



Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

MATHEMATICS

F

Foundation Tier Paper 2 Calculator

8300/2F

Thursday 3 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.

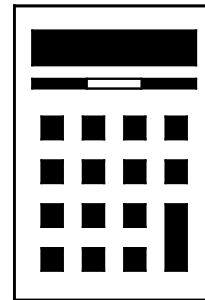
[Turn over]



MATERIALS

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 Circle the number that is a multiple of 25 [1 mark]**

55

65

75

85

- 2 Circle the value of the digit 3 in the number 10.23 [1 mark]**

$\frac{3}{1000}$

$\frac{3}{100}$

$\frac{3}{10}$

3

- 3 Circle the lowest of these temperatures. [1 mark]**

-2.1°C

0.4°C

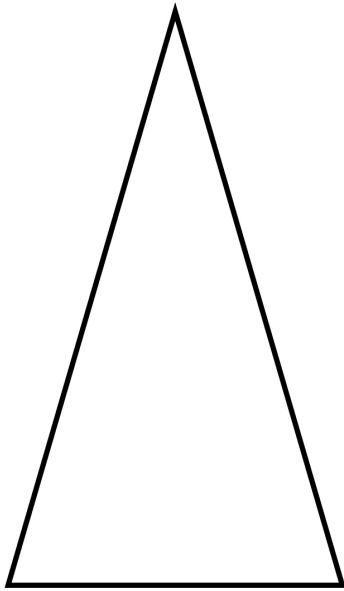
-5°C

1°C



4 **Circle the letter of the shape that has EXACTLY ONE line of symmetry. [1 mark]**

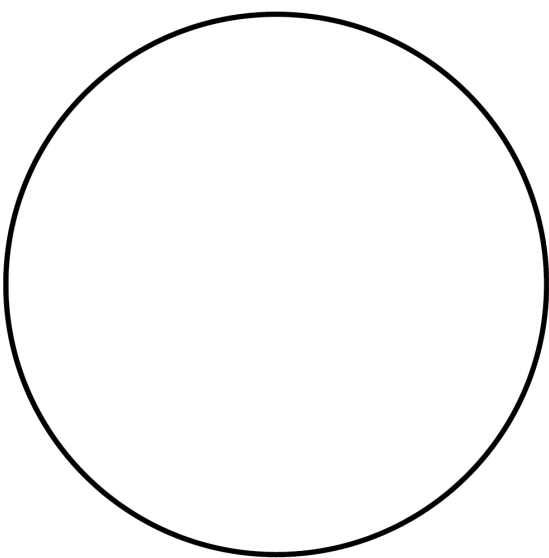
P



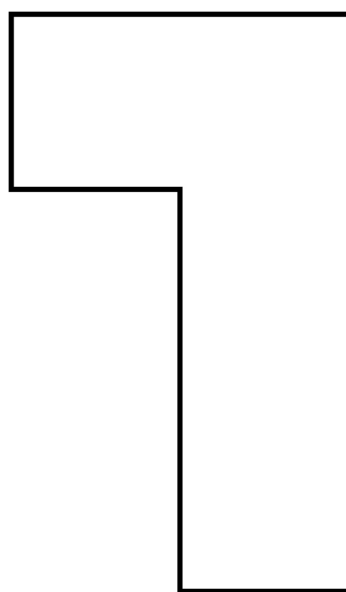
Q



R



S



[Turn over]



5 (a) Simplify fully $d \times d$ [1 mark]

Answer _____

5 (b) Simplify fully $n \div n$ [1 mark]

Answer _____

5 (c) Simplify fully $\frac{1}{3} \times 6t$ [1 mark]

Answer _____

6 (a) Write a number in the box to make the calculation correct. [1 mark]

$$16 \div \boxed{} = 0.016$$



- 6 (b) Write a number in the box to make the calculation correct. [1 mark]**

$$18.4 + 3.9 + \boxed{} = 27$$

- 6 (c) Write a fraction in the box to make the calculation correct. [1 mark]**

$$\frac{1}{2} \times \boxed{} = \frac{1}{8}$$

- 6 (d) Write the SAME number in both boxes to make the calculation correct. [1 mark]**

$$\boxed{} \times \boxed{} = 361$$

[Turn over]

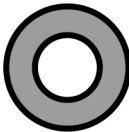
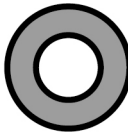
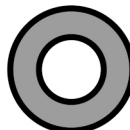
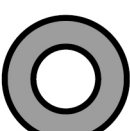


7 Three groups of people, A, B and C, have taken driving tests.

7 (a) Here is information about the number of tests taken by the people in A.

GROUP A

KEY:  represents 4 people

One test	  
Two tests	   
Three tests	 

BLANK PAGE

[Turn over]



Here is information about the number of tests taken by the people in B.

ONE TEST

Half the number in A who have taken one test.

TWO TESTS

4 fewer than the number in A who have taken two tests.

THREE TESTS

10 more than the number in A who have taken three tests.

**Complete the pictogram, on the opposite page, for the people in B.
[3 marks]**



GROUP B

KEY: ○ represents 4 people

One test	
Two tests	
Three tests	

[Turn over]



7 (b) In group C there are 25 people.

17 of these people have passed a test.

One person is picked at random from C.

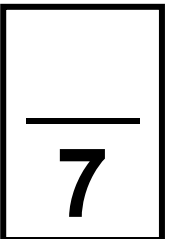
**Work out the probability that the person has NOT passed a test.
[2 marks]**

Answer

- 8 Work out the value of $3r + 4t$**
when $r = 13$ and $t = -2$ [2 marks]

Answer _____

[Turn over]



9 Hamish has saved 295 coins.

Each one is a 20p coin.

**He gives an equal number of 20p
coins to each of his
8 grandchildren.**

**He gives them as many coins as
possible.**

**How much, in £, does he have left?
[4 marks]**

Answer £

[Turn over]



10 Here are two sets of numbers.

SET A 2 12 13 27

SET B 1 15 16 30

**One number from Set A is swapped
with one number from Set B.**

**The total of the numbers in each set
is now the same.**

**Which two numbers are swapped?
[2 marks]**

Answer _____ and _____



11 Rearrange $m = p - 5$ to make p the subject.

Circle your answer. [1 mark]

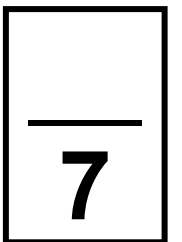
$$p = \frac{m}{5}$$

$$p = m + 5$$

$$p = 5m$$

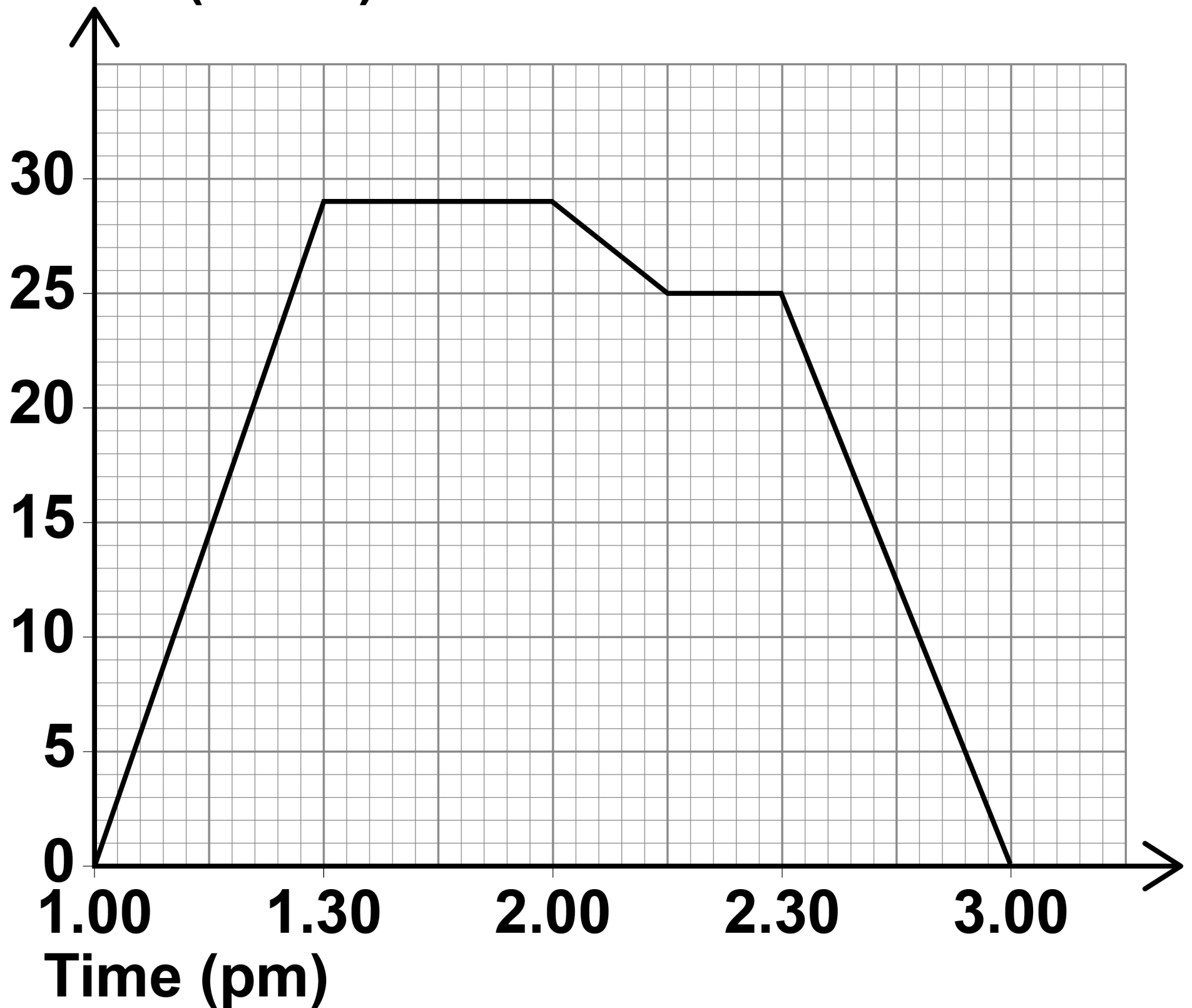
$$p = m - 5$$

[Turn over]



12 Here is the distance-time graph for a car between 1 pm and 3 pm

Distance from home (miles)



12 (a) Work out the TOTAL time that the car is NOT moving between 1 pm and 3 pm

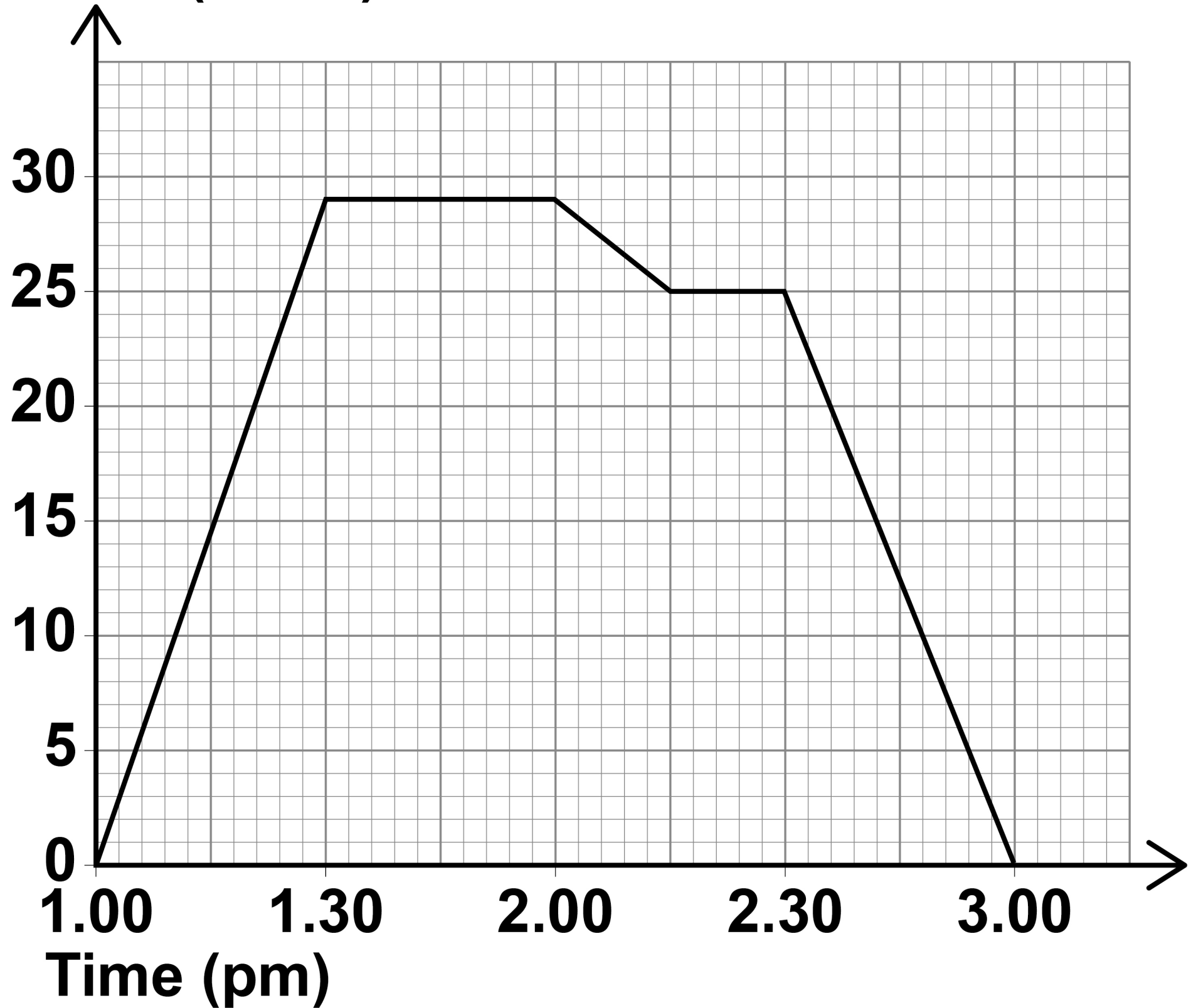
**State the units of your answer.
[2 marks]**

Answer _____

[Turn over]

REPEAT OF GRAPH

Distance from
home (miles)



12 (b) Work out the TOTAL distance the car travels between 1 pm and 3 pm [2 marks]

Answer _____ **miles**

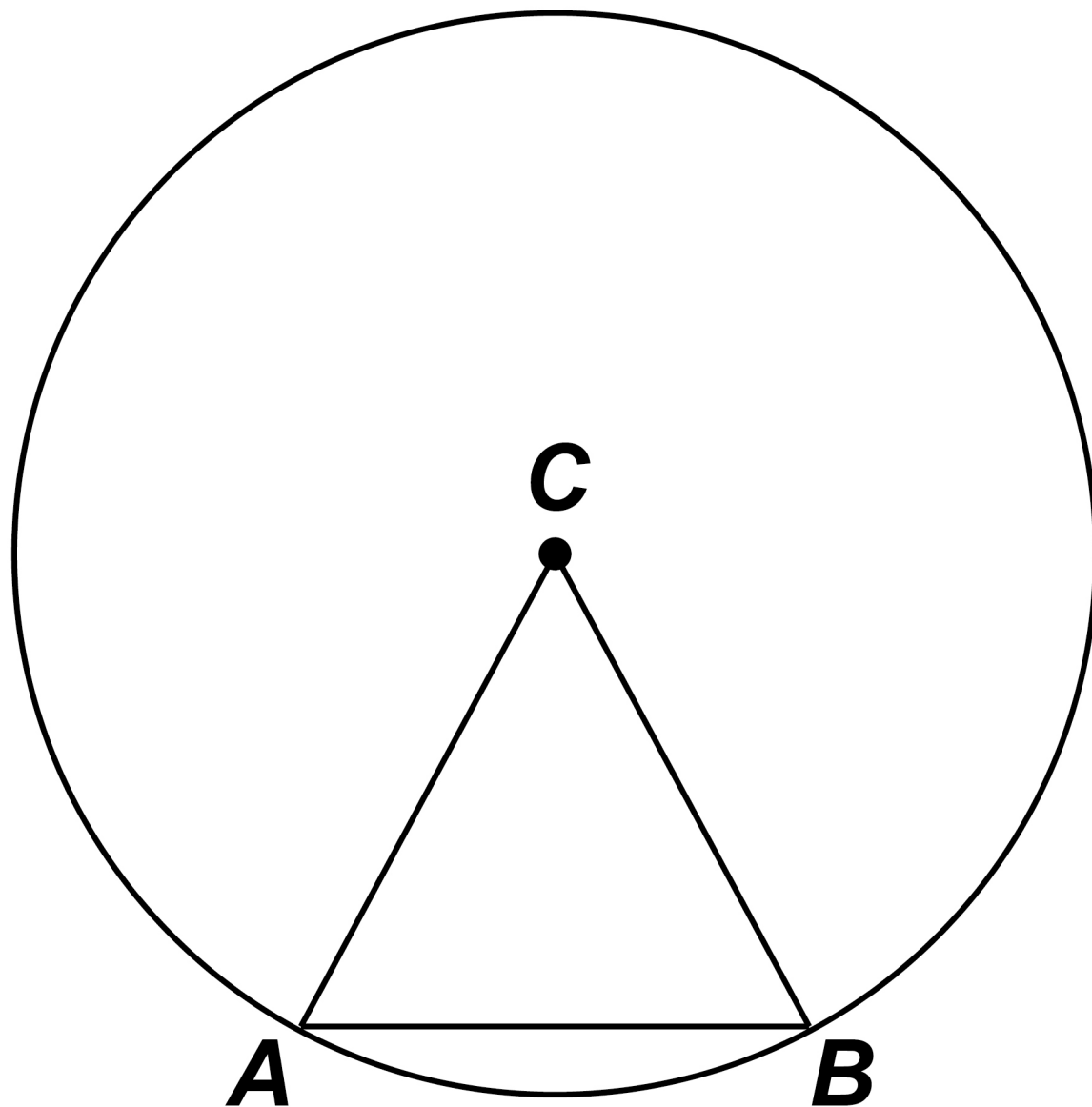
[Turn over]



13 *A* and *B* are points on a circle.

C is the centre of the circle.

The diagram is not drawn accurately.



Tick ONE box for each statement.
[3 marks]

	Definitely true	Might be true	Cannot be true
Line <i>AB</i> is a tangent to the circle	☐	☐	☐
<i>AC</i> is an arc of the circle	☐	☐	☐
Triangle <i>ABC</i> is equilateral	☐	☐	☐

[Turn over]

7



- 14 To travel to a festival, a group of people will hire a minibus.**

This formula has all costs in £

Cost per person =

$$\frac{165 + \text{cost of the minibus}}{\text{number of people in the group}}$$

- 14 (a) With 12 people in the group, the cost of the minibus will be £567**

**Work out the cost per person.
[2 marks]**

Answer £ _____



14 (b) With 15 people in the group, they will hire a different minibus.

The cost per person will be £50

**Work out the cost of this minibus.
[3 marks]**

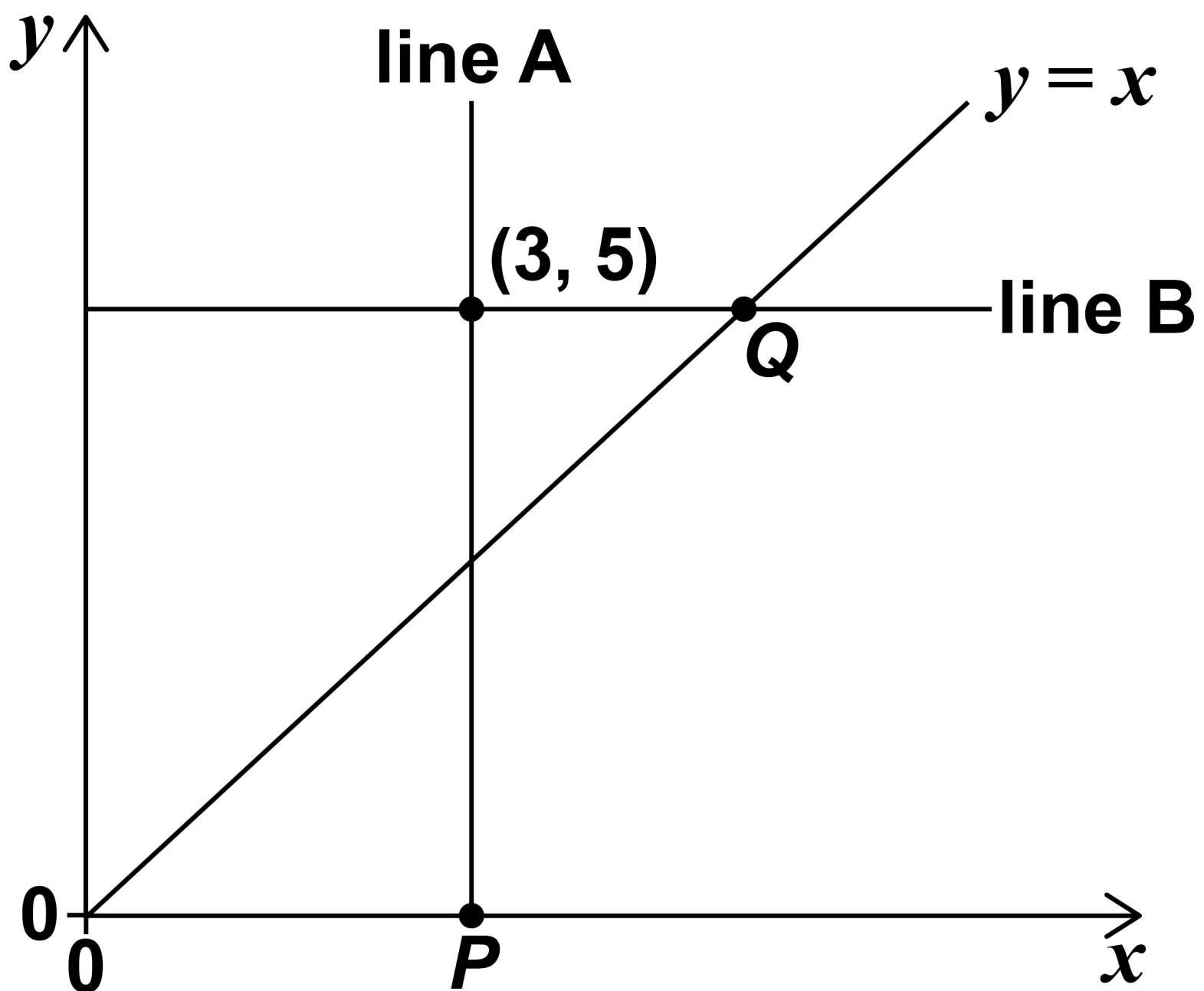
Answer £ _____

[Turn over]



- 15 The sketch shows
the line $y = x$
line A, which is vertical
line B, which is horizontal.

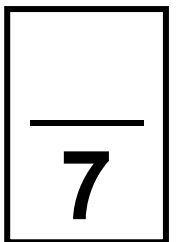
The point $(3, 5)$ is on both line A and line B.



Write down the coordinates of P and Q . [2 marks]

P (_____ , _____) Q (_____ , _____)

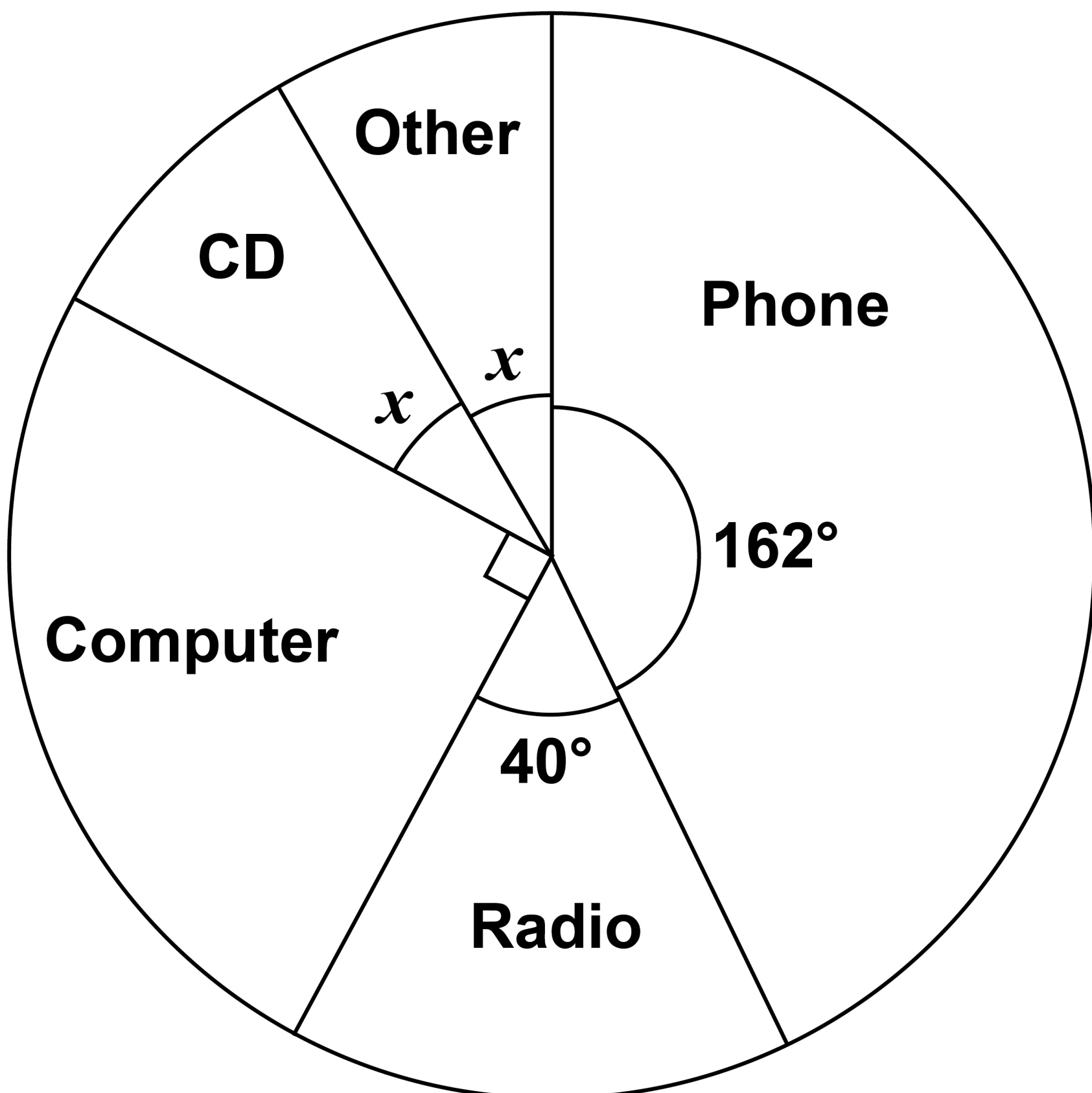
[Turn over]



- 16** Some people were asked for the main way they listen to music.

A pie chart is drawn to represent their answers.

The diagram is not drawn accurately.



**16(a) Work out the size of angle x .
[2 marks]**

Answer _____ **degrees**

[Turn over]



16 (b) 135 people said Computer.

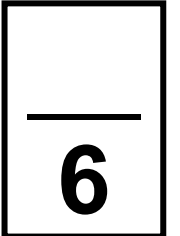
**How many people said Phone?
[3 marks]**

Answer _____

17 Complete this statement. [1 mark]

$10^8 =$ _____ million

[Turn over]



18 A football team plays two matches.

18 (a) For the first match, 40 000 tickets are sold.

Assume that each ticket costs £38.50

Work out the total amount of money from ticket sales for this match. [2 marks]

Answer £ _____



**18 (b) In fact, for the first match,
some of the tickets cost less than
£38.50
and
some of the tickets cost more than
£38.50**

**What does this mean about the
total amount of money from ticket
sales for this match?**

Tick ONE box. [1 mark]

☐

**It will be more than the
answer to part (a)**

☐

**It will be the same as the
answer to part (a)**

☐

**It will be less than the
answer to part (a)**

☐

It is not possible to tell

[Turn over]



18 (c) For the second match, the number of tickets sold increases from 40 000 to 55 000

Is the increase in tickets sold MORE than 35% ?

**You MUST show your working.
[3 marks]**

- 19 On a train, there are between 60 and 70 people.**

The ratio of adults to children is 5 : 4

Work out the TOTAL number of people on the train. [2 marks]

Answer _____

[Turn over]

8



20 The composite bar chart, on the opposite page, shows information about the **PERCENTAGE** of drinks sold by a café in 2007 and 2019

20(a) In 2007 the café sold a total of 24 000 drinks.

How many MORE teas than coffees were sold? [2 marks]

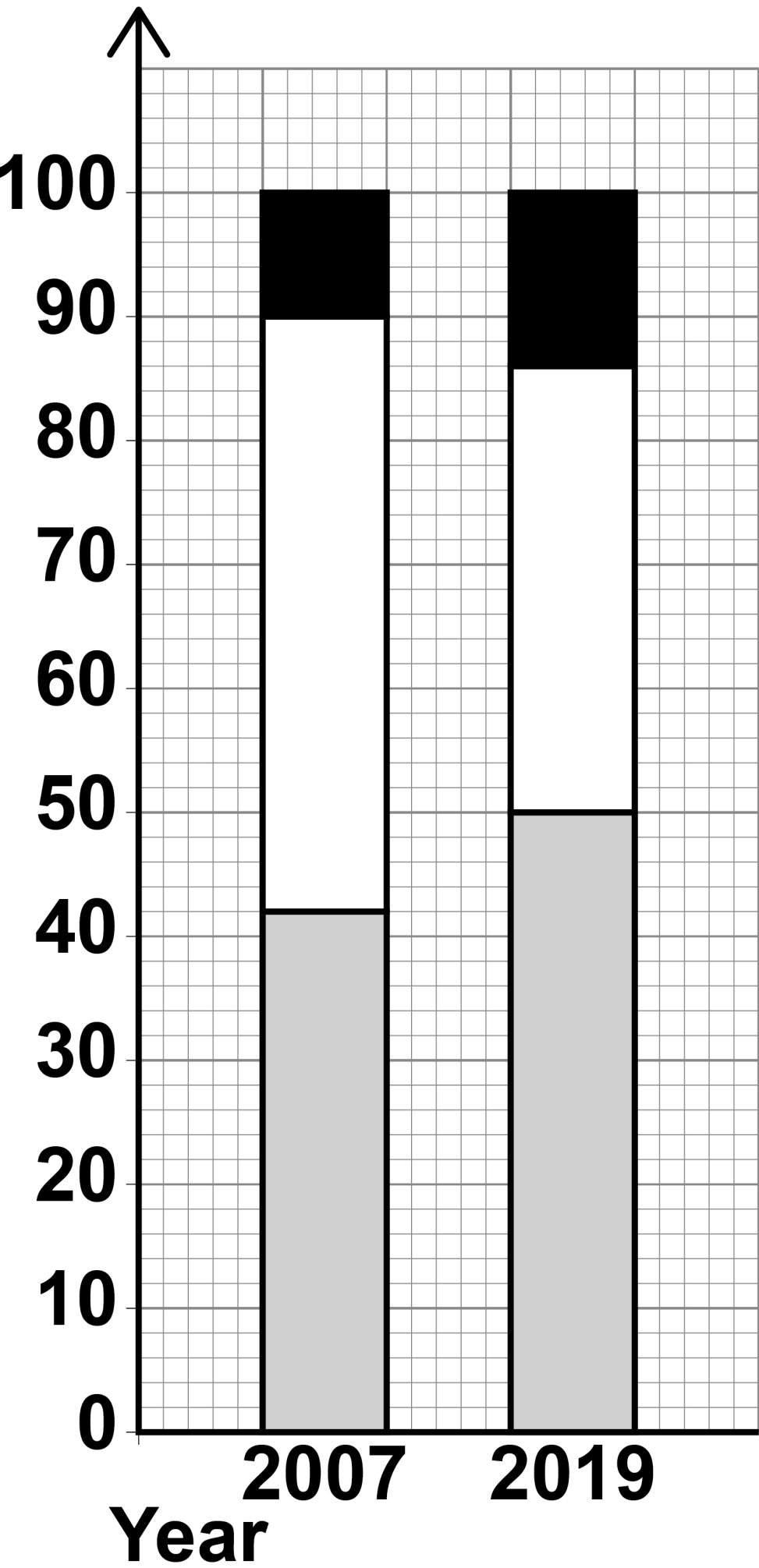
Answer _____



KEY:

Coffee Tea Other

Percentage of drinks sold



[Turn over]



BLANK PAGE



20 (b) Were more coffees sold at the café in 2019 than in 2007 ?

Tick a box.

☐

Yes

☐

No

☐

Cannot tell

**Give a reason for your answer.
[1 mark]**

[Turn over]



21 (a) k is a whole number between 40 and 50

The cube root of k is 3, to the nearest whole number.

Work out the LARGEST possible value of k . [2 marks]

Answer _____

21 (b) Fay tries to solve $x^2 = 100$

She says,

“The only possible value of x is 10”

Give a reason why she is NOT correct. [1 mark]

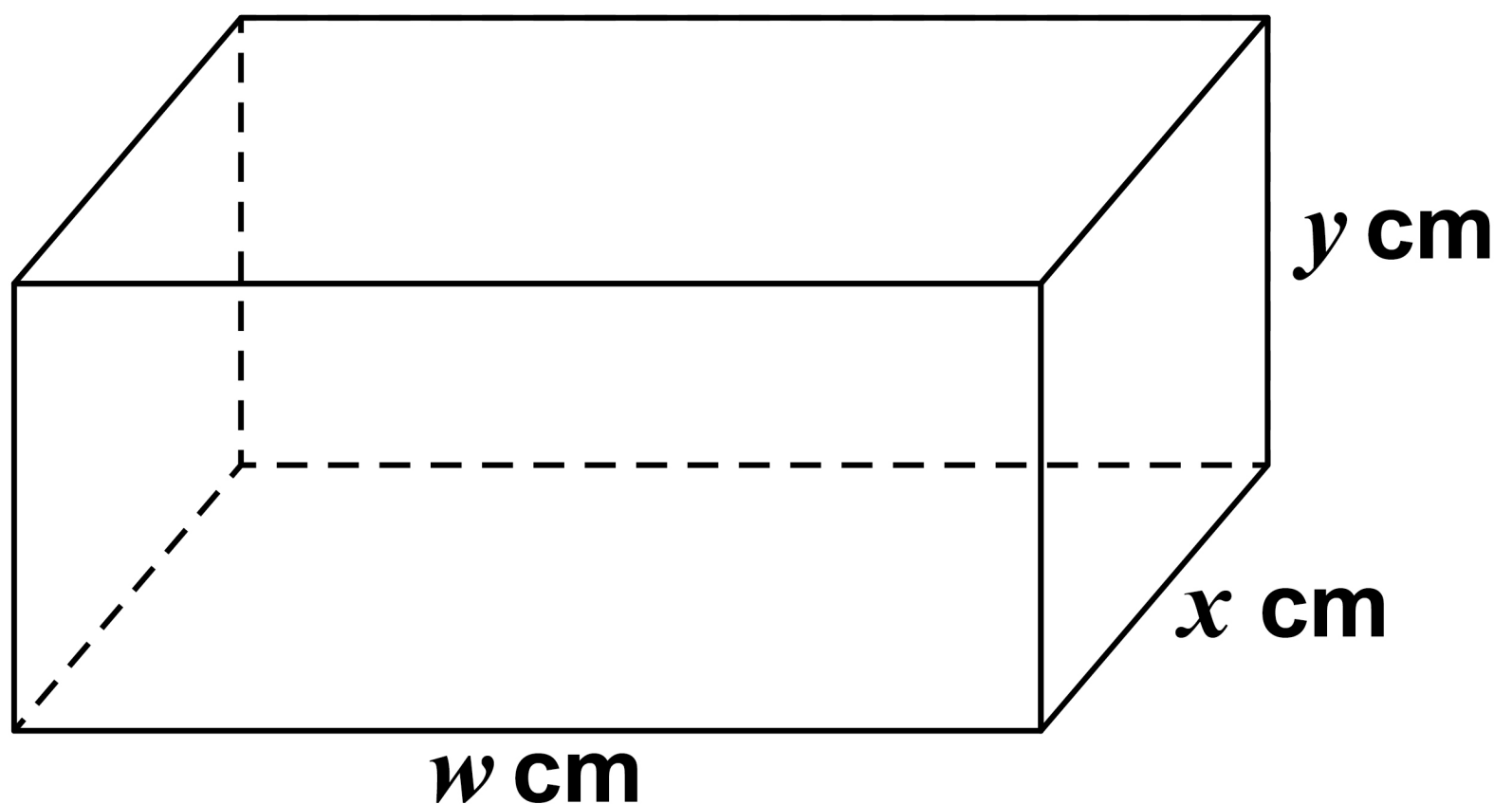
[Turn over]

6



22 (a) Here is a cuboid.

w , x and y are DIFFERENT whole numbers.



The total length of ALL the edges of the cuboid is 80 cm

The volume is GREATER than 200 cm^3



Work out one possible set of values for w , x and y . [2 marks]

$w =$ _____

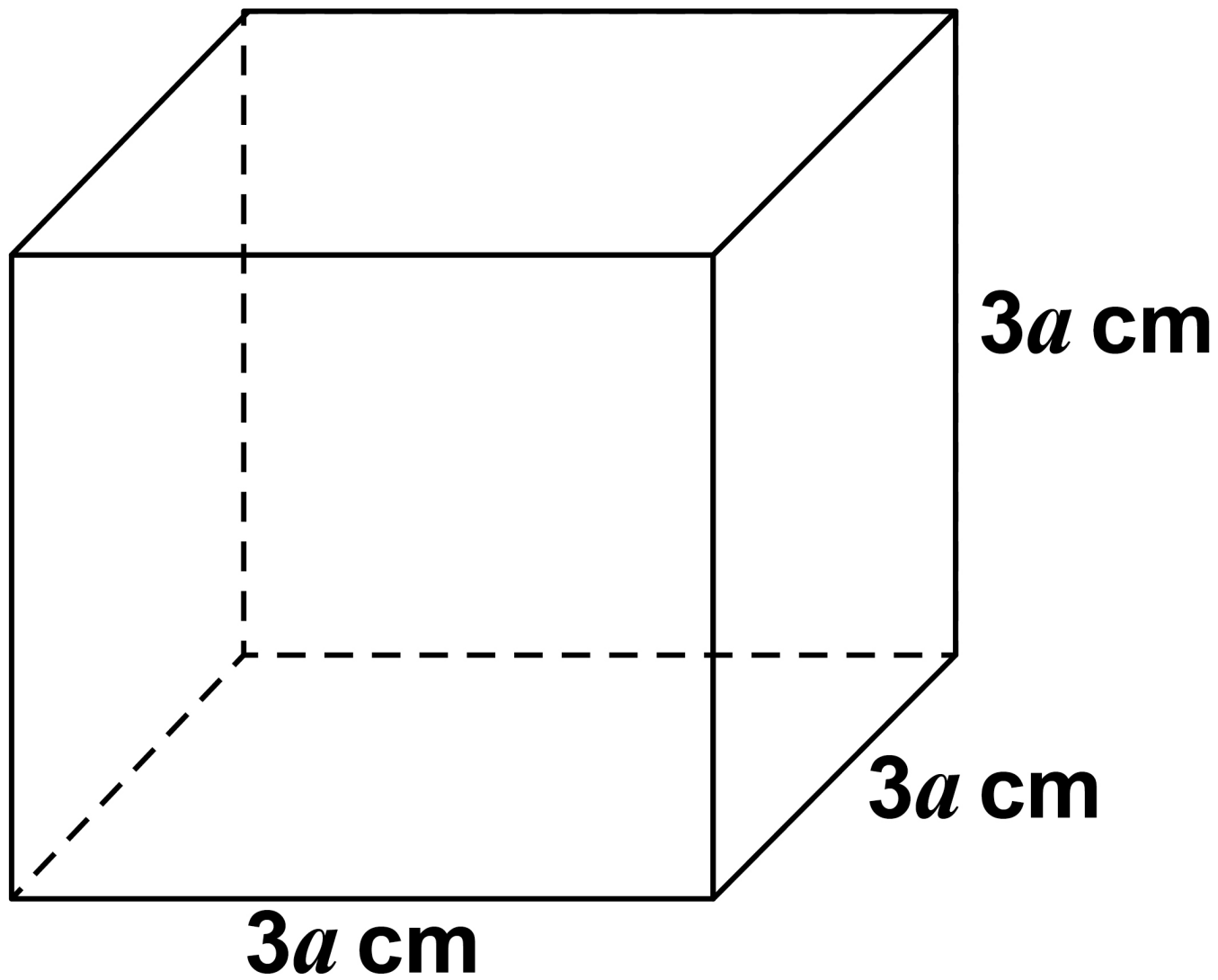
$x =$ _____

$y =$ _____

[Turn over]



22 (b) Here is a solid cube.



**Circle the expression for the
TOTAL surface area in cm^2
[1 mark]**

$36a$

$54a$

$36a^2$

$54a^2$



23 The equation of a line is $y = 3x - 6$

Circle the coordinates of the y -intercept. [1 mark]

(0, -6) (-6, 0) (0, 3) (3, 0)

[Turn over]

4



24(a) Work out $2.8^4 + \sqrt{158.76}$

**Give your answer as a decimal.
[2 marks]**

Answer _____

24 (b) Work out $\frac{6.09 \times 10^{14}}{4.2 \times 10^9}$

Give your answer in standard form. [2 marks]

Answer

[Turn over]

25 A tank contains 40 litres of water.

25 (a) Water leaks out of the tank at a rate of 1.2 litres per minute.

The leak is stopped after 20 minutes.

Show that, when the leak is stopped, the tank contains 16 litres of water. [1 mark]

BLANK PAGE

[Turn over]



25 (b) The tank is refilled with water from a tap.

The graph shows the amount of water in the tank AFTER the leak is stopped.

**Water in tank
(litres)**



Complete this report by writing a number in each answer space.

[3 marks]

REPORT

_____ minutes after the
leak is stopped, the tap starts to
refill the tank.

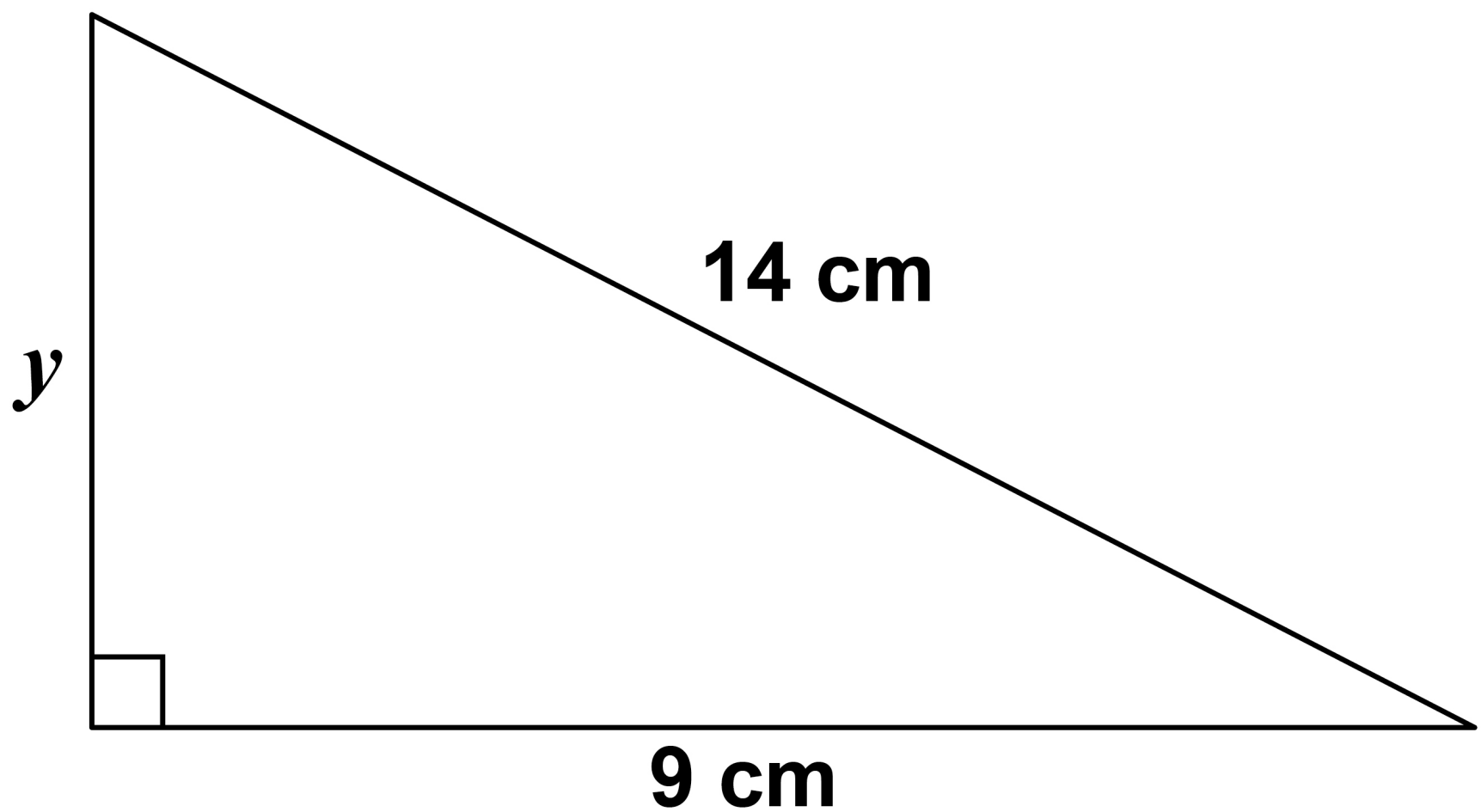
The rate at which the tank refills is
_____ litres per minute.

[Turn over]



26 Here is a triangle.

The diagram is not drawn accurately.



Use Pythagoras' theorem to work out the value of y .

**Give your answer as a decimal.
[3 marks]**

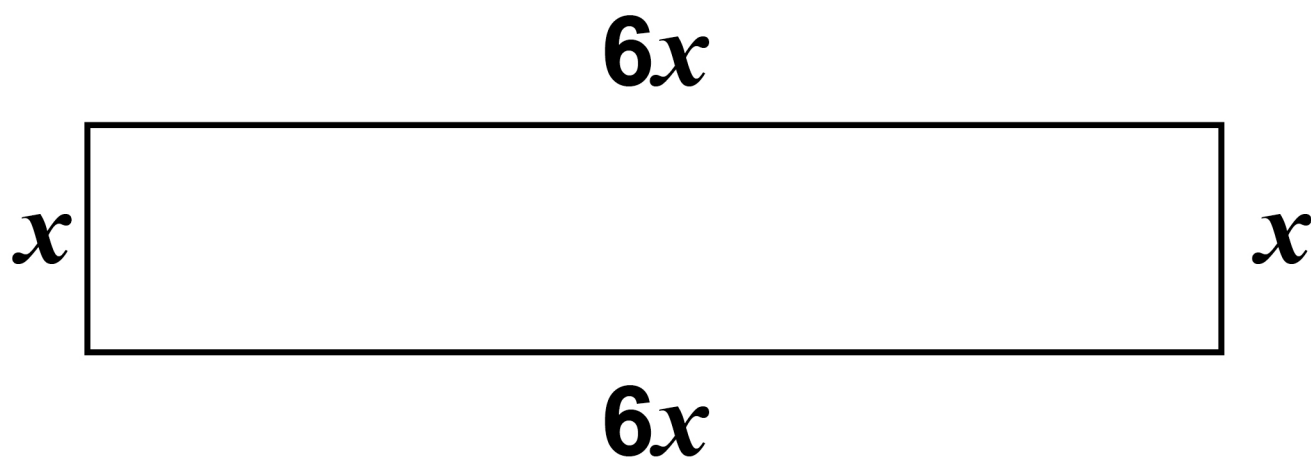
$y =$ _____ cm

[Turn over]



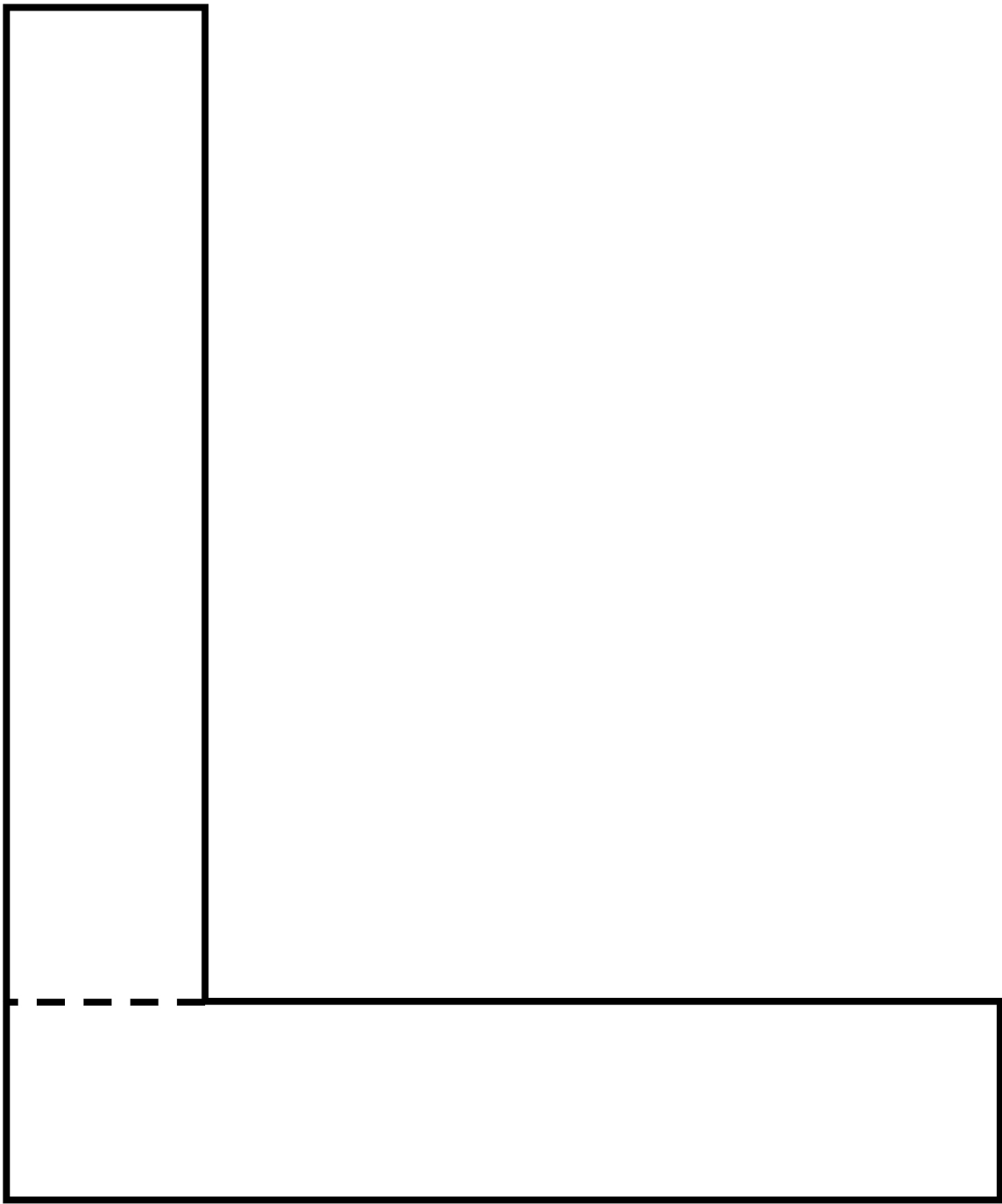
- 27** The length of this rectangle is 6 times the width.

The diagram is not drawn accurately.



Two of these rectangles are joined, with no overlap, to make this L-shape.

The diagram, on the opposite page, is not drawn accurately.



[Turn over]



BLANK PAGE



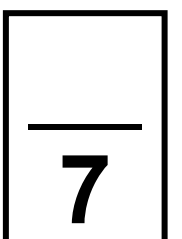
The perimeter of the L-shape is 98.8 cm

Work out the value of the perimeter of ONE of the rectangles. [4 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Answer **cm**

[Turn over]



28 Written as the product of prime factors,

$$12\,600 = 2^3 \times 3^2 \times 5^2 \times 7$$

and

$$14\,112 = 2^5 \times 3^2 \times 7^2$$

Work out the highest common factor (HCF) of 12 600 and 14 112

**Give your answer as an integer.
[2 marks]**

Answer _____

END OF QUESTIONS



**Additional page, if required.
Write the question numbers in the
left-hand margin.**

This image shows a blank sheet of white paper with horizontal ruling lines. A single vertical line runs down the left side, creating a margin. There are 20 horizontal lines in total, evenly spaced across the page. The lines are thin and black.

Write the question numbers in the left-hand margin.

This image shows a blank sheet of white paper with horizontal ruling lines. A single vertical line runs down the left side, creating a margin. There are 20 horizontal lines in total, evenly spaced across the page. The lines are thin and black.

**Additional page, if required.
Write the question numbers in the
left-hand margin.**

This image shows a blank sheet of white paper with horizontal ruling lines. A single vertical line runs down the left side, creating a narrow margin. There are 20 horizontal lines in total, evenly spaced across the page. The lines are thin and black.

BLANK PAGE

For Examiner's Use	
Pages	Mark
4–5	
6–7	
8–13	
14–17	
18–23	
24–27	
28–31	
32–35	
36–41	
42–45	
46–51	
52–57	
58	
TOTAL	

Copyright information

For confidentiality purposes, all acknowledgements of third-party copyright material are published in a separate booklet. This booklet is published after each live examination series and is available for free download from www.aqa.org.uk.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team.

Copyright © 2022 AQA and its licensors. All rights reserved.

IB/M/CD/Nov22/8300/2F/E2

