

Please write clearly in block capitals.

Centre number

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Candidate number

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# GCSE MATHEMATICS

# F

Foundation Tier      Paper 2 Calculator

Monday 6 November 2017

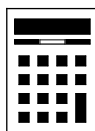
Morning

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]

\_\_\_\_\_  
\_\_\_\_\_

Answer \_\_\_\_\_

Turn over for the next question

7

Turn over ►

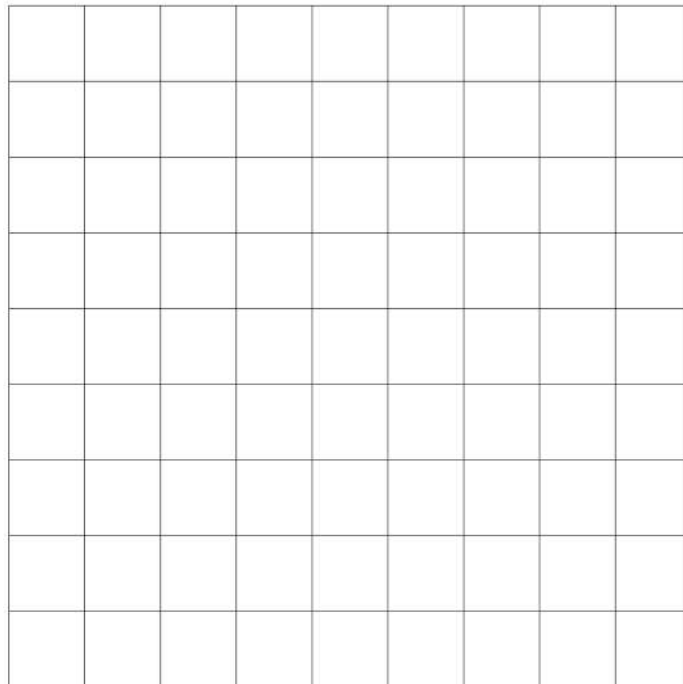


**6** The table shows information about the birds in a garden.

| <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



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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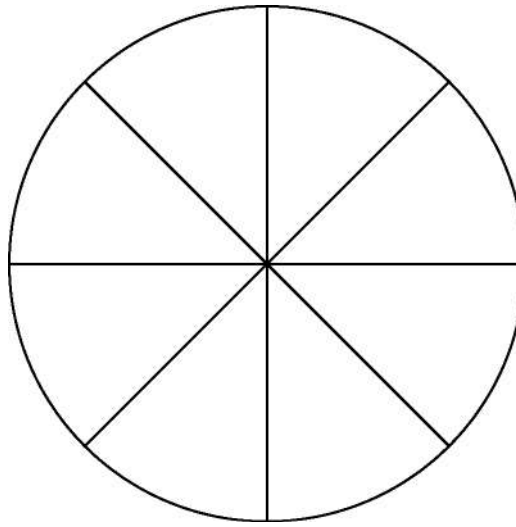
Answer \_\_\_\_\_

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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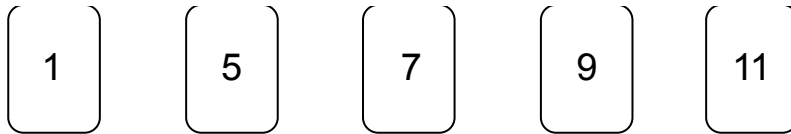
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Answer \_\_\_\_\_



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]**

| Outcome            | K    | L  | M |
|--------------------|------|----|---|
| Frequency          | 84   | 54 |   |
| Relative frequency | 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

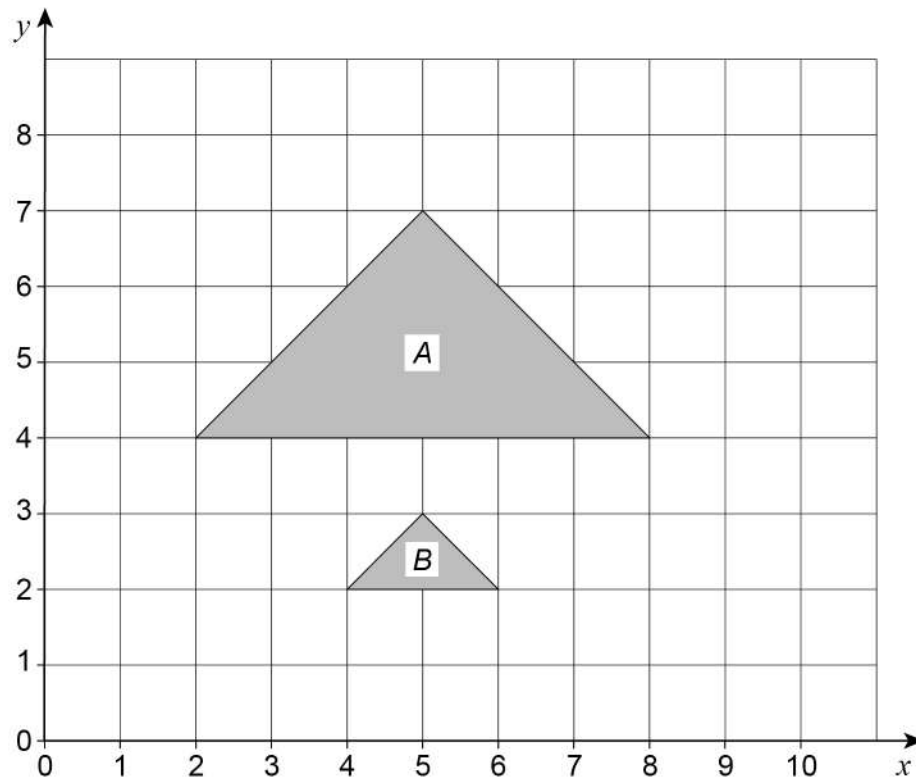
Time taken to deliver a television

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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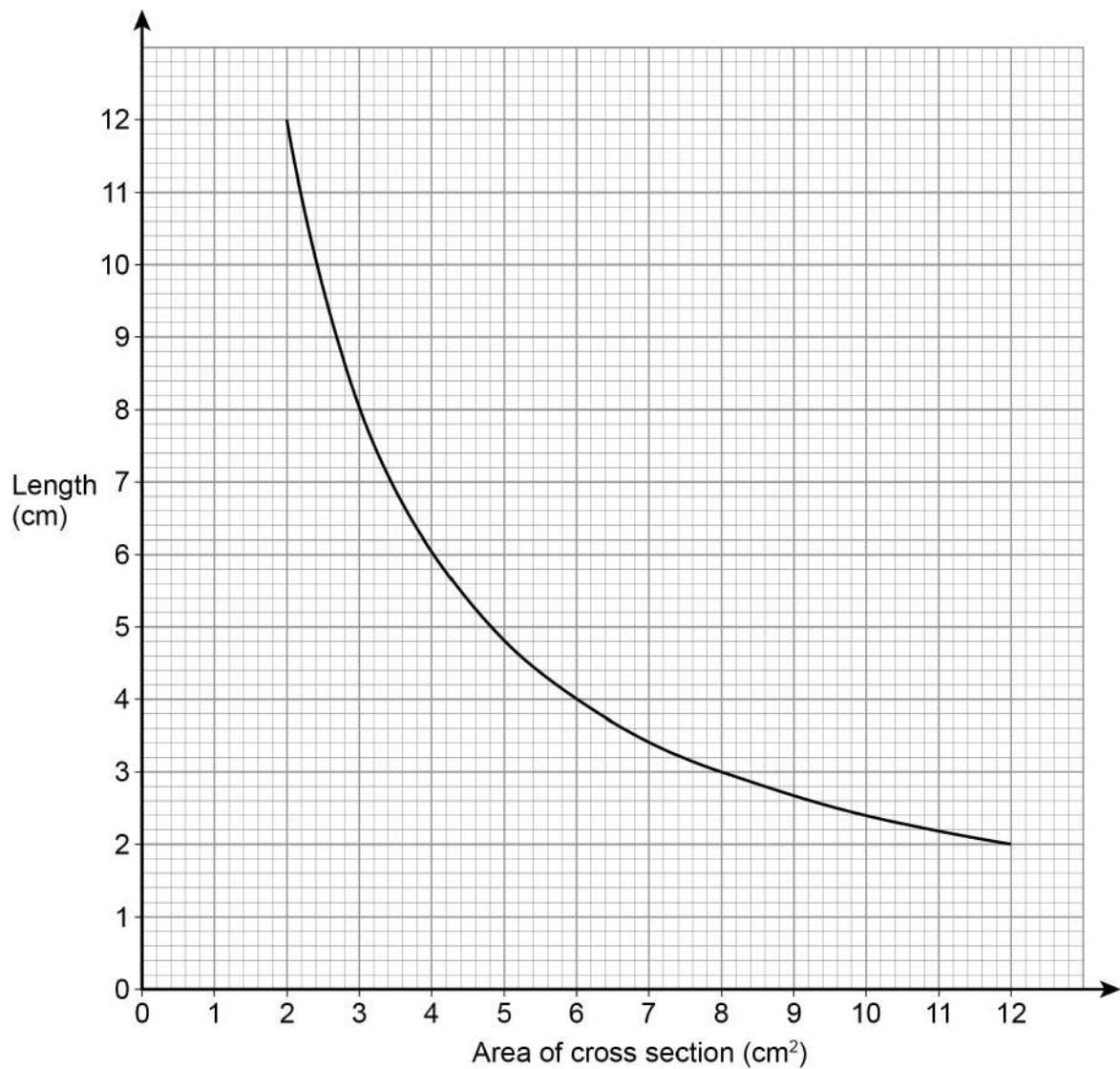
**Turn over for the next question**

|   |
|---|
| 7 |
|---|

**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]

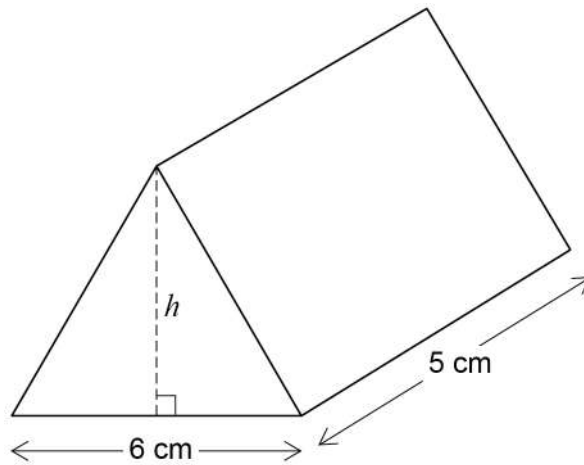
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- 25 (b)** The diagram shows a prism with volume  $24 \text{ cm}^3$   
The height of the triangular cross section is  $h$ .



Work out the height,  $h$ .

**[3 marks]**

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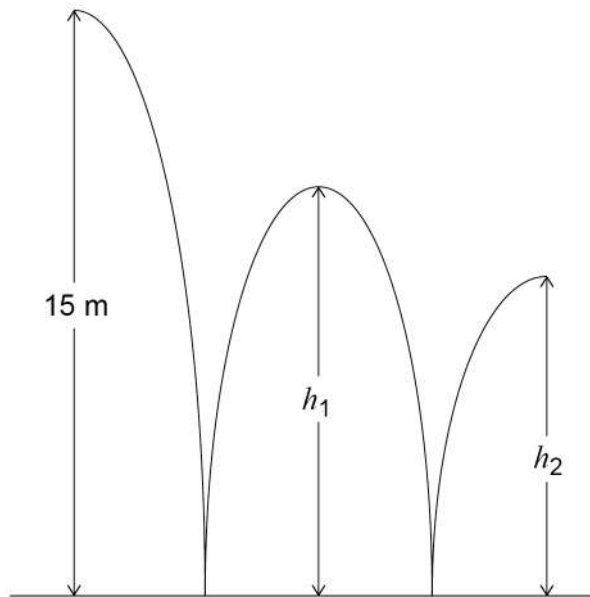
Answer \_\_\_\_\_ cm

**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.

Not drawn  
accurately

$h_1$  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]

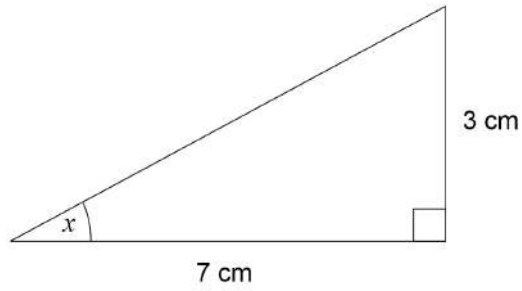
5                      8                      14                      23                      .....

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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