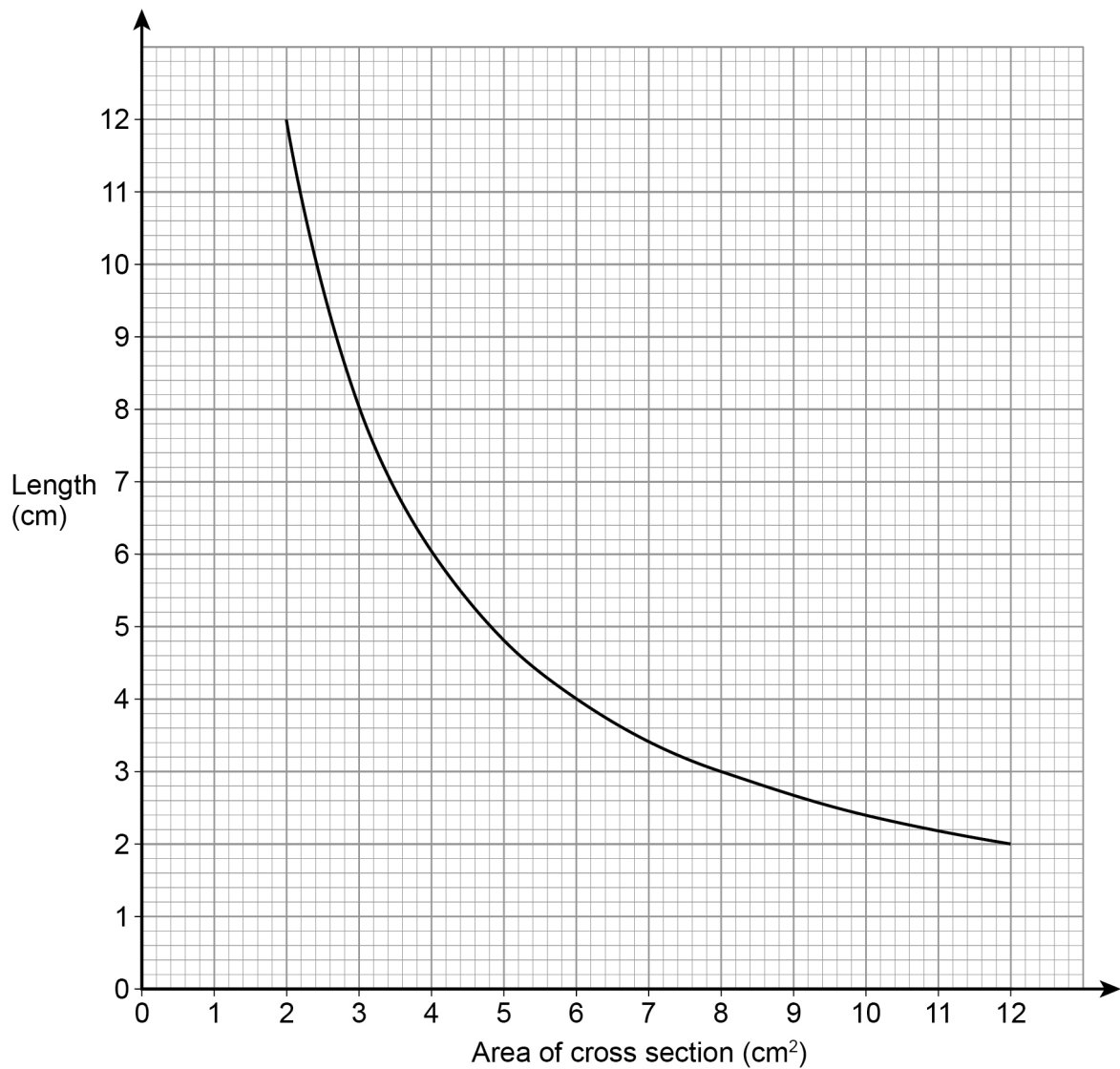
**Turn over for the next question**

7
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**Turn over ►**

25

The graph shows information about prisms with the same volume.



25 (a) Give **one** example to show the volume is  $24 \text{ cm}^3$

[1 mark]

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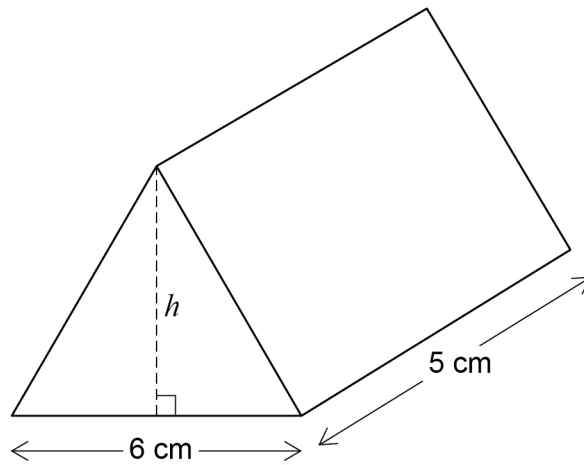
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- 25 (b)** The diagram shows a prism with volume  $24 \text{ cm}^3$   
The height of the triangular cross section is  $h$ .



Work out the height,  $h$ .

**[3 marks]**

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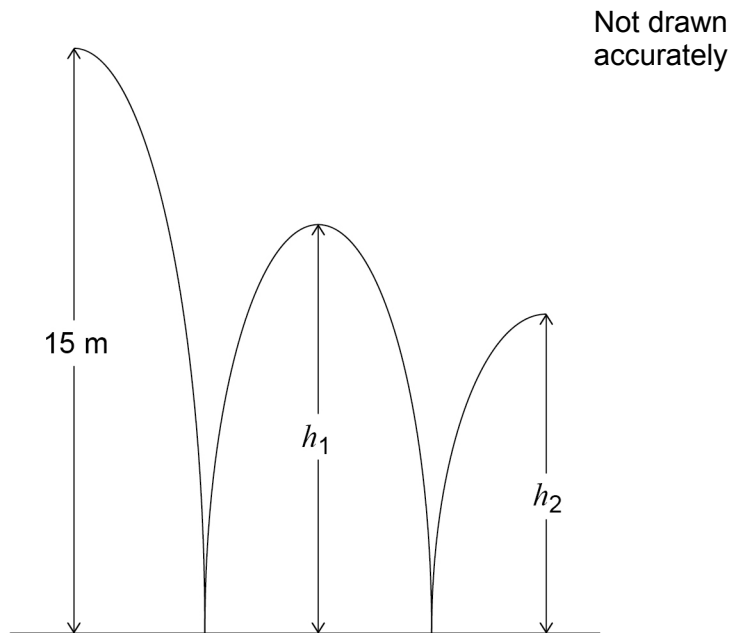
Answer \_\_\_\_\_ cm

**Turn over for the next question**



26

A ball is thrown from a height of 15 metres.  
It bounces to height  $h_1$ , then to height  $h_2$  as shown.



$h_1$  is three quarters of the original height.

26 (a) Jack expects  $h_2$  to be three quarters of  $h_1$

Work out the value of  $h_2$  that he expects.

[2 marks]

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Answer \_\_\_\_\_ metres



**26 (b)** In fact,  $h_2$  is two thirds of  $h_1$

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

Tick a box.

The ball bounced higher than he expected

The ball bounced lower than he expected

Show working to support your answer.

**[2 marks]**

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**Turn over for the next question**

4

**Turn over ►**



27 Solve  $4(3x - 2) = 2x - 5$

[3 marks]

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

28 Work out the next term of this quadratic sequence.

[2 marks]

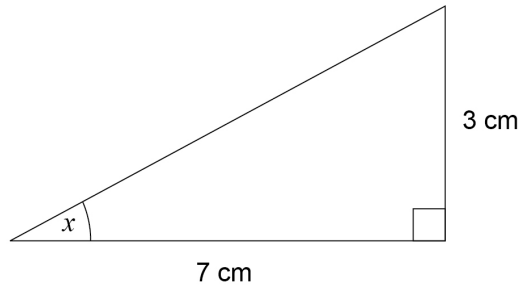
5                      8                      14                      23                      .....

Answer \_\_\_\_\_





29

Work out the size of angle  $x$ .Not drawn  
accurately**[2 marks]**

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

**END OF QUESTIONS**

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