

Please write clearly in block capitals.

Centre number

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# GCSE MATHEMATICS

# F

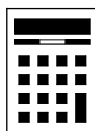
Foundation Tier      Paper 2 Calculator

Thursday 8 November 2018      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.
- 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 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	
26–27	
<b>TOTAL</b>	

## Advice

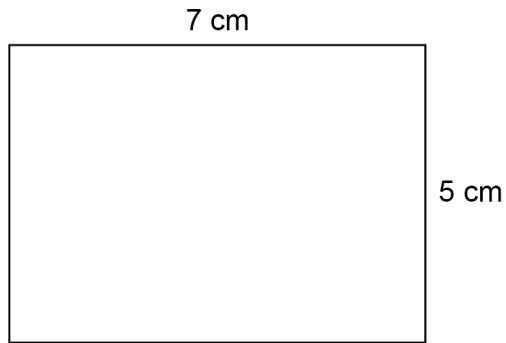
In all calculations, show clearly how you work out your answer.



Answer **all** questions in the spaces provided

- 1 Here is a rectangle.

Not drawn  
accurately



Work out the perimeter.

Circle your answer.

[1 mark]

12 cm

24 cm

35 cm

70 cm

- 2 Circle the number **greater** than  $-0.9$

[1 mark]

$-0.901$

$-0.89$

$-0.91$

$-\frac{9}{10}$



- 3 Simplify  $8x - 3 + 6x$   
Circle your answer.

[1 mark]

$2x - 3$

$11x$

$5 + 6x$

$14x - 3$

- 4 What is the angle of turn clockwise from South West to East?



Circle your answer.

[1 mark]

$45^\circ$

$135^\circ$

$225^\circ$

$315^\circ$

Turn over for the next question

Turn over ►



- 5** Lucy works for 37 hours per week.  
Her weekly wage is £303.40  
She receives a pay increase of 25p per hour.  
Work out her new weekly wage.

**[2 marks]**

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Answer £ \_\_\_\_\_



**6 (a)** Complete the bank statement.

**[3 marks]**

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/09/18	Starting balance			1140.79
06/09/18	Car repairs		256.00	_____
17/09/18	Gas bill		87.31	_____
24/09/18	Salary	2069.75		_____

**6 (b)** Write down the meaning of 'Debit' as used in the bank statement.

**[1 mark]**

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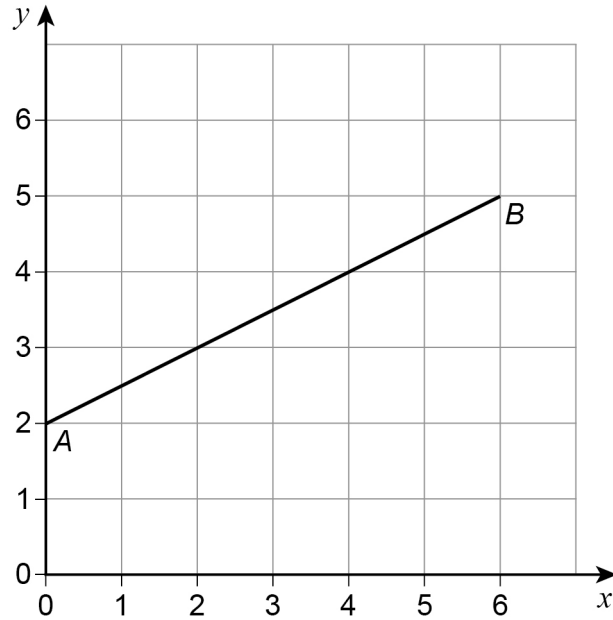
**Turn over for the next question**



7 Line  $AB$  is shown on the grid.

$A$  is the point  $(0, 2)$

$B$  is the point  $(6, 5)$



7 (a) Work out the coordinates of the midpoint of the line  $AB$ .

[1 mark]

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



- 7 (b)  $C$  is another point on  $AB$ .  
 $C$  is closer to  $B$  than to  $A$ .  
The coordinates of  $C$  are whole numbers.

Work out the coordinates of  $C$ .

[1 mark]

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

- 7 (c) On the grid, draw a line from point  $(0, 0)$  that is  
parallel to  $AB$   
and  
two thirds as long as  $AB$ .

[2 marks]

**Turn over for the next question**



8 Lena is at the gym.

8 (a) She will use each of these pieces of equipment once.

Rowing machine (R)      Stepper (S)

Treadmill (T)          Bike (B)

Lena will use the rowing machine **first**.

List all the possible orders in which she could use the four pieces of equipment.

**[2 marks]**





8 (b) The table shows how long Lena spends on each piece of equipment.

Rowing machine	15 minutes
Stepper	13 minutes
Treadmill	35 minutes
Bike	1 hour 30 minutes

Lena starts on the rowing machine at 1.50 pm  
She has a break for 4 minutes between pieces of equipment.

What time does she finish on her last piece of equipment?

**[3 marks]**

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Answer \_\_\_\_\_

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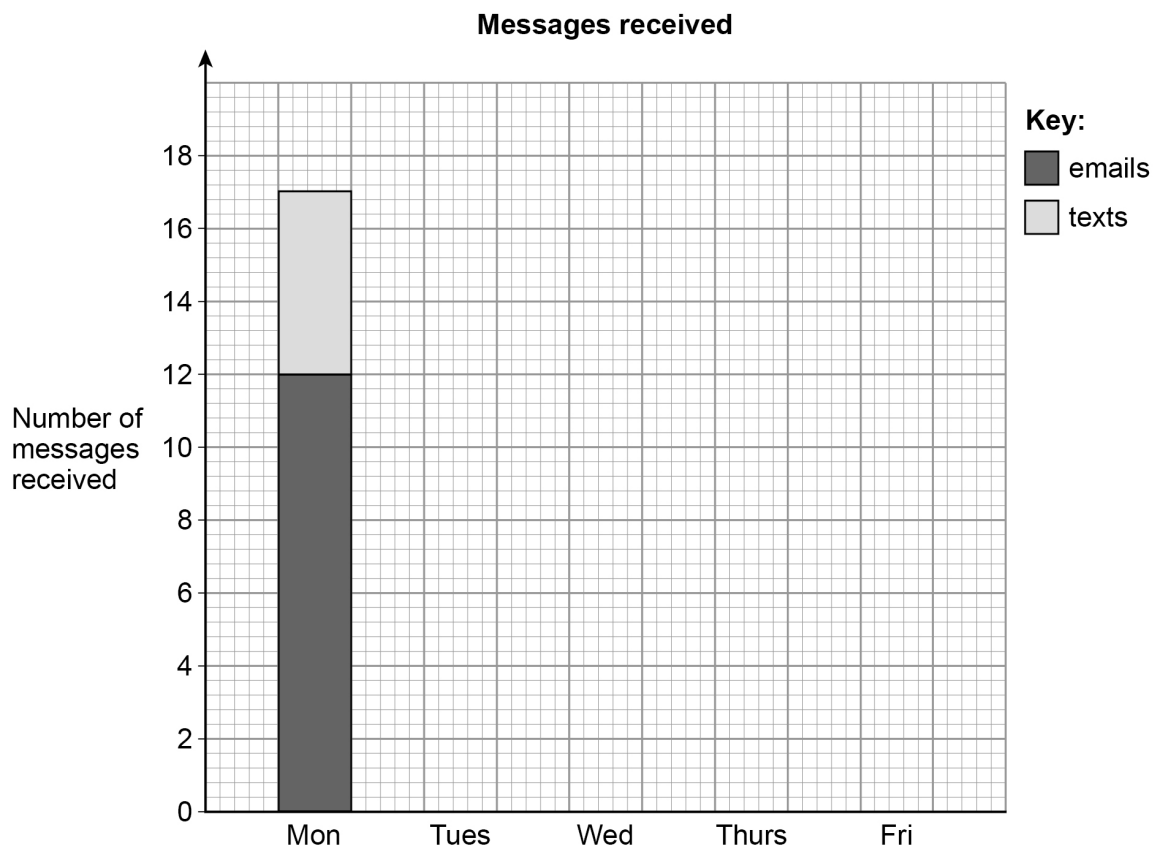
Turn over ►



- 9 The table shows the number of messages Sam received each day for five days.

	Messages	
	Number of emails	Number of texts
Monday	12	5
Tuesday	8	6
Wednesday	10	3
Thursday	6	6
Friday	12	4

- 9 (a) Sam draws a composite bar chart to represent the data.  
He has drawn the bar for Monday.



Complete the chart.

**[2 marks]**



- 9 (b)** In total, what fraction of the messages were emails?  
Give your answer in its simplest form.

**[3 marks]**

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Answer \_\_\_\_\_

- 10** Each side of a square is made 3 times as long.  
What happens to the perimeter?  
Circle your answer.

**[1 mark]**

× 3

× 6

× 9

× 12

**Turn over for the next question**



**11** Here is a list of ingredients needed to make 6 pancakes.

Flour	120 grams
Eggs	2
Milk	210 millilitres

**11 (a)** Complete the list of ingredients needed to make 9 pancakes.

**[3 marks]**

Flour	_____
Eggs	_____
Milk	_____

**11 (b)** Convert 210 millilitres to fluid ounces.

Use 1 fluid ounce = 28.4 millilitres

Give your answer to 1 decimal place.

**[2 marks]**

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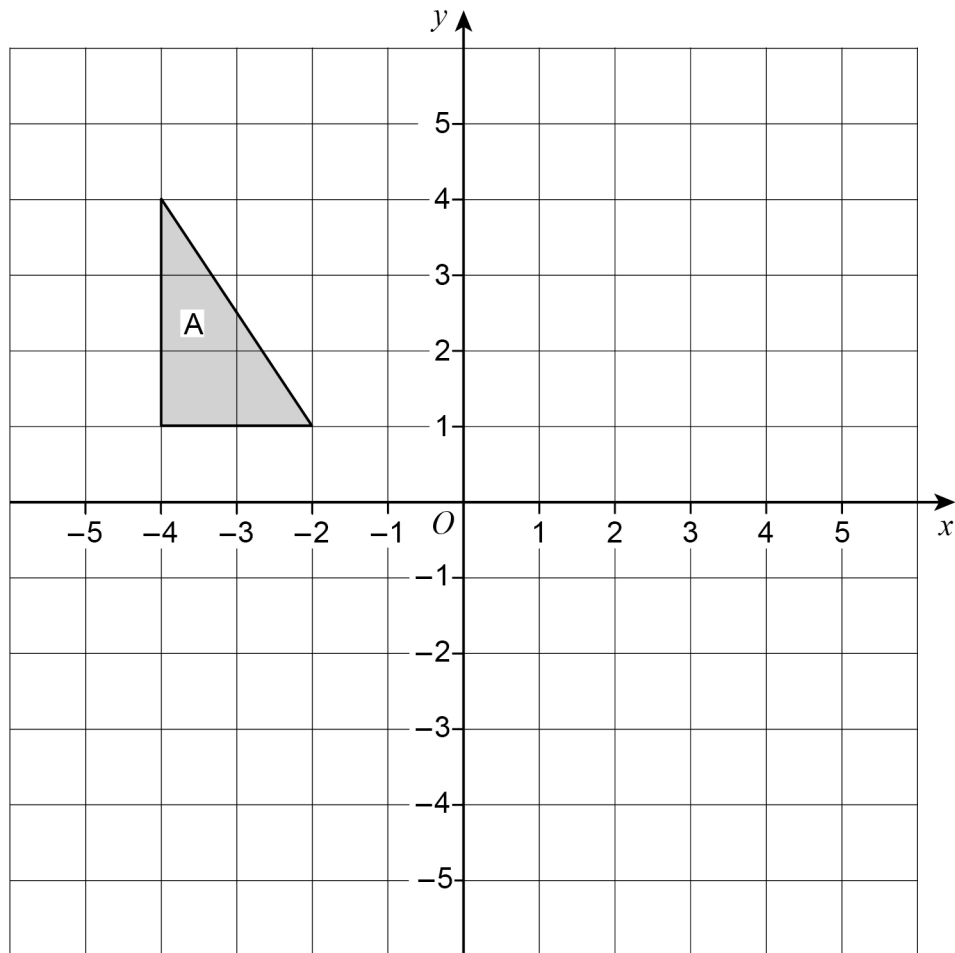
Answer \_\_\_\_\_ fluid ounces



12

Reflect shape A in the  $x$ -axis.

[2 marks]



Turn over for the next question

Turn over ►



- 13** A charity sends an appeal letter to 3000 people.  
The letter asks for a donation of money.

Here is some information about the last appeal letter the charity sent out.

$\frac{1}{2}$  of the people who were sent the letter made a donation.

The average donation was £8.60

$\frac{1}{3}$  of the people who made a donation filled in a tax form.

The government adds 25% to the donations of these people.

- 13 (a)** Using this information,  
work out the amount the charity can expect to receive from this appeal.

**[6 marks]**

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Answer £ \_\_\_\_\_



**13 (b)** The average donation from the people who filled in a tax form was more than £8.60

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

Tick **one** box.

It should be lower

It should be higher

It should stay the same

Give a reason.

[1 mark]

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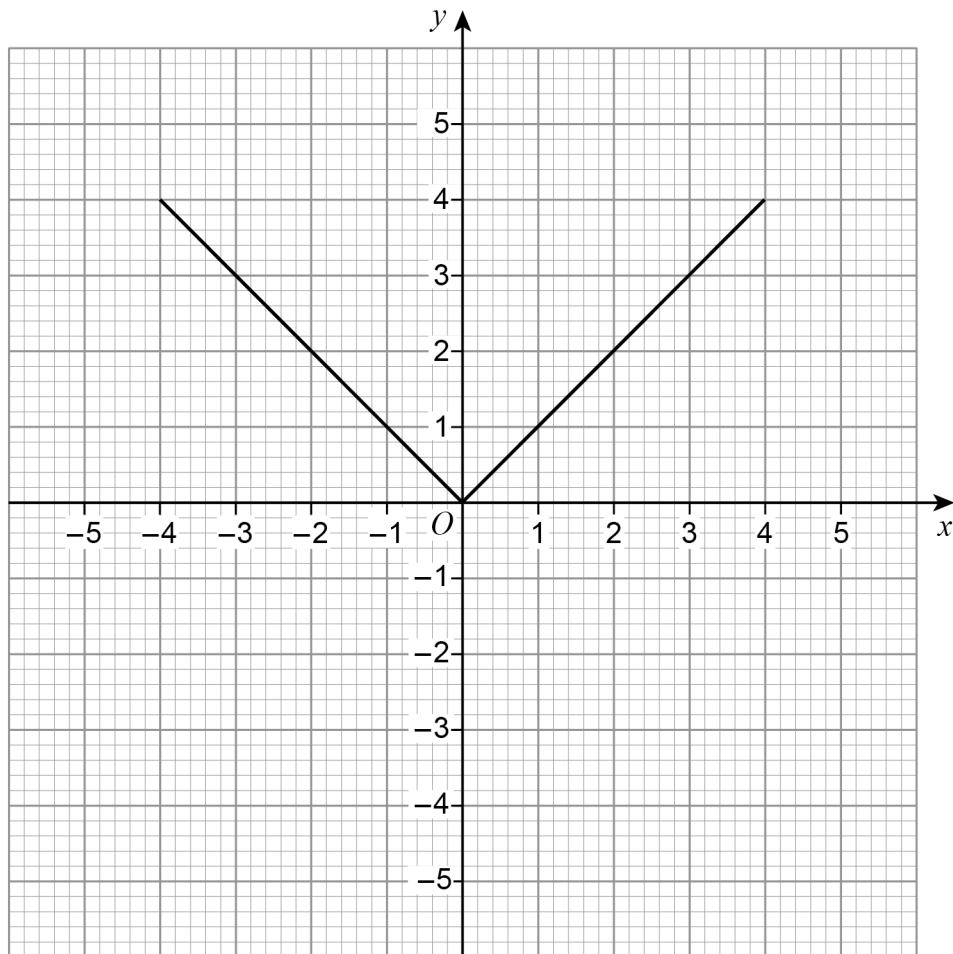
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**Turn over for the next question**



14 Lee wants to draw the graph of  $y = x$  for values of  $x$  from  $-5$  to  $5$

Here is his graph.



Make two **different** criticisms of his graph.

[2 marks]

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

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_





- 15** A company uses this formula to work out the cost, £ $A$ , of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

$m$  is the number of miles travelled

£ $b$  is a charge for booking online

- 15 (a)** Clare books a taxi online and travels 8 miles.  
She pays £20 altogether.

How much is the charge for booking online?

**[3 marks]**

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Answer £ \_\_\_\_\_

- 15 (b)** A different company  
has a fixed charge of £3  
charges £1.90 per mile  
has no charge for booking online.

Write a formula for the cost, £ $C$ , of a taxi ride with this company.

**[1 mark]**

Answer \_\_\_\_\_



- 16 What does  $(A \cap B)$  represent in  $P(A \cap B)$ ?  
Circle your answer.

[1 mark]

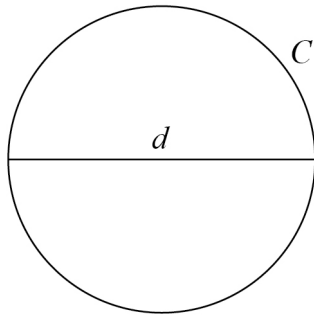
A or B or both

A but not B

not A and not B

A and B

- 17 A circle has circumference  $C$  and diameter  $d$ .



$$C = kd$$

What **value** does the constant  $k$  represent?

[1 mark]

Answer \_\_\_\_\_



18 There are 240 cows on a farm.

18 (a) On the farm,  
number of bulls : number of cows = 1 : 30

How many bulls are there?

[1 mark]

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Answer \_\_\_\_\_

18 (b) Assume  
the 240 cows produce milk for 10 months each year  
each cow produces an average of 25 litres of milk per **day**.  
Estimate the total milk production, in litres, of the 240 cows in one year.  
You **must** show your working.

[4 marks]

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Answer \_\_\_\_\_ litres

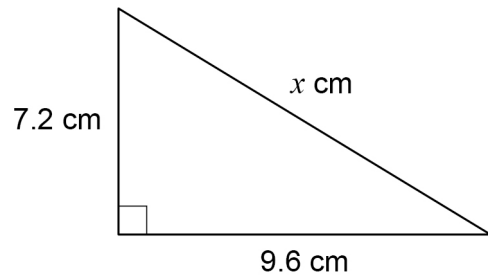
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Turn over ►



19

Here is a right-angled triangle.

Not drawn  
accuratelyShow that  $x = 12$ **[2 marks]**

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20 Work out the values of  $a$  and  $b$  in the identity

$$5(7x + 8) + 3(2x + b) \equiv ax + 13$$

[4 marks]

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$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}}$$

21 The first four terms of a linear sequence are

7      11      15      19

Circle the expression for the  $n$ th term.

[1 mark]

$n + 6$

$4n + 3$

$7n + 4$

$n + 4$

      
7

Turn over ►



22 Here is some information about 20 trains leaving a station.

Number of minutes late, $t$	Number of trains	Midpoint	
$0 \leq t < 5$	12		
$5 \leq t < 10$	7		
$10 \leq t < 15$	1		
$t \geq 15$	0		

22 (a) Work out an estimate of the mean number of minutes late.

[3 marks]

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



22 (b) The station manager looks at the information in more detail.

Number of minutes late, $t$	Number of trains
$0 \leq t < 2$	12
$2 \leq t < 4$	0
$4 \leq t < 6$	7
$6 \leq t < 8$	0
$8 \leq t < 10$	0
$10 \leq t < 12$	1

He works out an estimate of the mean using this information.

How does his estimate compare with the answer to part (a)?

Tick **one** box.

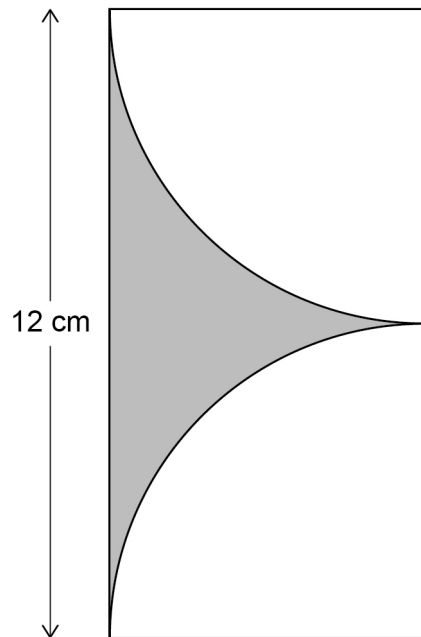
[1 mark]

- Higher than part (a)
- Same as part (a)
- Lower than part (a)
- Not possible to tell



23

Two identical quarter circles are cut from a rectangle as shown.



Not drawn  
accurately

Work out the shaded area.

[4 marks]

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Answer \_\_\_\_\_  $\text{cm}^2$





24

The diagrams show the position of a tap when off and fully on.

The tap is fully on when the angle of turn is  $180^\circ$

Off



Fully on



When fully on, water flows out of the tap at 14 litres per minute.

The rate at which water flows out is in direct proportion to the angle of turn.

The tap is turned  $135^\circ$



The water flows into a tank with a capacity of 79.8 litres.

Will it take **less than**  $7\frac{1}{2}$  minutes to fill the tank?

You **must** show your working.

[4 marks]

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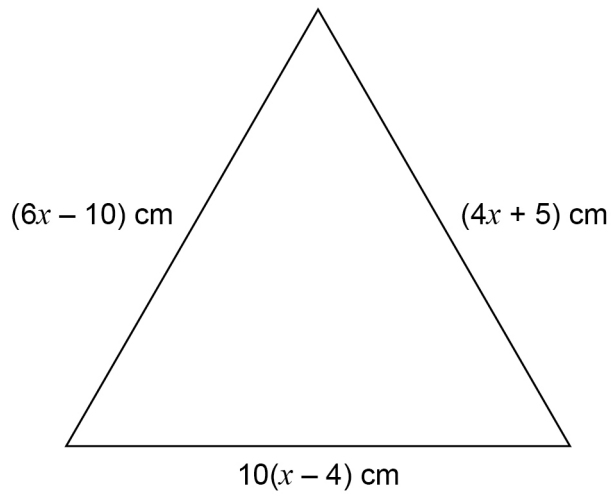
8

Turn over ►



25

This triangle is equilateral.

Not drawn  
accurately

Is the perimeter of the triangle greater than one metre?

You **must** show your working.**[5 marks]**

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26 An approximation for the value of  $\pi$  is given by

$$4\left(1 - \frac{22}{57} + \frac{22}{85} - \frac{22}{105} + \frac{22}{117} - \frac{22}{242}\right)$$

Use your calculator to show that this approximation is within 0.1 of 3.14

[2 marks]

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27 Work out

$$\frac{9.12 \times 10^{10}}{3.2 \times 10^4}$$

Give your answer in standard form.

[2 marks]

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Answer \_\_\_\_\_

**END OF QUESTIONS**



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outside the  
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ANSWER IN THE SPACES PROVIDED**

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