



Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

MATHEMATICS

F

Foundation Tier

Paper 3 Calculator

8300/3F

Time allowed: 1 hour 30 minutes

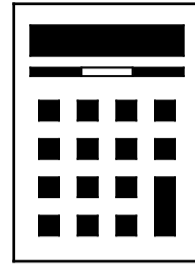
At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]



For this paper you must have:

- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).



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 What is $\frac{1}{4}$ as a percentage?

Circle your answer. [1 mark]

10%

25%

40%

75%

2 Circle the number that is a factor of 10 [1 mark]

7

6

5

4

3 Circle the value of the digit 9 in 0.094 [1 mark]

$\frac{9}{100}$

$\frac{9}{10}$

$\frac{1}{90}$

$\frac{1}{9}$



4 Simplify $4 \times 2c$

Circle your answer. [1 mark]

$42c$

$16c$

$8c$

$6c$

5 (a) Write a suitable unit for measuring each amount.

One has been done for you. [2 marks]

	Unit
Distance from London to Manchester	kilometres
Length of a pencil	
Mass of a pound coin	

[Turn over]

6



5 (b) Times for the three parts of a journey are

- 20 minutes
- 40 minutes
- 1 hour 30 minutes.

Work out the TOTAL time for the journey.

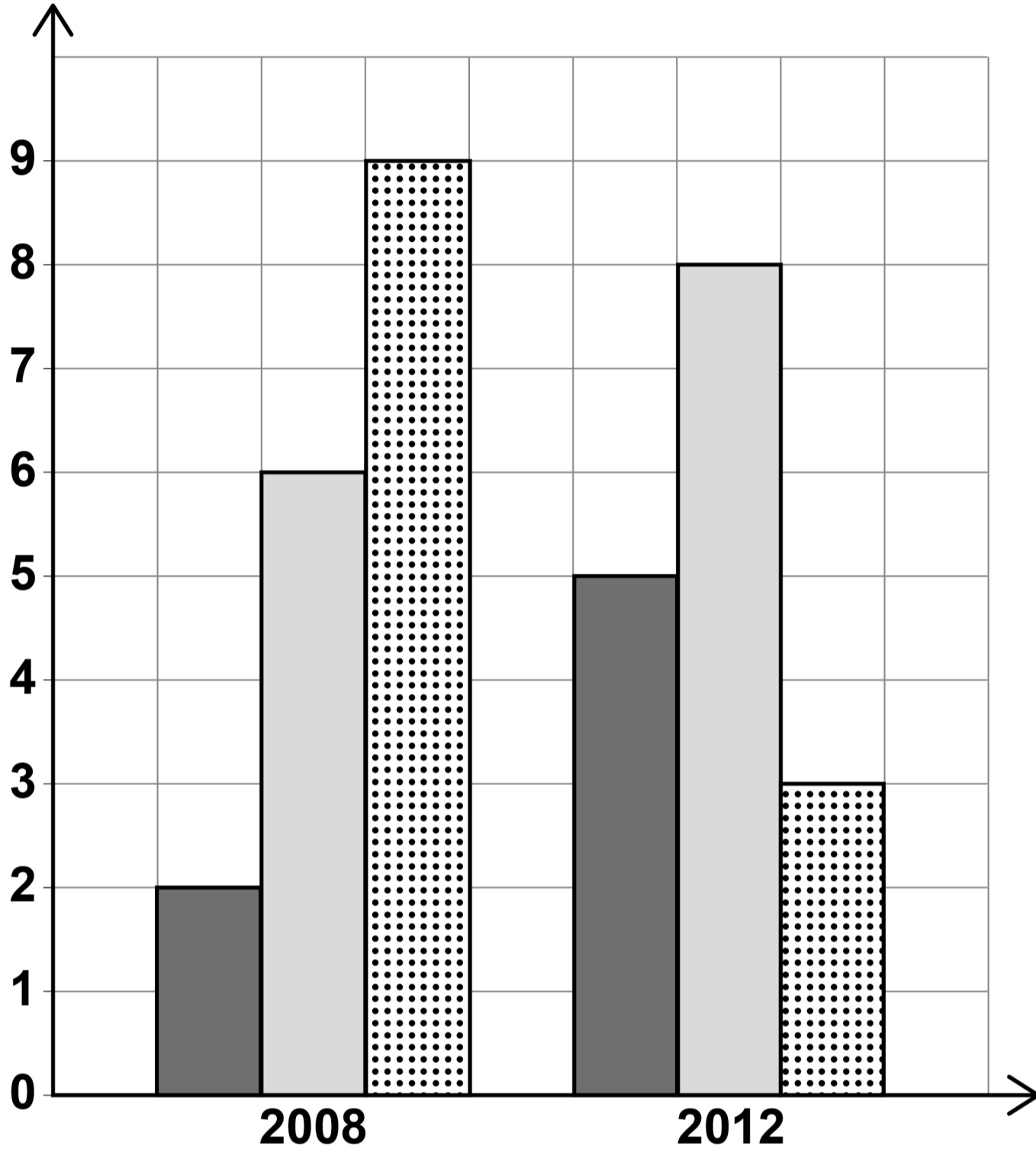
Give your answer in hours. [2 marks]

Answer _____ hours



7 The bar chart shows the number of medals won by a country at events in 2008 and 2012

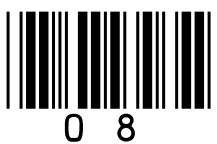
Number of medals



Year

KEY

Gold Silver Bronze



- 7 (a) Complete this statement about the medals won by the country in 2008 [1 mark]

number of Silver medals =

_____ × number of Gold medals

- 7 (b) Show that the country won MORE medals in 2008 than in 2012 [2 marks]

[Turn over]



- 7 (c) At the 2016 event the country won an EQUAL number of each type of medal.

Here is a statement about the medals won by the country in 2016

The total number of medals CANNOT be 25

Give a reason why the statement is correct.
[1 mark]

4



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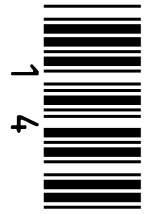
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Answer _____ ml

[Turn over]





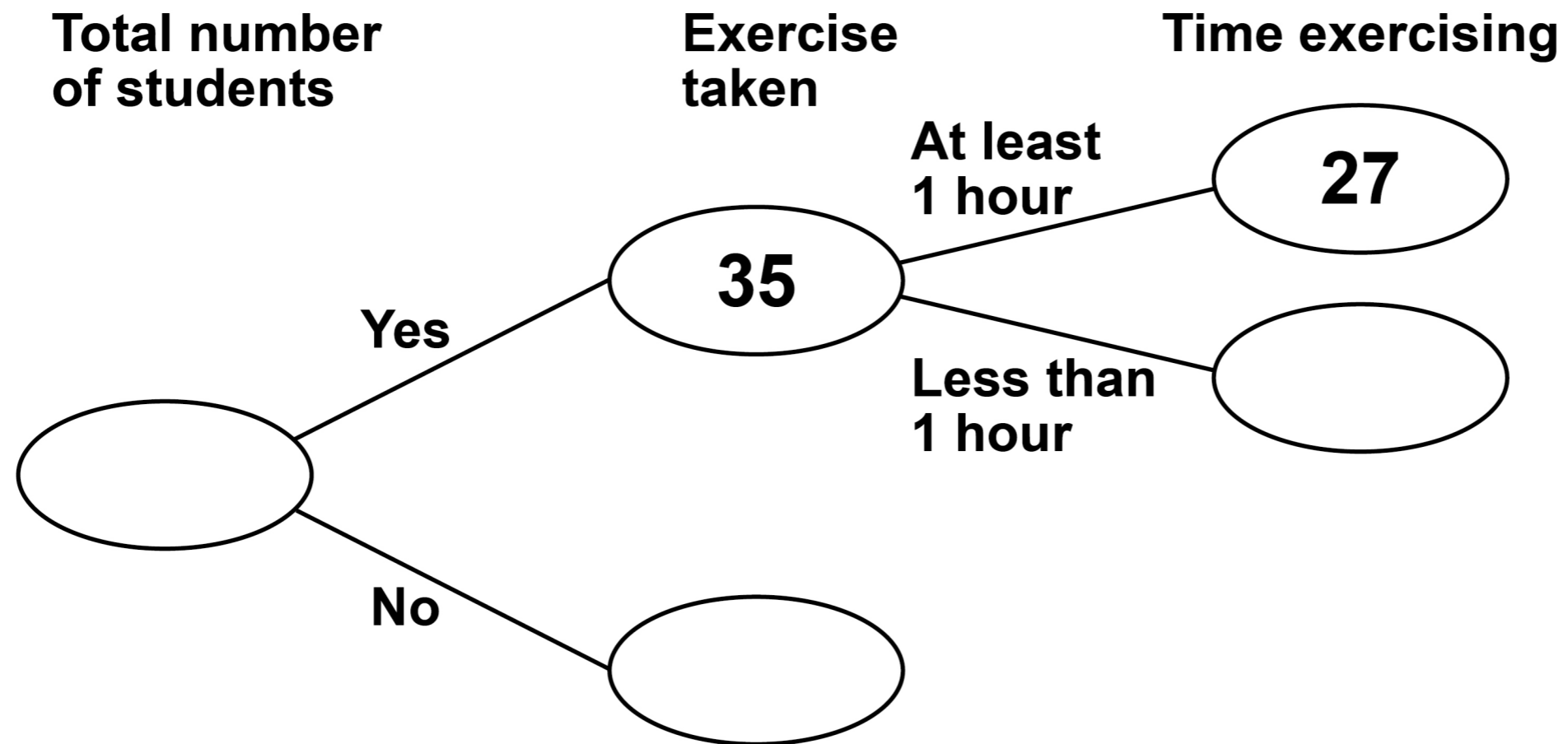
9

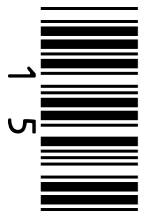
Some students were asked about their daily exercise.

9

(a) 12 MORE students answered Yes than answered No.

Complete the frequency tree. [3 marks]





9 (b) One of the 35 students who answered Yes is chosen at random.

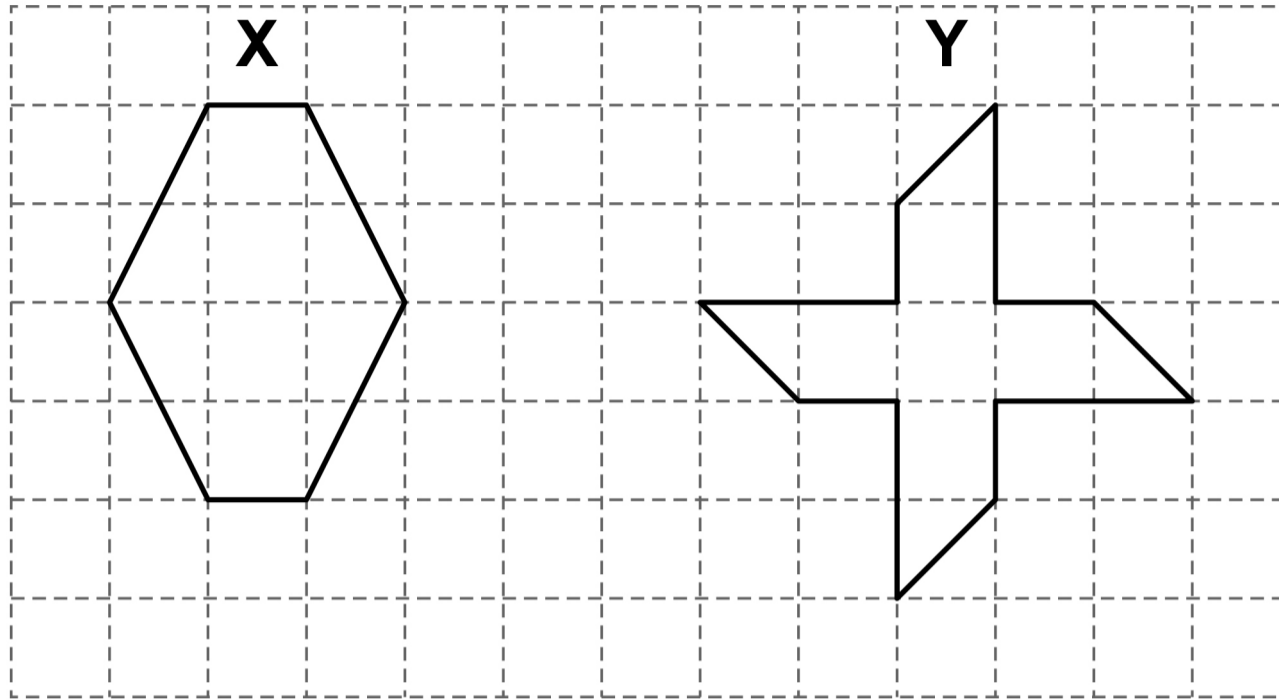
What is the probability that they exercise for at least 1 hour? [1 mark]

Answer _____

[Turn over]

8

10 Shapes X and Y are shown on a centimetre grid.



10 (a) Circle the name of shape X. [1 mark]

pentagon

hexagon

octagon

decagon



**10 (b) Give a reason why shape Y is NOT a regular polygon.
[1 mark]**

10 (c) Complete these statements. [2 marks]

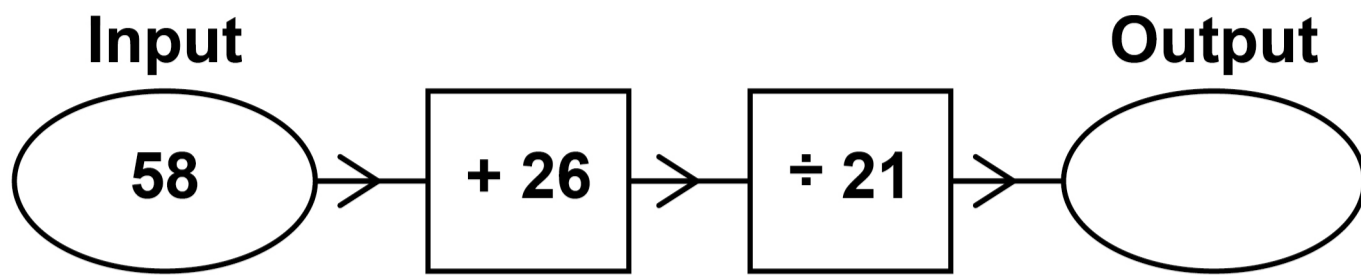
The number of lines of symmetry of shape X is

The order of rotational symmetry of shape Y is

[Turn over]



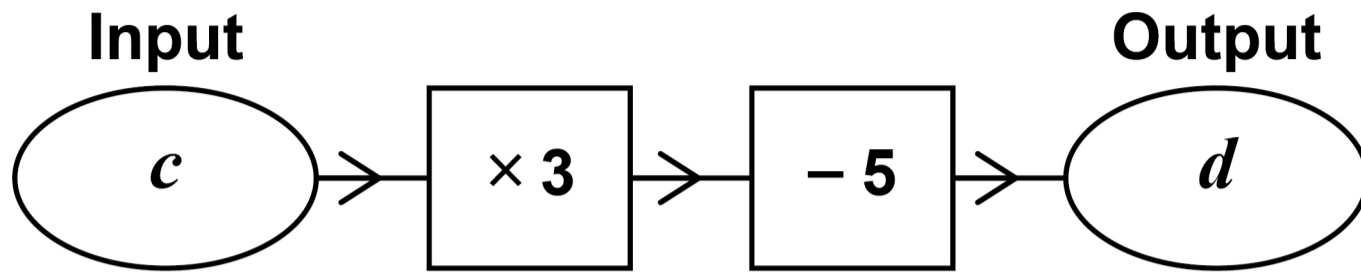
11 (a) Here is a number machine.



Work out the output. [1 mark]

Answer _____

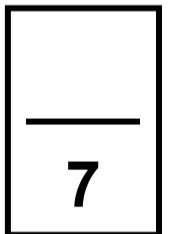
11 (b) Here is a different number machine.



Work out a formula for d in terms of c .
[2 marks]

Answer _____

[Turn over]



12 (a) Simplify fully $9x + y - 6x + y$ [2 marks]

Answer _____

12 (b) Here are two expressions.

$$8a$$

$$a^2 - b$$

When $a = 25$ the expressions have the same value.

Work out the value of b . [3 marks]



$b =$ _____

12 (c) Simplify $\frac{6w + 10}{2}$

Circle your answer. [1 mark]

$6w + 8$

$3w + 10$

$6w + 5$

$3w + 5$

13 In a bag,
number of green discs : number of blue discs = 20 : 11

Tick ONE box for each statement about the discs in the bag. [2 marks]

True

False

Cannot tell

There are more green discs than blue discs.

In total there are 31 discs.

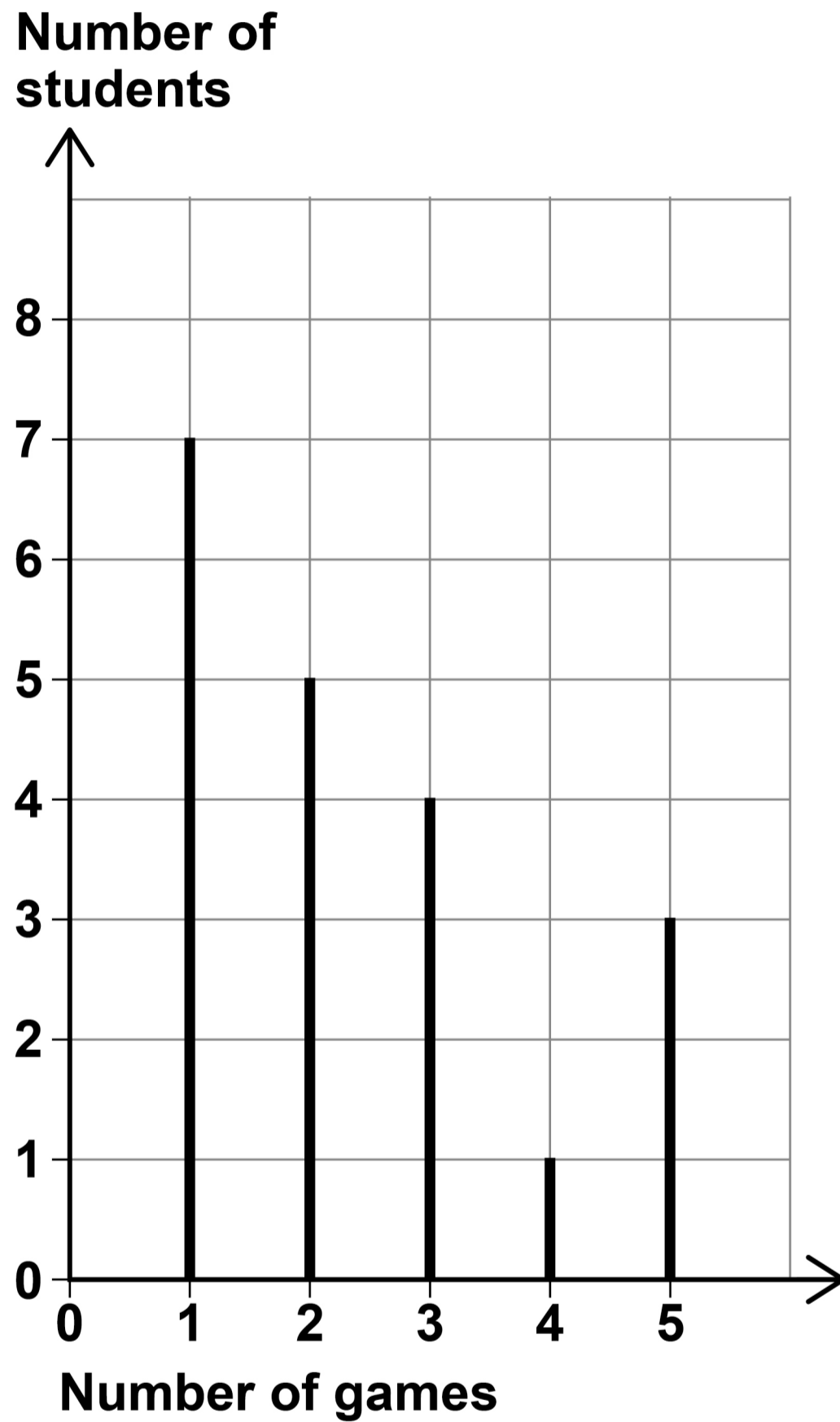
[Turn over]

8



- 14 20 students are asked how many video games they played last month.

The chart shows information about the results.



15 (a) Work out the multiple of 60 that is closest to 400
[2 marks]

Answer _____



15 (b) Work out the highest common factor (HCF) of 12 and 18 [2 marks]

Answer _____

[Turn over]



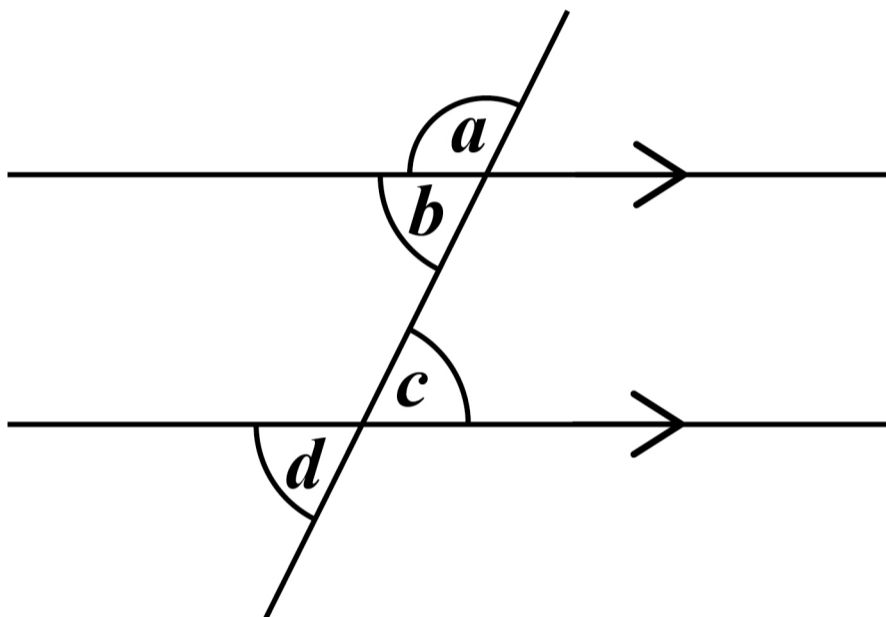
17 (a) Calculate $2^7 \times 5^2$ [1 mark]

Answer _____

17 (b) Calculate $\sqrt[4]{20\,736}$ [1 mark]

Answer _____

18



Circle the pair of alternate angles. [1 mark]

a and *b*

b and *c*

c and *d*

a and *d*

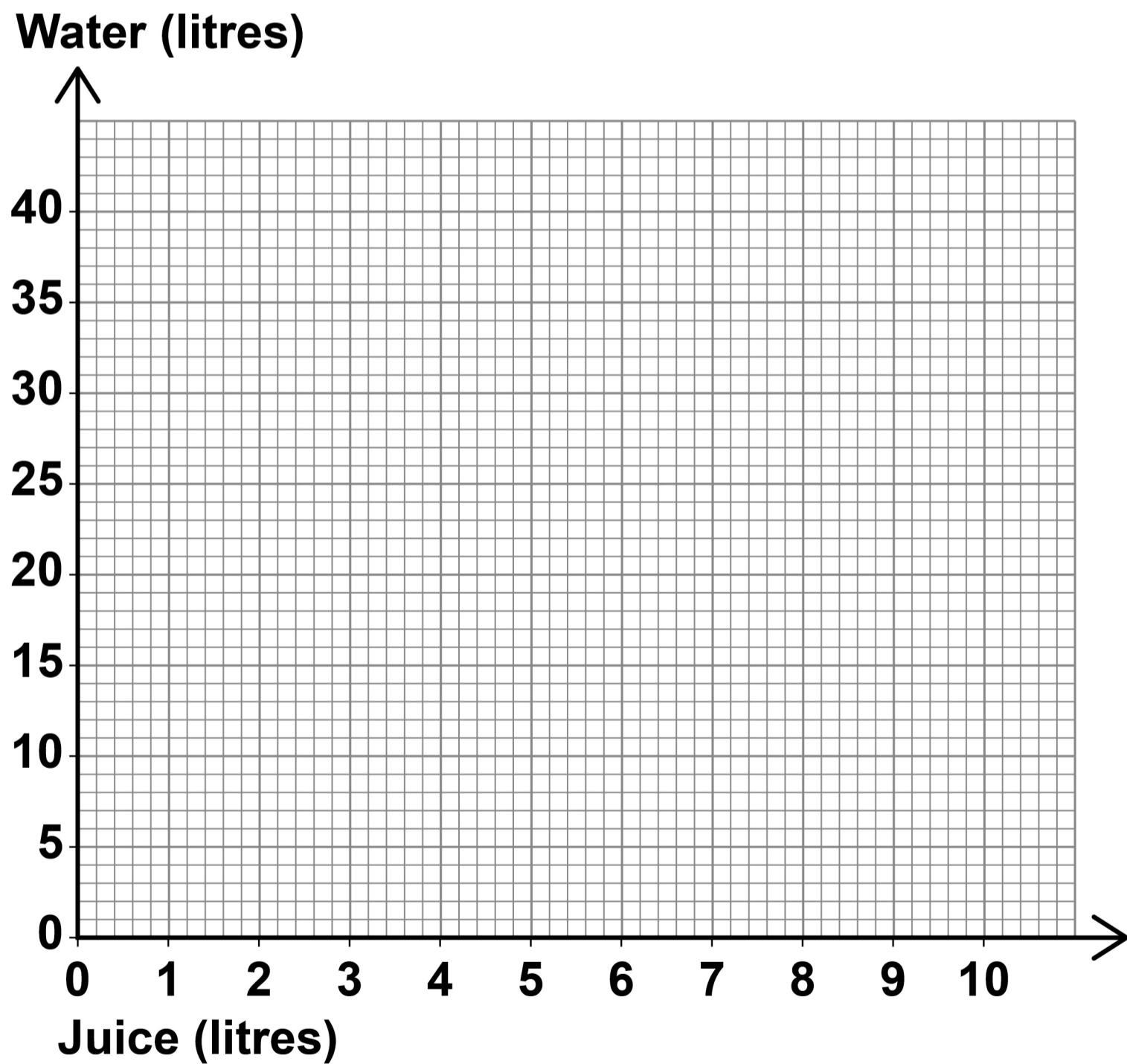
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19 Juice and water are mixed together in the ratio 2 : 7

19 (a) Draw a straight line graph that shows the amounts of juice and water to mix together.

Your graph **MUST** show up to 10 litres of juice.
[2 marks]



19 (b) How much water needs to be mixed with 5 litres of juice? [1 mark]

Answer _____ litres

[Turn over]

6



20 Adam and Bianca each throw the same biased coin.

Here is some information about their throws.

	Number of throws	Number of Heads
Adam	40	14
Bianca	60	20

Bianca says,

“My results give a better estimate of the probability of Heads than Adam’s results.”

Is she correct?

Tick a box.

Yes

No

Give a reason for your answer. [1 mark]

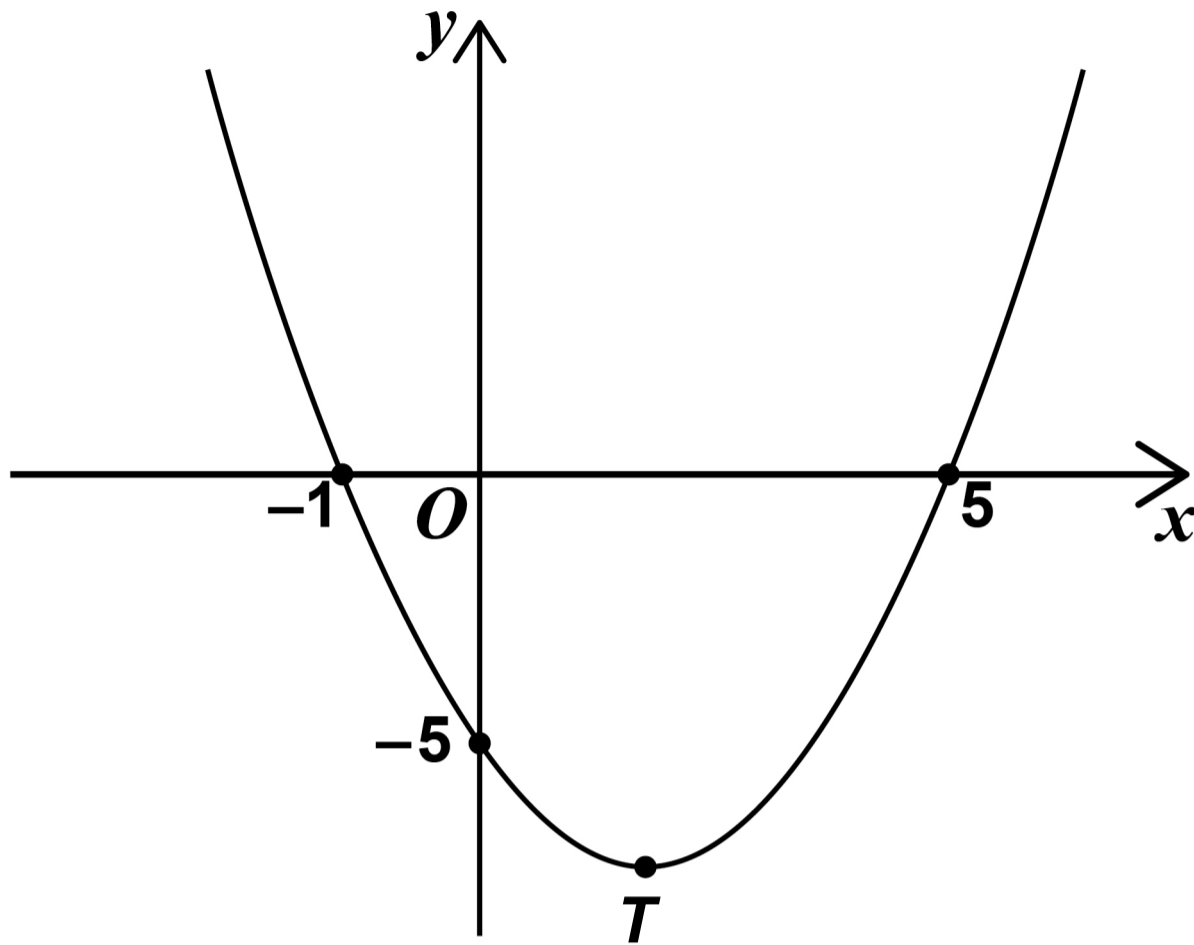


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23 Here is a sketch of the curve $y = x^2 - 4x - 5$



23 (a) Write down the TWO roots of $x^2 - 4x - 5 = 0$
[1 mark]

Answer _____ and _____



23 (b) Work out the coordinates of T , the turning point of the curve. [2 marks]

Answer (_____ , _____)

[Turn over]

6



24 A is an ARITHMETIC progression.

Here are the first four terms.

13 16 19 22

G is a GEOMETRIC progression.

Here are the first four terms.

2 4 8 16

n th term of A = 8th term of G

Work out the value of n . [4 marks]



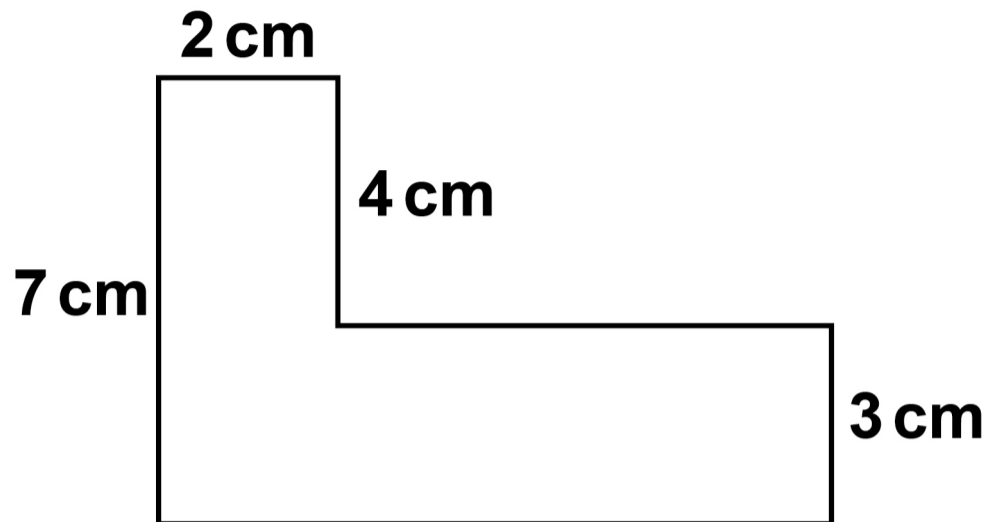
$n =$ _____

[Turn over]



25 The L-shape is made from rectangles.

The diagram is not drawn accurately.



The area is 44 cm^2

Work out the perimeter. [3 marks]

Answer _____ cm



26 Work out $3\begin{pmatrix} 1 \\ 6 \end{pmatrix} + \begin{pmatrix} 2 \\ 5 \end{pmatrix}$ [1 mark]

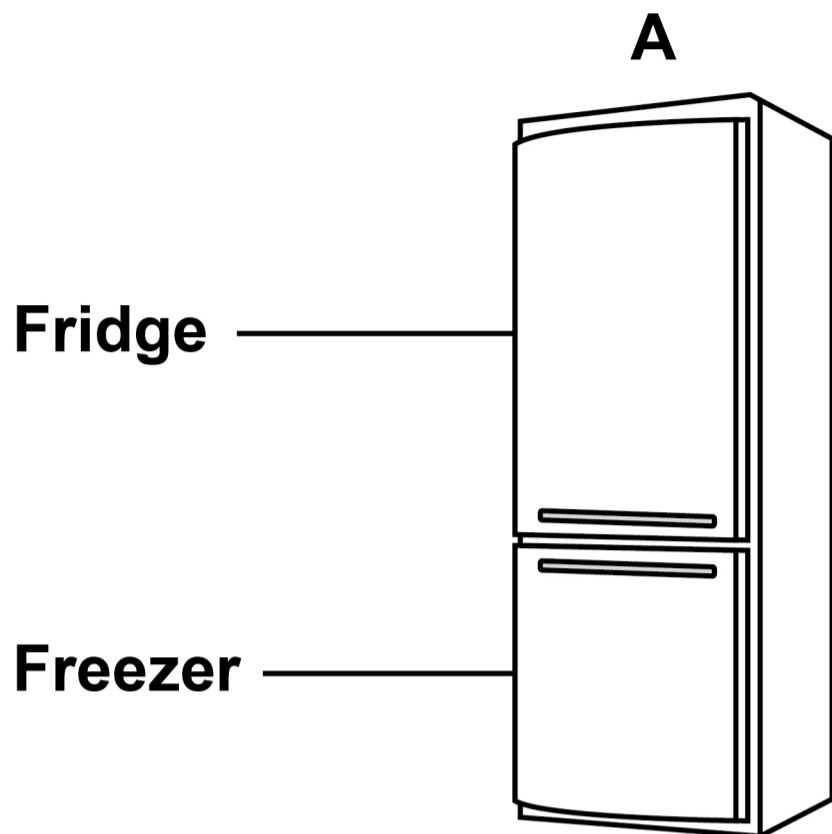
Answer ()

[Turn over]

8

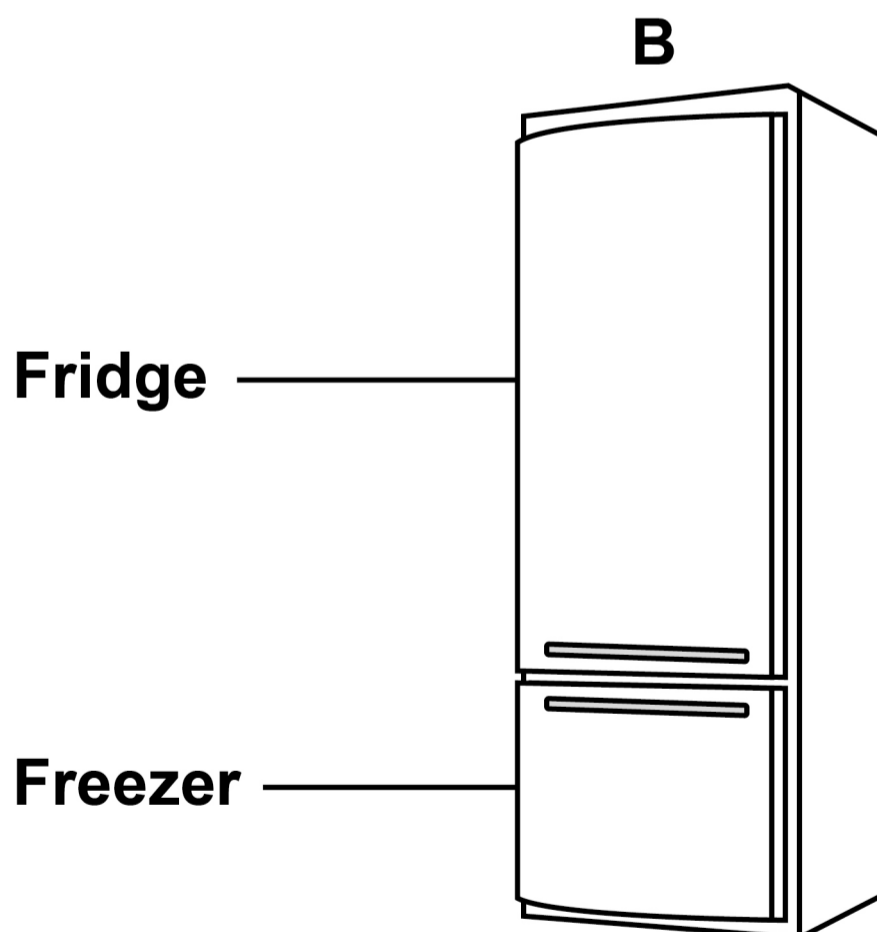


- 27 Information about two fridge-freezers, A and B, is shown.



TOTAL capacity is 330 litres

fridge capacity : freezer capacity = 3 : 2



FRIDGE capacity is 294 litres

fridge capacity : freezer capacity = 7 : 3



Answer _____

—
4



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[Turn over]



Answer _____

[Turn over]



- 29 The mass of a baby is 3.6 kilograms to 1 decimal place.

What is the error interval for the mass in kilograms?

Tick ONE box. [1 mark]

$$3.5 \leq \text{mass} \leq 3.6$$

$$3.55 \leq \text{mass} \leq 3.65$$

$$3.5 \leq \text{mass} < 3.6$$

$$3.55 \leq \text{mass} < 3.65$$

END OF QUESTIONS

4



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For Examiner's Use	
Pages	Mark
4–5	
6–7	
8–10	
12–15	
16–19	
20–21	
22–23	
24–26	
27–29	
30–31	
32–35	
36–39	
40–42	
44–46	
TOTAL	

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