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Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

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

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

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

I declare this is my own work.

**GCSE  
MATHEMATICS**

**F**

Foundation Tier      Paper 1 Non-Calculator  
**8300/1F**

**Tuesday 1 November 2022**

**Morning**

**Time allowed: 1 hour 30 minutes**

**At the top of the page, write your surname and forename(s), your centre number, your candidate number and add your signature.**

**[Turn over]**

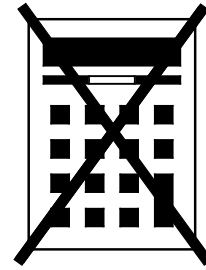


N 0 V 2 2 8 3 0 0 1 F 0 1

## MATERIALS

For this paper you must have:

- mathematical instruments
- the Formulae Sheet (enclosed).



You must **NOT** use a calculator.

## 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.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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 length of time between 4.00 pm and 5.05 pm  
[1 mark]

55 min

65 min

105 min

125 min

- 2 A circle has diameter 10 cm

Circle the radius. [1 mark]

5 cm

10 cm

20 cm

100 cm

- 3 Circle the percentage that is between  $\frac{1}{2}$  and  $\frac{3}{4}$   
[1 mark]

40%

60%

80%

90%



4 Circle the value of  $3^2 + 4^2$  [1 mark]

14

17

25

49

5 Simplify fully  $8a + 5b + 6a - 2b$  [2 marks]

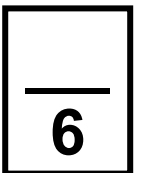
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Answer \_\_\_\_\_

[Turn over]



- 6 200 students were each asked about the monthly cost of their phone contract.

Here are the results.

|                  | Less than £25 | £25 or over |
|------------------|---------------|-------------|
| School students  | 40            | 90          |
| College students | 32            | 38          |

- 6 (a) How many MORE school students than college students were asked? [2 marks]

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Answer

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6 (b) What percentage of the 200 students had a monthly cost LESS THAN £25 ? [2 marks]

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

[Turn over]



7 The only animals on a farm are 30 cows and 80 sheep.

$\frac{1}{5}$  of the 30 cows are sold

and

$\frac{5}{8}$  of the 80 sheep are sold.

Work out the TOTAL number of animals that are sold.  
[3 marks]

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





8 Some gamers were asked which type of video game they preferred.

65% said Action.

19% said Role-playing.

The rest said Sports.

What percentage said Sports? [2 marks]

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

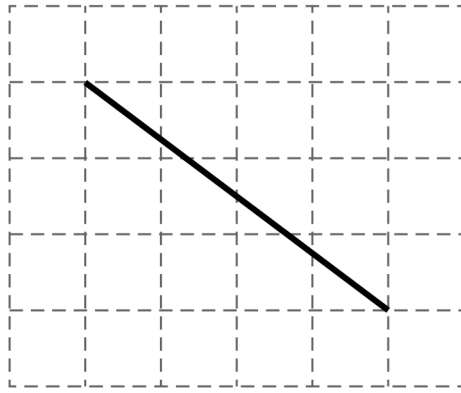
[Turn over]

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- 9 (a) A diagonal of a rectangle is drawn on a centimetre grid.

The sides of the rectangle are on the grid lines.



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

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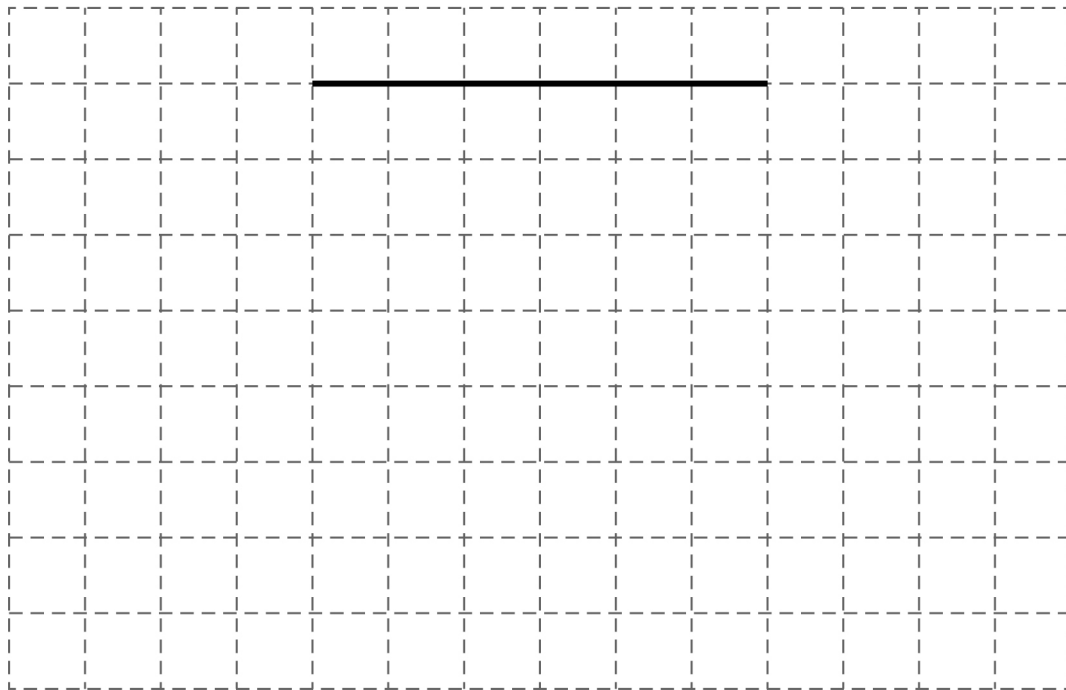
Answer \_\_\_\_\_  $\text{cm}^2$



- 9 (b) One side of a parallelogram is drawn on this centimetre grid.

The parallelogram does NOT have any right angles.

Complete the parallelogram so that it has area  $24 \text{ cm}^2$  [2 marks]

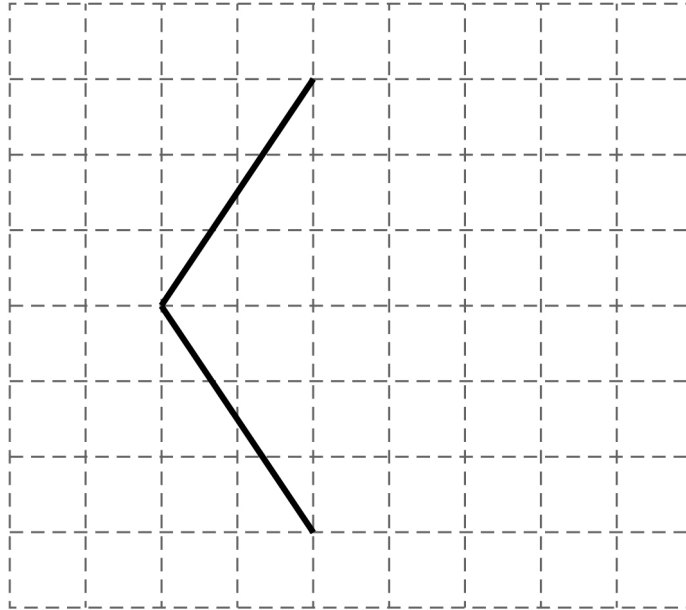


[Turn over]



9 (c) Two sides of a rhombus are drawn on this grid.

Complete the rhombus. [1 mark]



10 Here is a calculation.

$$428 \times 30 = 12\,840$$

Use the calculation to help answer the following questions.

10 (a) Write down the answer to  $12\,840 \div 428$   
[1 mark]

Answer \_\_\_\_\_

10 (b) Circle the answer to  $214 \times 30$  [1 mark]

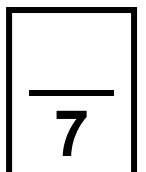
1284

3210

6420

25 680

[Turn over]



11 A shop sells notebooks and pencils.

**NOTEBOOKS**

**Pack of 8 for £12**

**PENCILS**

**56p each**

**or**

**Pack of 6 for £2.70**

11 (a) Marek buys some **PACKS** of notebooks.

**The cost is £60**

**In total, how many NOTEBOOKS does he buy?  
[2 marks]**

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

**11 (b) Work out the cheapest cost of 10 pencils.  
[3 marks]**

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**Answer £** \_\_\_\_\_

**[Turn over]**







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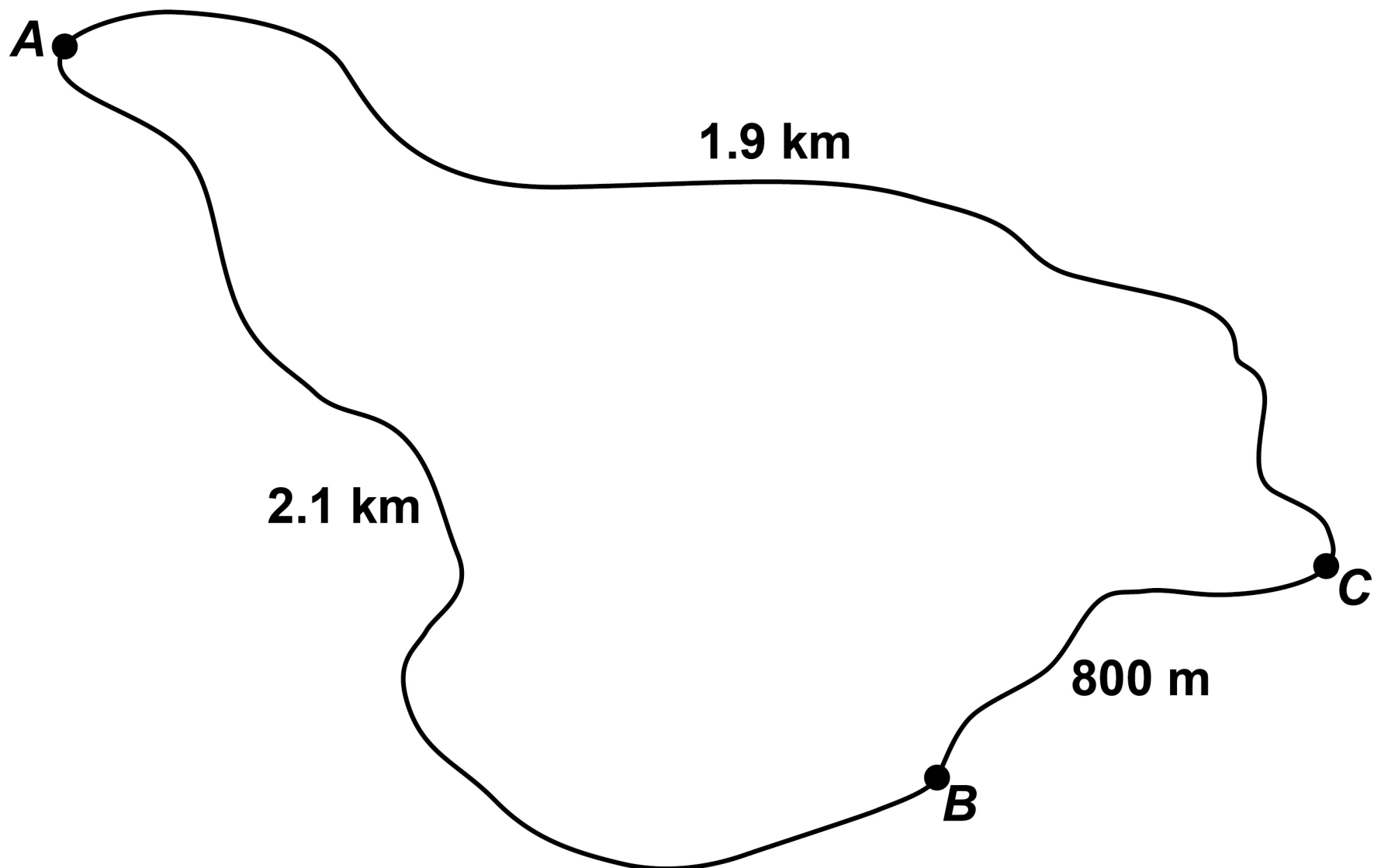
**[Turn over]**



12 (a) *A*, *B* and *C* are connected by paths.

The length of each path is shown.

The diagram is not drawn accurately.



Nathan and Sue each walk from *A* to *B*.

Nathan walks along the path  $A \longrightarrow B$

Sue walks along the paths  $A \longrightarrow C \longrightarrow B$



How much FURTHER does Sue walk than Nathan?

Give your answer in kilometres. [3 marks]

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Answer \_\_\_\_\_ km

[Turn over]





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

13 Emma tries to simplify  $cd \times 2$

Here is her method.

$$c \times 2 = 2c$$

$$d \times 2 = 2d$$

$$2c \times 2d = 4cd$$

What is wrong with her method? [1 mark]

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[Turn over]

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

**[Turn over]**







15 (b) Solve  $\frac{2x}{5} = 14$  [2 marks]

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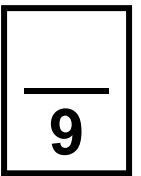
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$x =$  \_\_\_\_\_

[Turn over]





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

**[Turn over]**



16 (b) A different bag, C, is empty.

The 28 red discs from A are put into C.

The 20 green discs from B are also put into C.

One disc is now picked at random from each bag.

Complete each statement. [3 marks]

The probability of red from A is \_\_\_\_\_

The probability of red from B is \_\_\_\_\_

The probability of red from C is \_\_\_\_\_



17 What is  $\frac{1}{20}$  as a decimal?

Circle your answer. [1 mark]

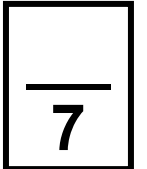
0.2

0.05

0.02

0.005

[Turn over]





19  $n$  is an odd number.

Why is  $n(n + 1)$  always an even number?  
[2 marks]

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[Turn over]



- 20 Here is some information about the time spent on social media by 40 women and 40 men last week.

| Time spent, $t$ (hours) | Number of women | Number of men |
|-------------------------|-----------------|---------------|
| $2 < t \leq 5$          | 12              | 10            |
| $5 < t \leq 8$          | 11              | 17            |
| $8 < t \leq 11$         | 14              | 9             |
| $11 < t \leq 14$        | 2               | 4             |
| $14 < t \leq 17$        | 1               | 0             |

Tick ONE box for each statement. [3 marks]

|   | Definitely true          | Might be true            | Cannot be true           |
|---|--------------------------|--------------------------|--------------------------|
| Three of the <b>WOMEN</b> spent more than 11 hours on social media. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The range for the <b>MEN</b> is 15 hours.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The women have a higher median than the men.                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





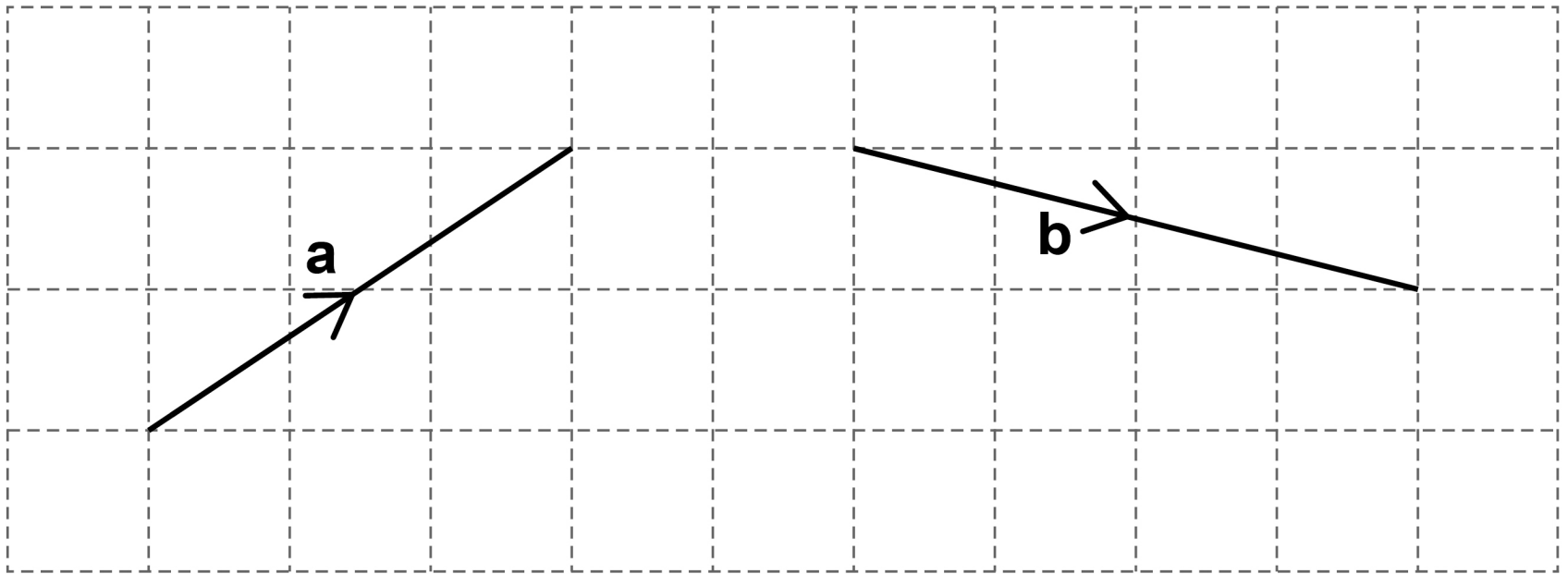
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**[Turn over]**



21 The diagram shows the vectors  $a$  and  $b$ .

As a column vector  $a = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$



21 (a) What is  $b$  as a column vector? [2 marks]

Answer  $\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$

21 (b) Work out  $4a$  as a column vector. [1 mark]

Answer  $\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$



$$21 \text{ (c)} \quad \mathbf{a} + \mathbf{c} = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$$

Work out  $\mathbf{c}$  as a column vector.

Circle your answer. [1 mark]

$$\begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} -2 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ -2 \end{pmatrix}$$

[Turn over]



22 Work out  $\left(\frac{7}{10} - \frac{4}{15}\right) \div \frac{2}{3}$

Give your answer as a fraction. [3 marks]

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

**[Turn over]**



- 23 Work out all the INTEGER values of  $x$  for which  
 $12 \leq 4x < 25$  [2 marks]

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Answer \_\_\_\_\_

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**[Turn over]**



24 Here is some information about 120 people who visit a shop.

$\frac{3}{4}$  of the people buy neither a coat nor a dress.

19 people buy a coat.

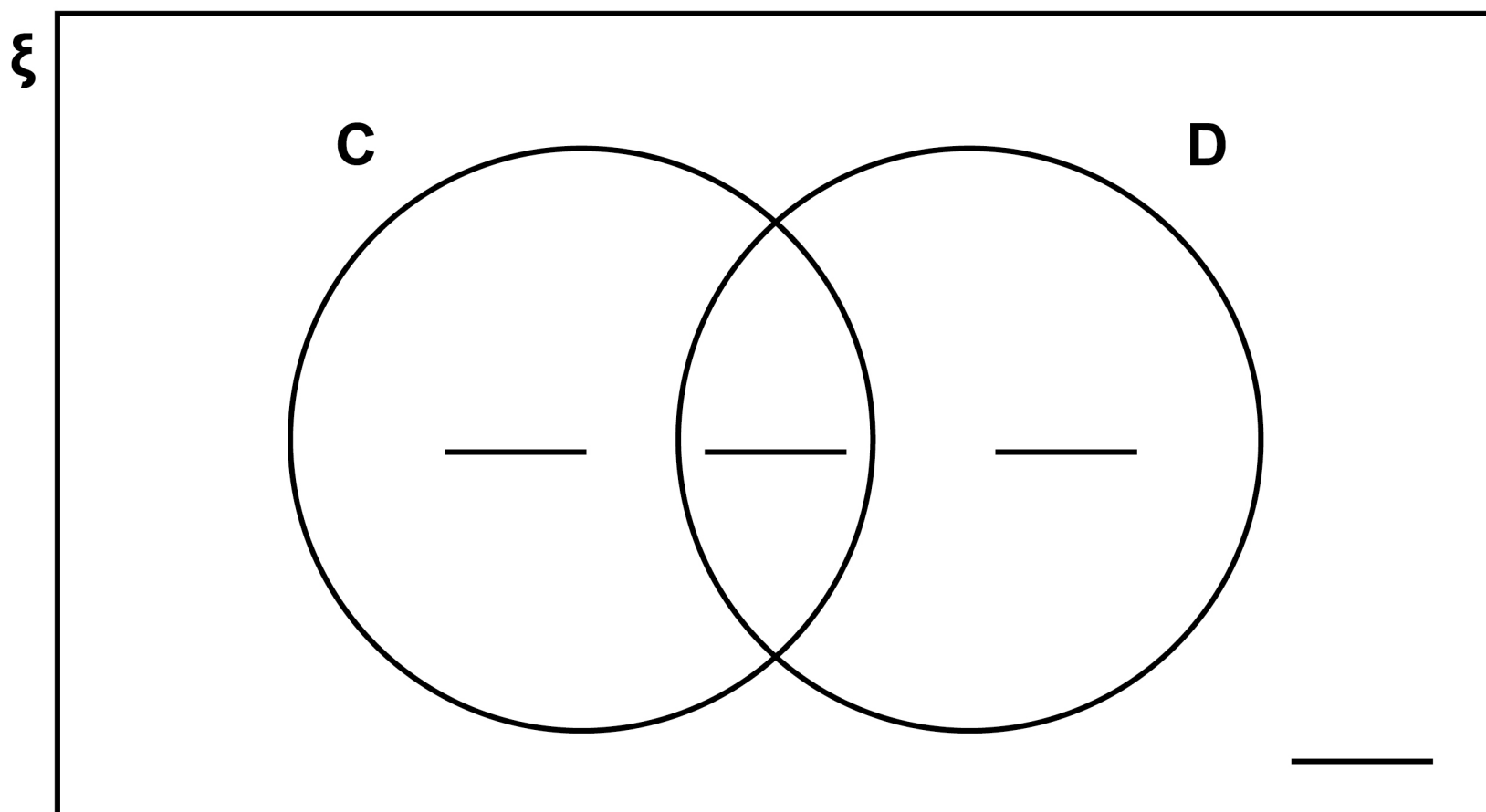
14 people buy a dress.

Complete this Venn diagram to represent the information. [3 marks]

$\xi$  = 120 people who visit the shop

C = people who buy a coat

D = people who buy a dress





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**[Turn over]**



- 25 Write  $(3^6 \times 3^5) : 3^7$  in the form  $n : 1$  where  $n$  is an integer. [3 marks]

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Answer \_\_\_\_\_ : 1

- 26  $a$  is 10% more than  $b$ .

Circle the ratio  $a : b$  [1 mark]

10 : 11

10 : 1

11 : 10

1 : 10

|            |
|------------|
| <hr/><br>7 |
|------------|



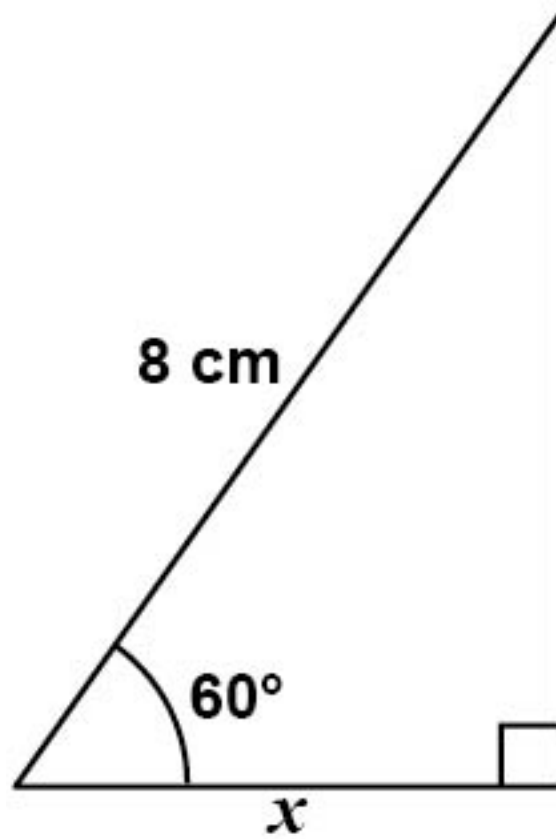
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**[Turn over]**



- 27 Use trigonometry to work out the value of  $x$ .  
[3 marks]

The diagram is not drawn accurately.



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$x =$  \_\_\_\_\_ **cm**

**END OF QUESTIONS**

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| <b>3</b> |







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| For Examiner's Use |      |
|--------------------|------|
| Pages              | Mark |
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| 30–32              |      |
| 34–38              |      |
| 40–42              |      |
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