



Surname \_\_\_\_\_

Other Names \_\_\_\_\_

Centre Number \_\_\_\_\_

Candidate Number \_\_\_\_\_

Candidate Signature \_\_\_\_\_

**GCSE**

**MATHEMATICS**

**F**

Foundation Tier      Paper 3 Calculator

**8300/3F**

Tuesday 12 June 2018

Morning

Time allowed: 1 hour 30 minutes

**For this paper you must have:**

- a calculator
- mathematical instruments.



**At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.**

**[Turn over]**



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## 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 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.

## ADVICE

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

**DO NOT TURN OVER UNTIL TOLD TO DO SO**



Answer ALL questions in the spaces provided

1 Circle the value of the digit 7 in 9.17 [1 mark]

$$\frac{1}{70}$$

$$\frac{1}{7}$$

$$\frac{7}{10}$$

$$\frac{7}{100}$$

2 Solve  $3x = 2$

Circle your answer. [1 mark]

$$x = -1$$

$$x = \frac{2}{3}$$

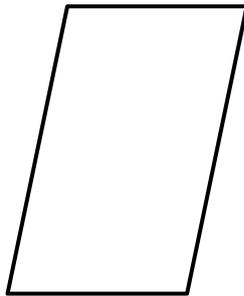
$$x = \frac{3}{2}$$

$$x = 6$$

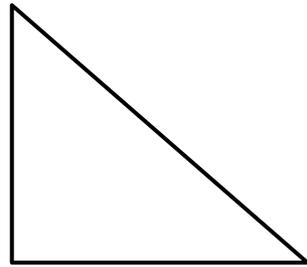


- 3 Which of these shapes has NO lines of symmetry?  
Circle the correct letter. [1 mark]

A



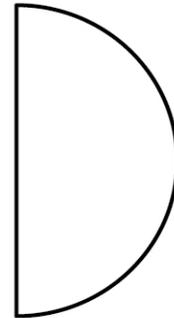
B



C



D



- 4 Circle the shortest length. [1 mark]

1200 cm

0.13 km

110 m

140 000 mm

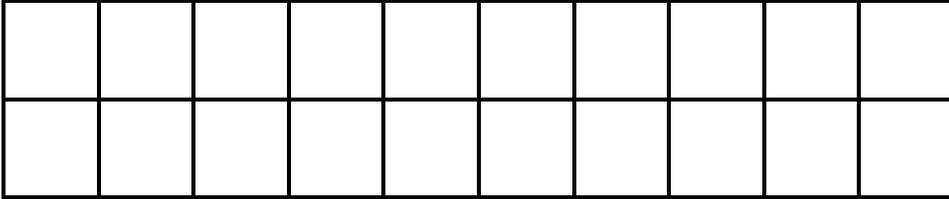
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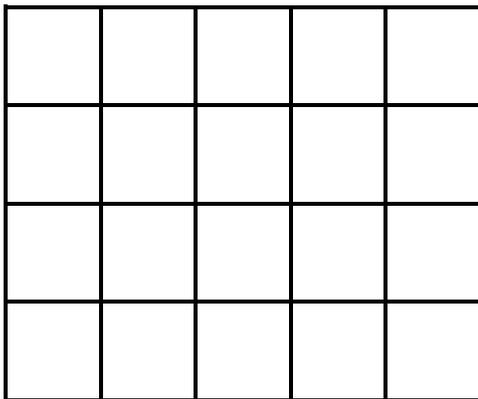
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5 (a) Shade  $\frac{2}{5}$  of this grid. [1 mark]



5 (b) Shade 10% of this grid. [1 mark]



[Turn over]



**6 Saj wants to go to all 19 home games at a football club.**

**For each game, a ticket costs £28**

**A season ticket costs £379**

**and**

**gives entry to all 19 home games.**

**In total, how much does Saj save by buying a season ticket? [3 marks]**

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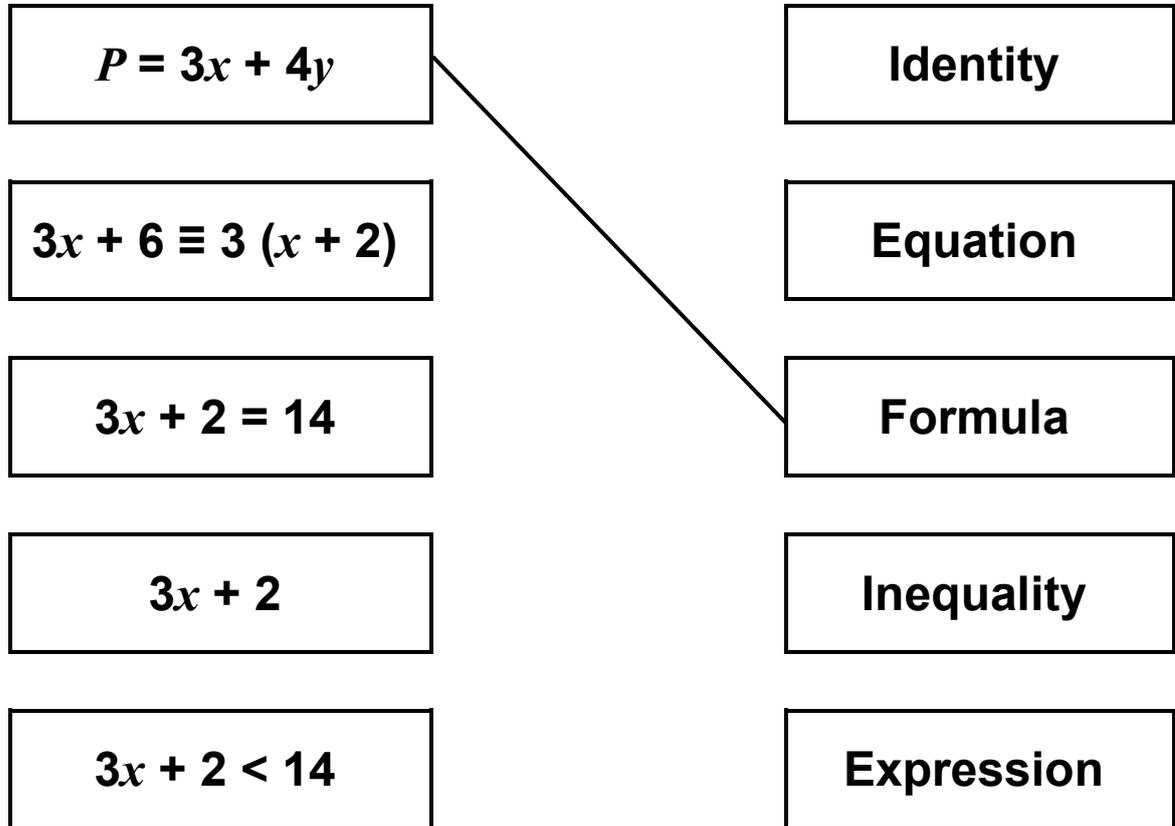
**Answer £** \_\_\_\_\_

**[Turn over]**



7 Link the algebra to the correct description.

One has been done for you. [3 marks]



6



8 Jim has six banknotes.  
The value of each note is £5 or £10 or £20  
He CAN make £20 with three notes.  
He CAN make £55 with four notes.  
He CANNOT make £25 with three notes.  
He CANNOT make £25 with four notes.  
List the six notes. [2 marks]

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£ \_\_\_\_\_ £ \_\_\_\_\_ £ \_\_\_\_\_  
£ \_\_\_\_\_ £ \_\_\_\_\_ £ \_\_\_\_\_

[Turn over]



9 A music app has a shuffle play function.

This means that songs are played in a random order **WITHOUT REPEAT**.

9 (a) Ruth puts 10 songs on shuffle play.

One of them is her favourite song.

Write down the probability that her favourite song plays first. [1 mark]

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Answer 

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9 (b) Ted puts songs A, B and C on shuffle play.

List all the possible orders of songs A, B and C.

One has been done for you. [2 marks]

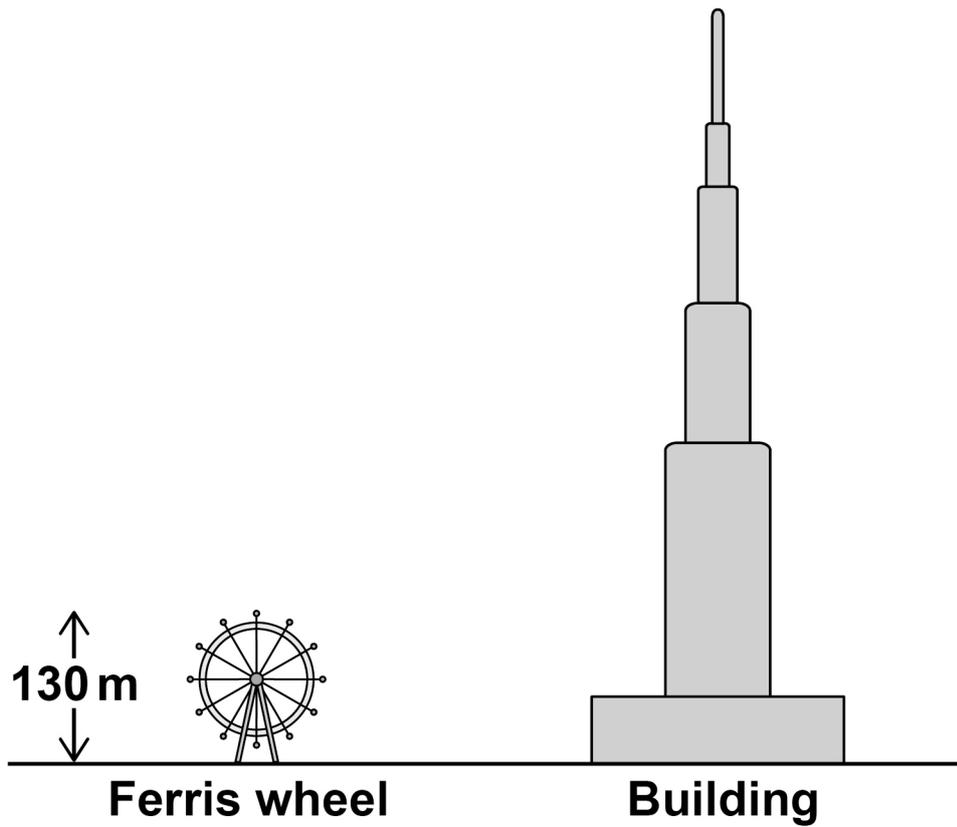
A B C

[Turn over]

5



10 Here is a scale drawing.



The Ferris wheel has a height of 130 m

Work out the height of the building. [3 marks]

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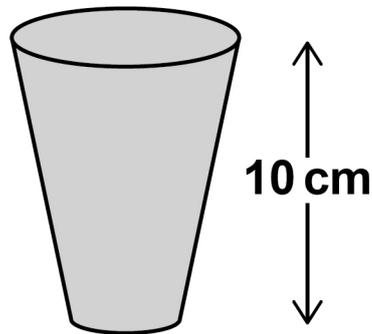
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Answer \_\_\_\_\_ m

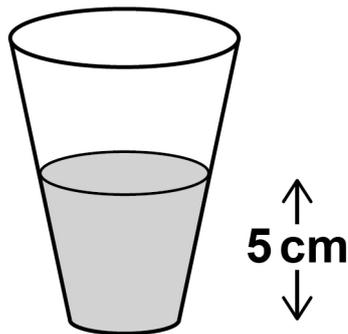
[Turn over]



11 Jo has a full cup of coffee.



She drinks some of it.



She says,

“Half of the coffee is still in the cup, because 5 cm is half of 10 cm”

Is she correct?

Tick a box.

Yes

No

Give a reason for your answer. [1 mark]



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[Turn over]

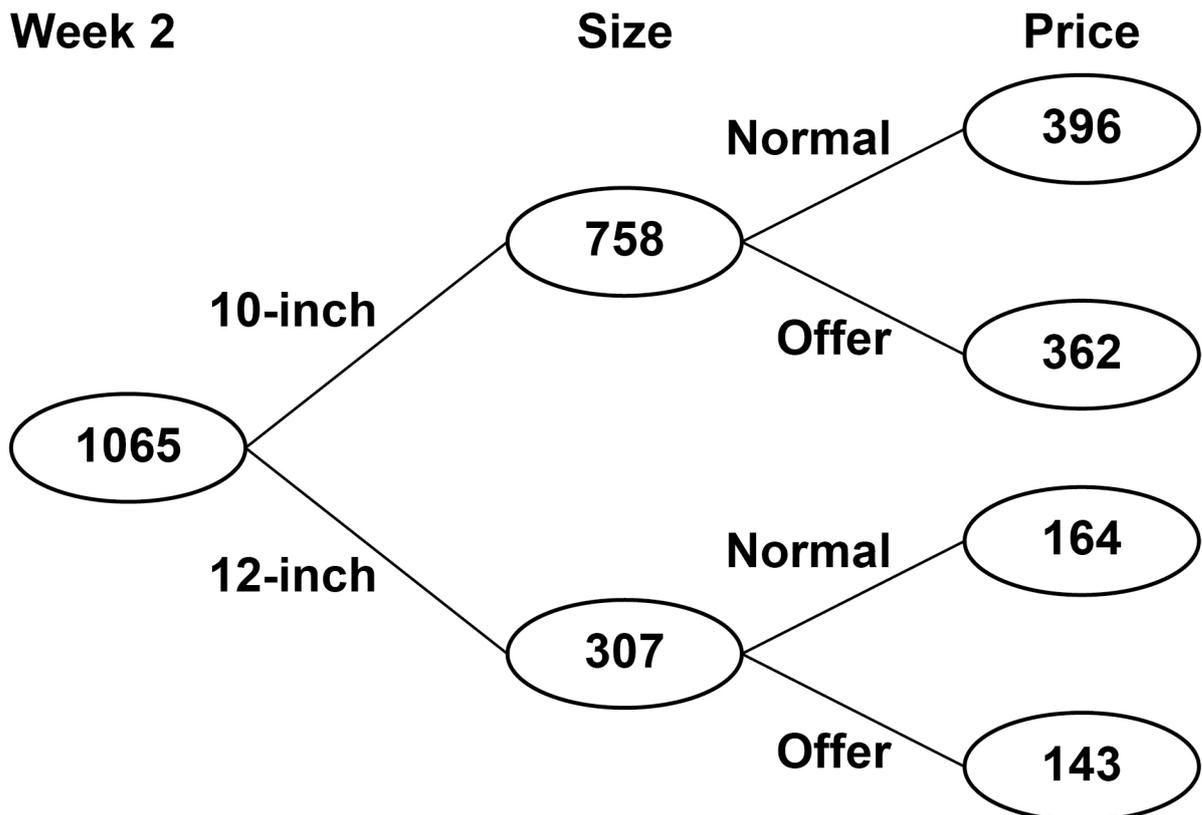
4



- 12 A takeaway sells 10-inch pizzas and 12-inch pizzas. Here is some information about the numbers sold in two weeks.

**Week 1**

<b>10-inch</b>	<b>512</b>
<b>12-inch</b>	<b>231</b>
<b>Total</b>	<b>743</b>

**Week 2**

**12 (a) In each week a proportion of the pizzas sold were 10-inch.**

**In which week was this proportion greater?**

**Show working to support your answer. [2 marks]**

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**Answer** \_\_\_\_\_

**[Turn over]**

- 12 (b) The table shows the profit or loss the takeaway makes on each pizza.

	Normal price	Offer price
10-inch	£3.74 profit	51p loss
12-inch	£5.29 profit	4p loss

In week 1 the total profit was £1895.55

At the end of week 1 the takeaway spent £175 on adverts.

Was the INCREASE in profit in week 2 more than the cost of the adverts?

You MUST show your working. [4 marks]

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13 A car travels 3.5 miles in 5 minutes.

Work out the average speed in miles per hour.  
[3 marks]

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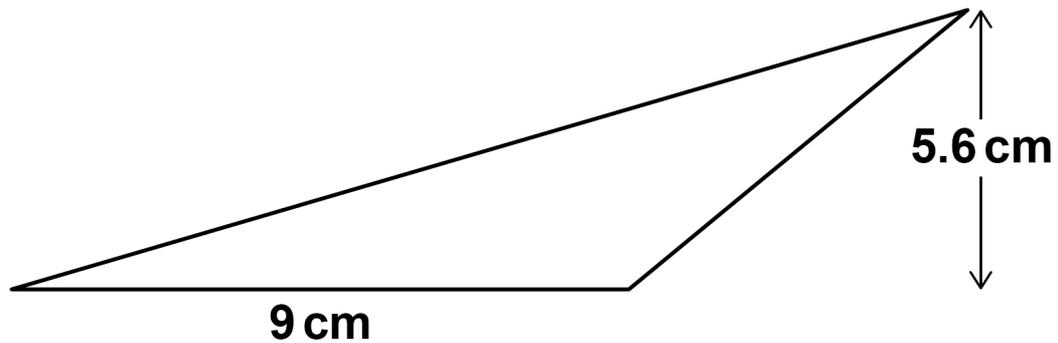
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Answer \_\_\_\_\_ mph



- 14 A triangle has base 9 cm and perpendicular height 5.6 cm

The diagram is not drawn accurately.



Work out the area of the triangle.  
[2 marks]

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

[Turn over]





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**Answer** \_\_\_\_\_

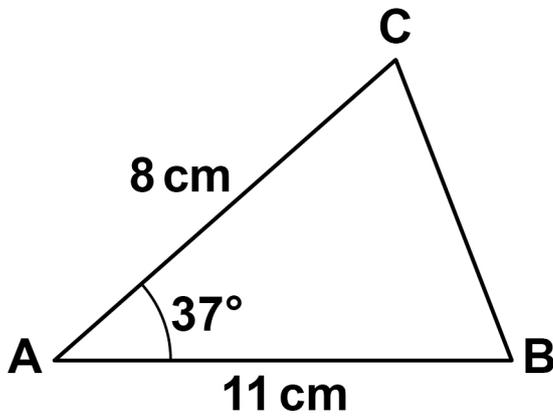
8

**[Turn over]**



16 A sketch of triangle  $ABC$  is shown.

The diagram is not drawn accurately.



In the space below, complete an accurate drawing of triangle  $ABC$ . [2 marks]

A \_\_\_\_\_ B



17 Simplify  $7x - (3x - 2x)$

Circle your answer. [1 mark]

$7x - 1$

$2x$

$6x$

$8x$

18 A competition  
took place in 1983  
takes place every six years.

Circle the year in which it will also take place.  
[1 mark]

2083

2036

2049

2023

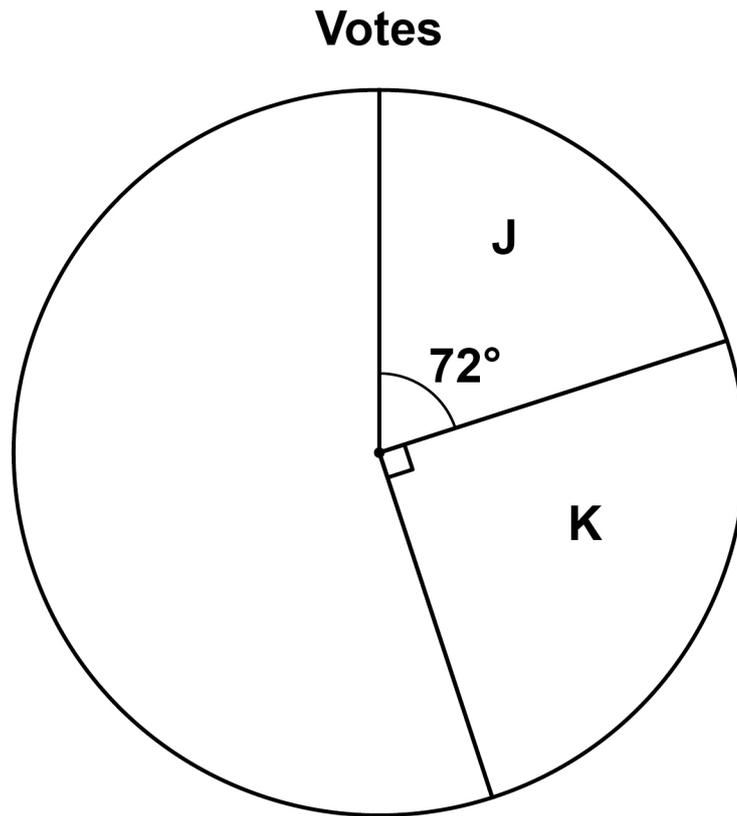
[Turn over]

4



- 19 In an election there were four candidates, J, K, L and M.

Fran is drawing a pie chart to show the results.  
The sectors for J and K have been drawn.



- 19 (a) Twice as many people voted for L as voted for M.  
Complete the pie chart. [3 marks]

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**19 (b) Altogether, 16 200 people voted.  
How many voted for J? [2 marks]**

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**Answer** \_\_\_\_\_

**[Turn over]**



- 20 The probability that A is the outcome of an experiment is 0.2

Circle the probability that A is NOT the outcome.  
[1 mark]

0                      0.2                      0.5                      0.8

- 21 Rearrange  $e = 2f$  to make  $f$  the subject.

Circle your answer. [1 mark]

$$f = 2e$$

$$f = \frac{2}{e}$$

$$f = e - 2$$

$$f = \frac{e}{2}$$

7



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**[Turn over]**







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22 (b) A different sequence follows the same rule.

The 1st term is 4

The 3rd term is 9.5

4      \_\_\_\_\_      9.5

Work out the 2nd term. [3 marks]

Answer \_\_\_\_\_

[Turn over]

6



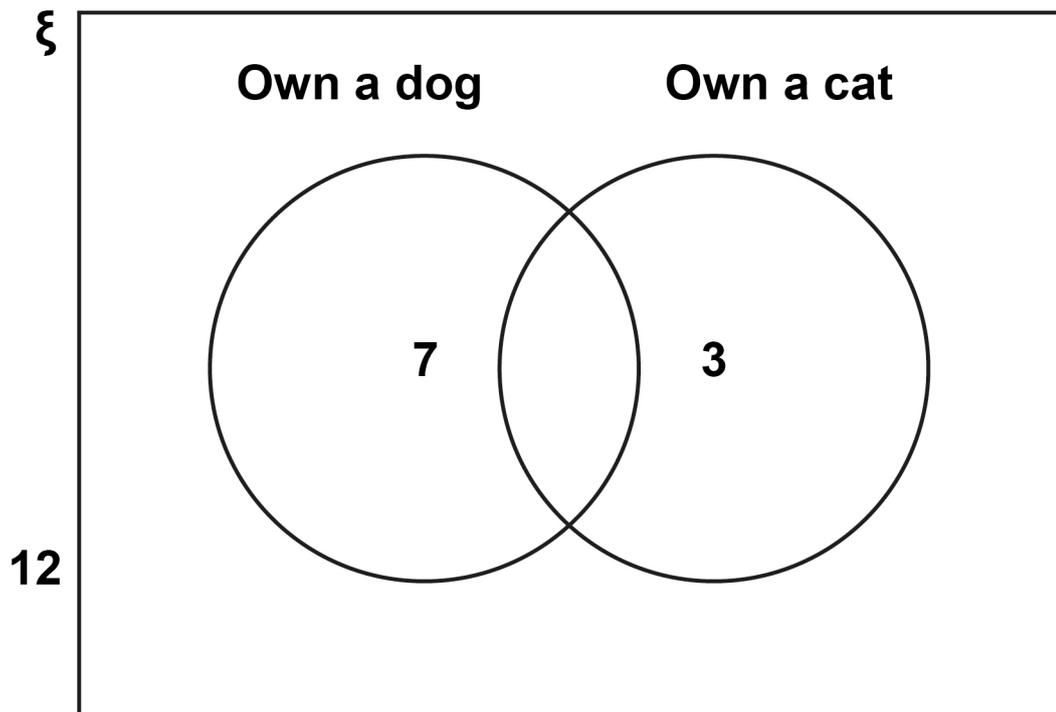
23 In a group of 20 people

7 own a dog

3 own a cat

12 do not own a dog or a cat.

Aidan shows this information on a Venn diagram.



**Make TWO criticisms of his Venn diagram.  
[2 marks]**

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

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

**[Turn over]**





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**[Turn over]**





Work out the values of  $x$ ,  $h$  and  $w$ . [3 marks]

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

$h =$  \_\_\_\_\_ cm

$w =$  \_\_\_\_\_ cm

[Turn over]



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26

**Investment A**

**Save £150 per month for 2 years.**

**2.5% interest is added to the total amount saved.**

**Investment B**

**Invest £3500**

**Compound interest is added at 3% per year.**

**After 2 years, how much MORE is investment B worth than investment A? [4 marks]**

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**Answer £** \_\_\_\_\_

7

[Turn over]







28

The cost of a ticket increases by 10% to £19.25

Work out the original cost. [3 marks]

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Answer £ \_\_\_\_\_

8





$$30 \quad \mathbf{a} = \begin{pmatrix} 6 \\ -10 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \quad \mathbf{c} = \begin{pmatrix} -4 \\ 7 \end{pmatrix}$$

30 (a) Work out  $\mathbf{a} + \mathbf{b} + \mathbf{c}$  [2 marks]

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Answer  $\left( \quad \right)$



30 (b) Show that  $a + 2c = kb$ , where  $k$  is an integer.  
[2 marks]

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7

**END OF QUESTIONS**



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For Examiner's Use	
Pages	Mark
4–7	
8–10	
11–13	
14–17	
18–21	
22–25	
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40–43	
44–46	
47–49	
<b>TOTAL</b>	

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