



Centre Number

71

Candidate Number

General Certificate of Secondary Education
2014

Mathematics

Unit T2

(With calculator)

Foundation Tier

[GMT21]



MV18

TUESDAY 27 MAY, 9.15am–10.45am

TIME

1 hour 30 minutes, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Complete in blue or black ink only.

Answer **all twenty-seven** questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Functional Elements will be assessed in this paper.

Quality of written communication will be assessed in

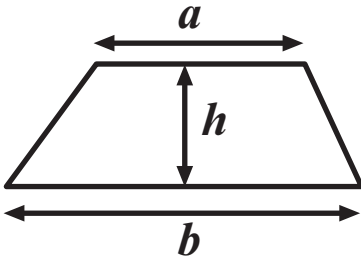
Questions 3 and 26.

You should have a calculator, ruler, compasses and a protractor.

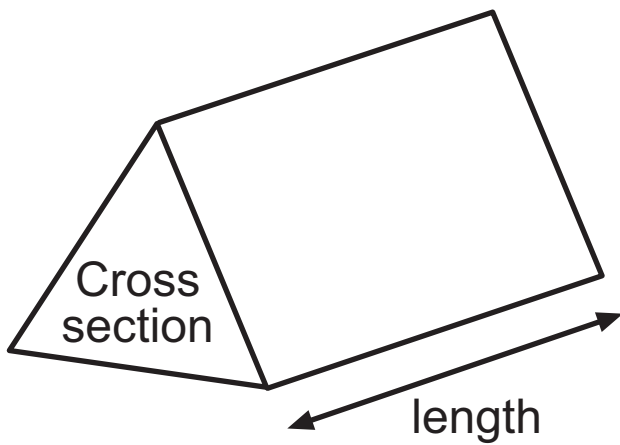
The Formula Sheet is on page 3.

Formula Sheet

$$\text{Area of trapezium} = \frac{1}{2} (a + b)h$$



$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$



1 Calculate

(a) $\sqrt{7.84} - 1.3^2$ [2 marks]

Answer _____

(b) $\frac{1}{0.4^3}$ [1 mark]

Answer _____

2 Of 304 000 flights from 10 UK airports, 74% were on time.

How many flights were on time? [2 marks]

Answer _____

Quality of written communication will be assessed in this question.

3 Tina bought a garden ornament costing £12.75 and some shrubs.

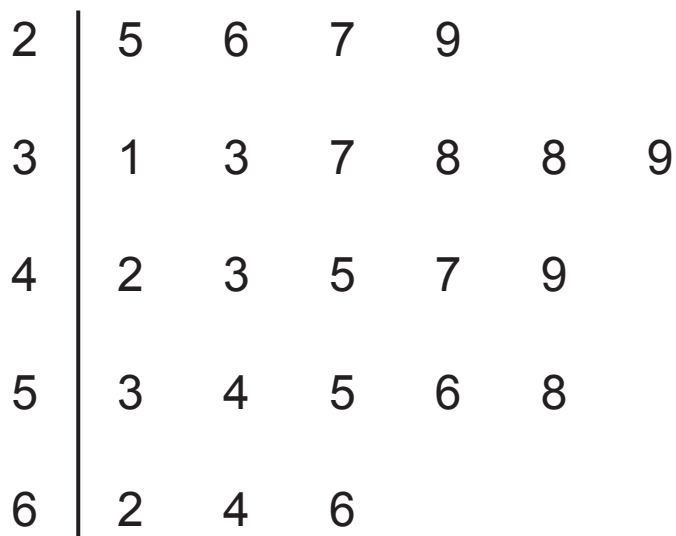
Each shrub cost £3.15

The total cost was £31.65

How many shrubs did she buy? [3 marks]

Answer _____

- 4 The stem and leaf diagram shows the weights of some schoolbags.



Key 2 | 5 = 2.5 kg

Write down

- (a) the range, [1 mark]

Answer _____ kg

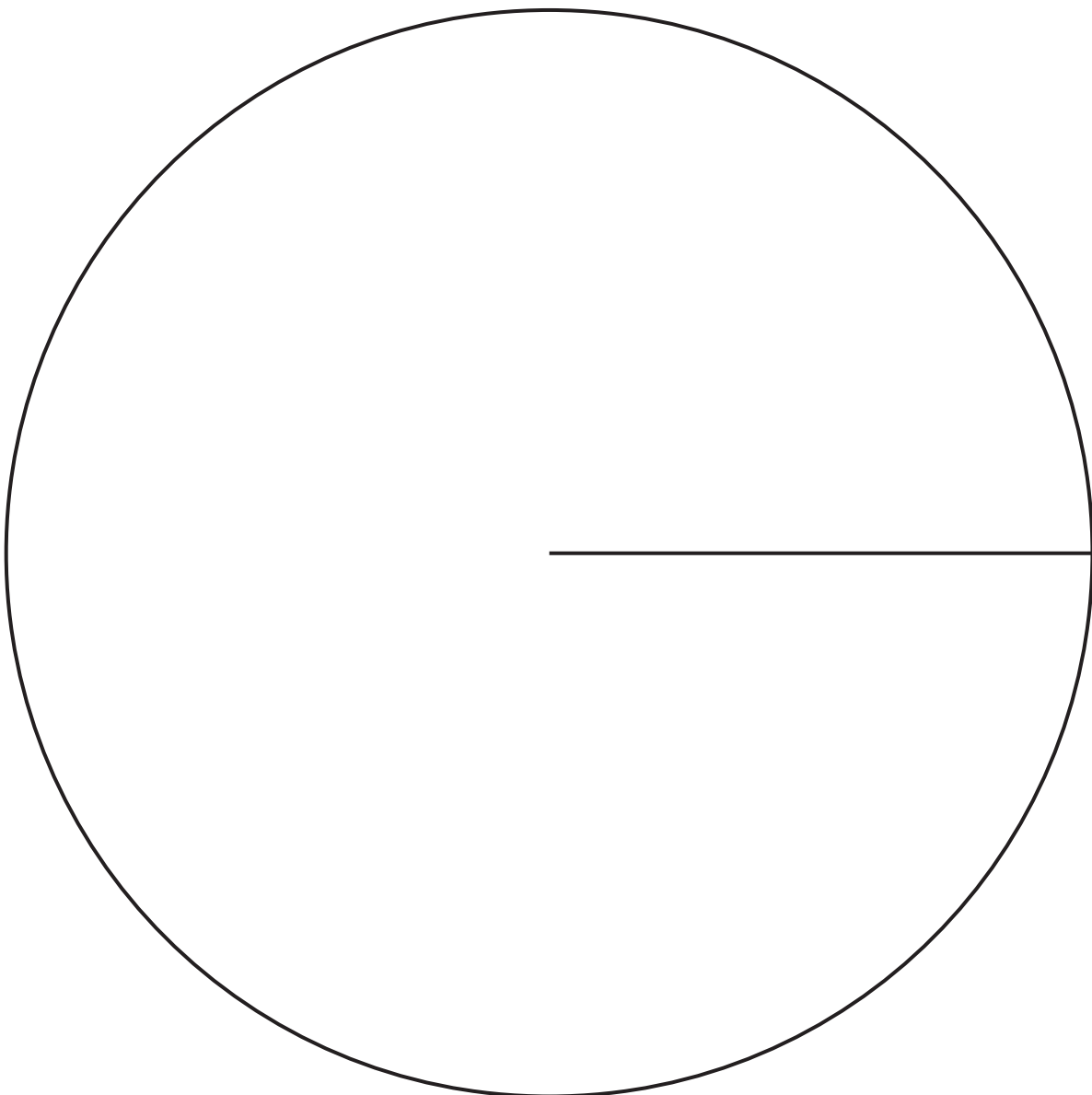
- (b) the median. [1 mark]

Answer _____ kg

(b) The number of items sold in a shop was recorded as follows.

Item	Number	Angle
Television	25	
Fridge	12	
Washing Machine	8	
Camera	15	

Draw a pie chart to illustrate this information. [4 marks]



6 (a) The diagram shows a triangle.

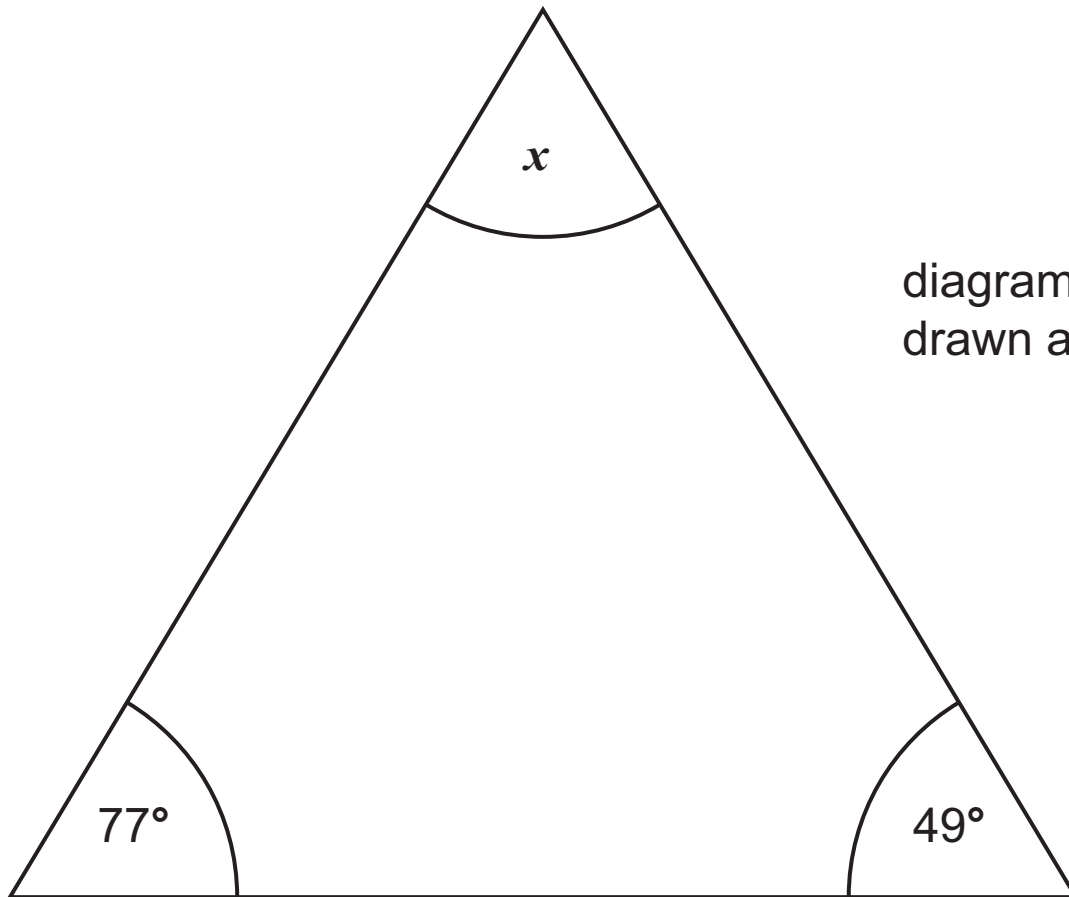


diagram not
drawn accurately

Work out the size of the angle marked x [2 marks]

Answer $x =$ _____ $^\circ$

(b) A sheet of A4 paper is a rectangle 297 mm long and 210 mm wide.

Calculate the area of a sheet of A4 paper.

Give your answer in square centimetres. [2 marks]

Answer _____ cm^2

(c) ABCD is a quadrilateral.

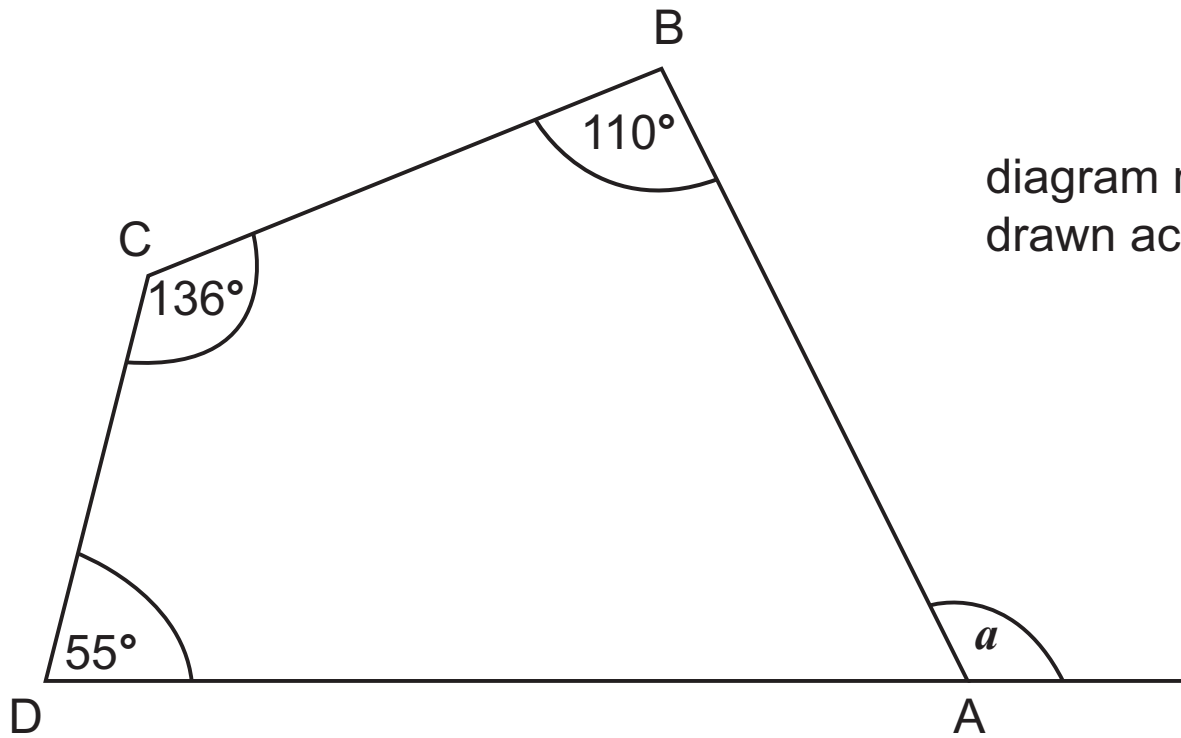


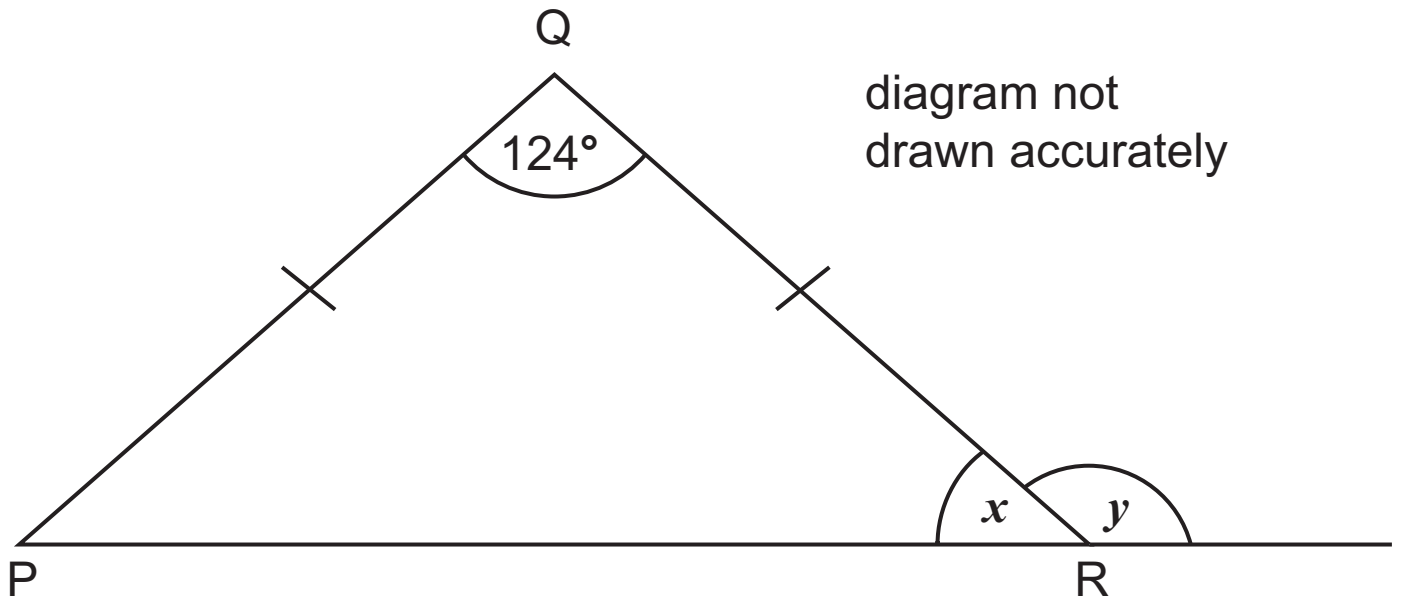
diagram not
drawn accurately

Work out the size of the exterior angle, a . [3 marks]

Answer $a =$ _____ $^\circ$

(d) PQR is an isosceles triangle.

$$PQ = QR$$



Calculate the angles x and y . [3 marks]

Answer $x =$ _____^o

$y =$ _____^o

7 Solve

(a) $\frac{y}{4} = 12$ [1 mark]

Answer $y =$ _____

(b) $2d - 4 = 5$ [2 marks]

Answer $d =$ _____

8 (a) Simplify $6b - 2k + 3b - k$ [2 marks]

Answer _____

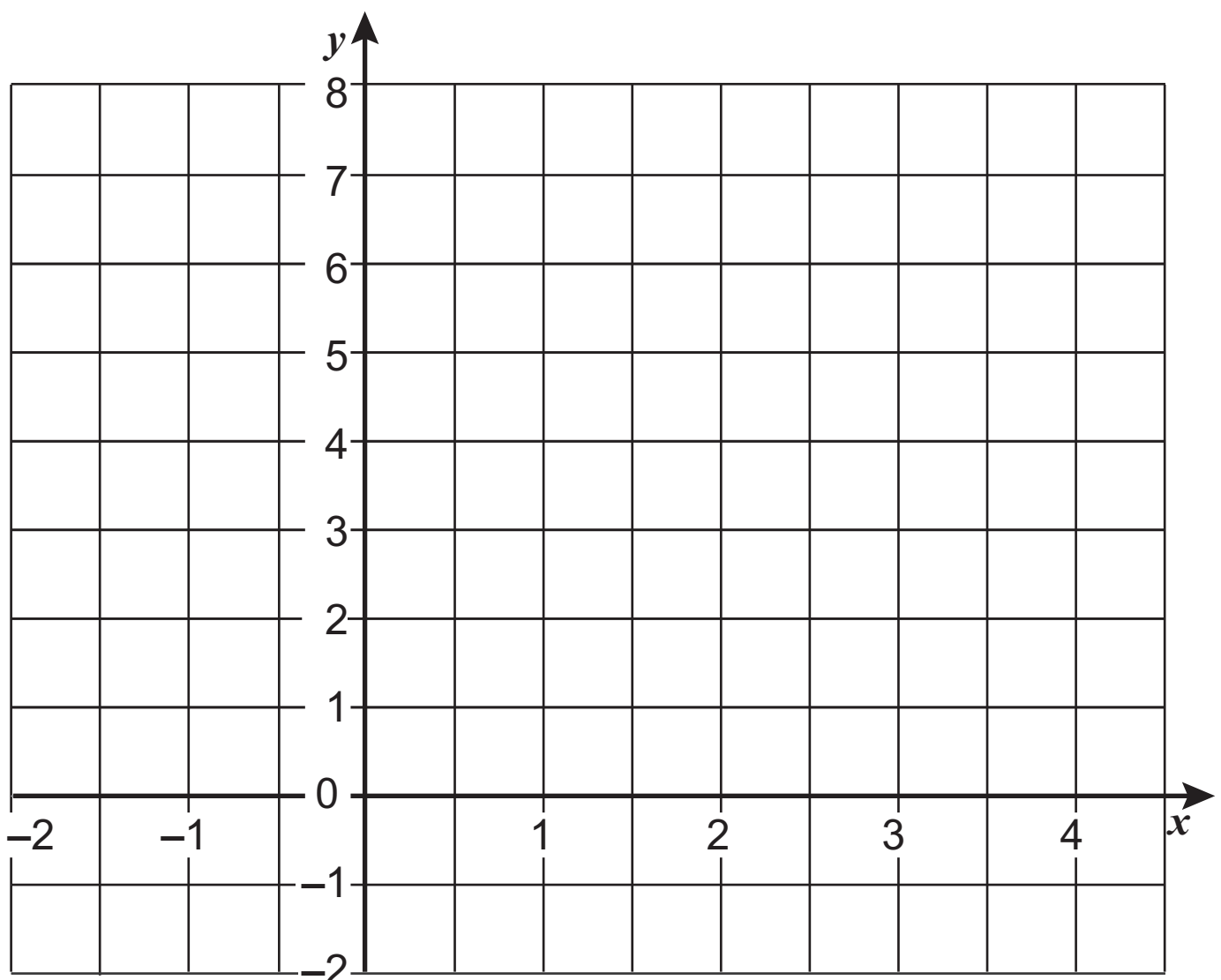
(b) Find the value of $3x + 5y$ when $x = -2$ and $y = 3$
[2 marks]

Answer _____

- 9 (a) Complete the table of values for $y = 5 - 2x$
[2 marks]

x	-1	0	1	2	3
y	7				

- (b) On the axes below, draw the graph of $y = 5 - 2x$
[1 mark]

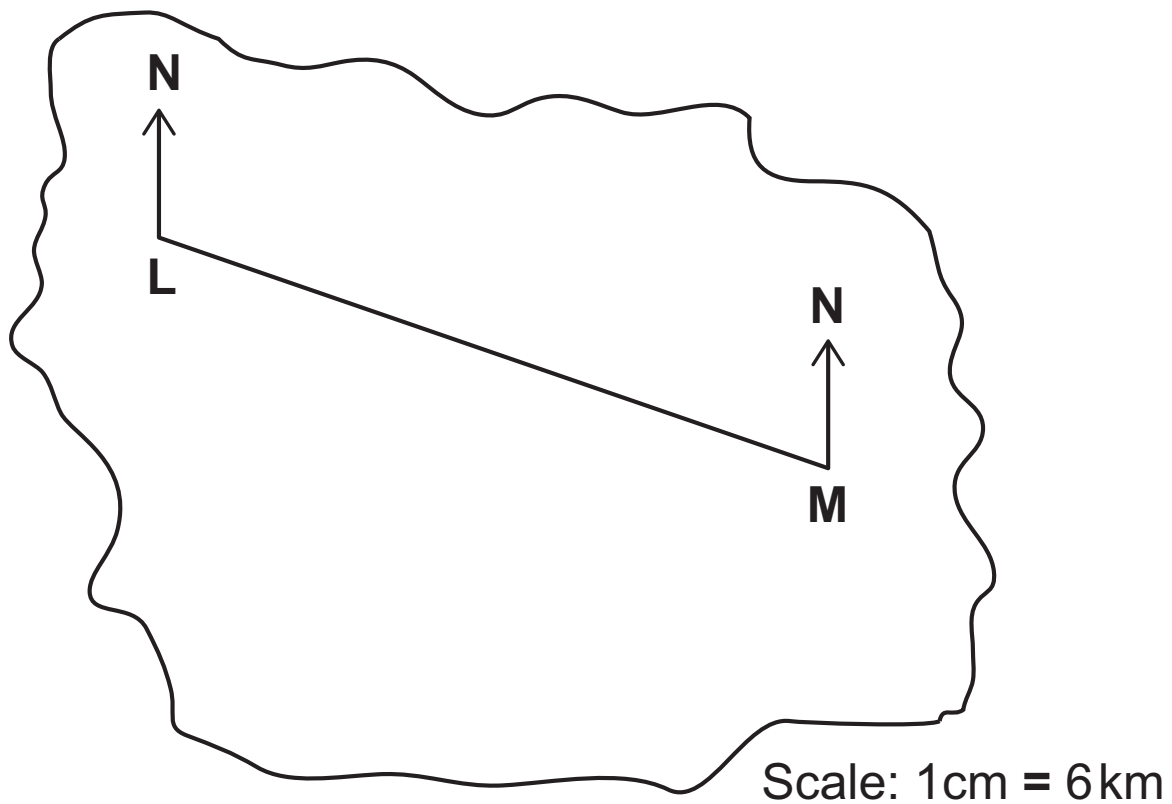


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(Questions continue overleaf)

10 The map of an island is shown below.

L and **M** are the positions of two houses on the island.



(a) What is the bearing of **L** from **M**? [1 mark]

Answer _____ °

- (b) Calculate the actual distance from **L** to **M** in kilometres.
[2 marks]

Answer _____ km

- (c) A third house, **H**, is on a bearing of 130° from **L** and on a bearing of 225° from **M**.
Mark the position of **H** on the diagram on page 16.
[3 marks]

11 The petrol tank of a type of lawnmower holds $\frac{2}{3}$ of a litre.

How many tanks of this type of lawnmower can be completely filled from a 5 litre can? [2 marks]

Answer _____

12 There are 150 Year 8 pupils in St. Kilda's Secondary School.

$\frac{3}{5}$ of these pupils come to school by bus.

24% walk. The remainder come by car.

How many Year 8 pupils come to school by car? [3 marks]

Answer _____

13 Bill has two options on how to pay for a car.

Option 1. Cash Price £9695

Option 2. A deposit of £1899 + 35 monthly payments of
£146 + a final payment of £3785

Calculate which option is cheaper for Bill and by how much.
[3 marks]

Answer Option _____ is cheaper by £ _____

14 The match attendance for Bidford United last week was 2350

This week the match attendance fell by 640

To the nearest whole number, what was the percentage fall on the match attendance? [2 marks]

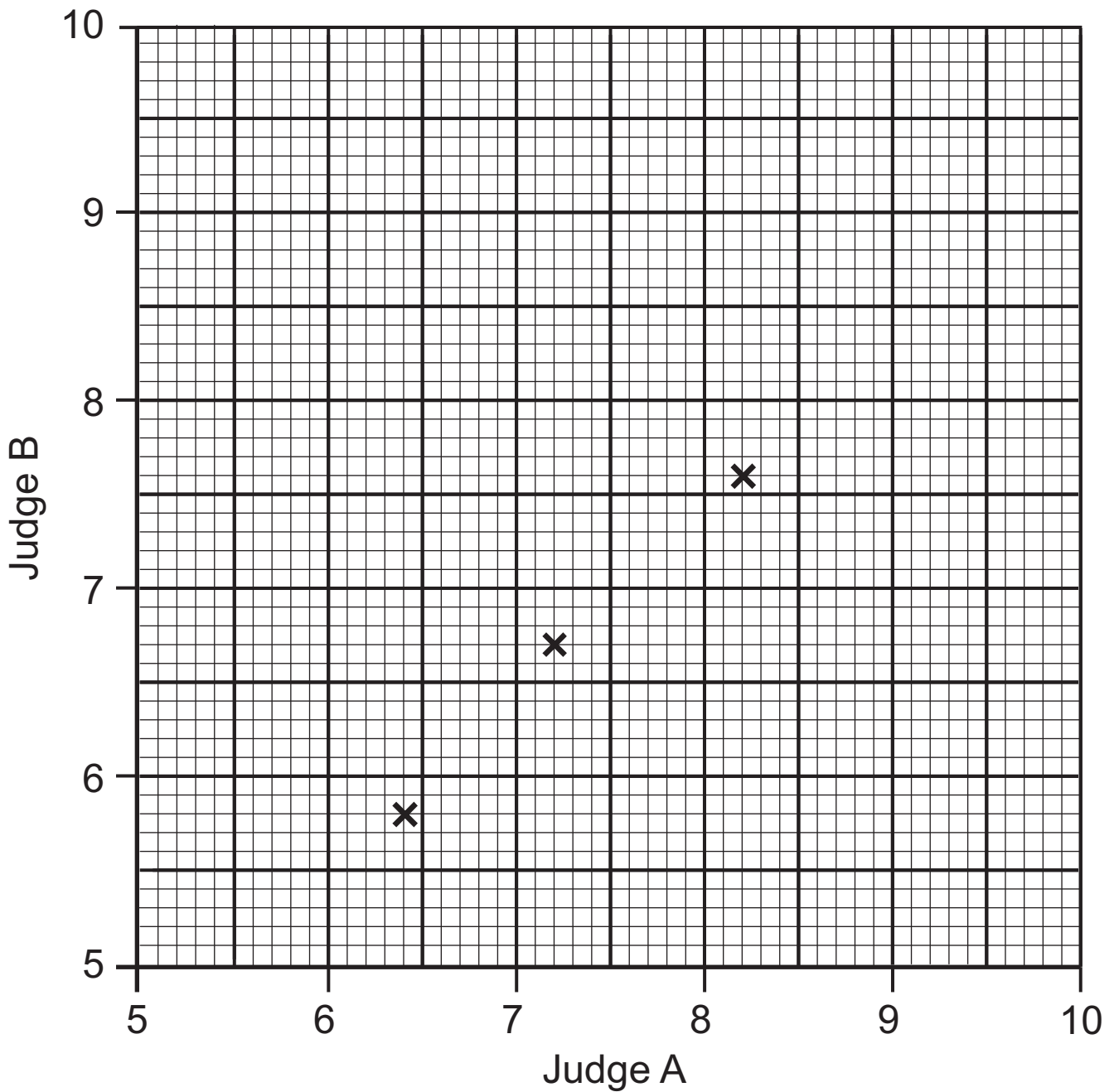
Answer _____ %

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(Questions continue overleaf)

15 The table shows the marks awarded by two judges to the first seven competitors in a dancing competition.

Judge A	8.2	6.4	7.2	6.8	5.6	8.2	9.0
Judge B	7.6	5.8	6.7	6.8	5.2	8.6	9.2



(a) The first three points have already been plotted.
Use the data to complete the scatter graph. [2 marks]

(b) Draw the line of best fit. [1 mark]

(c) Another competitor was awarded 7.7 marks by Judge A.
Estimate the marks awarded to this competitor by
Judge B. [1 mark]

Answer _____

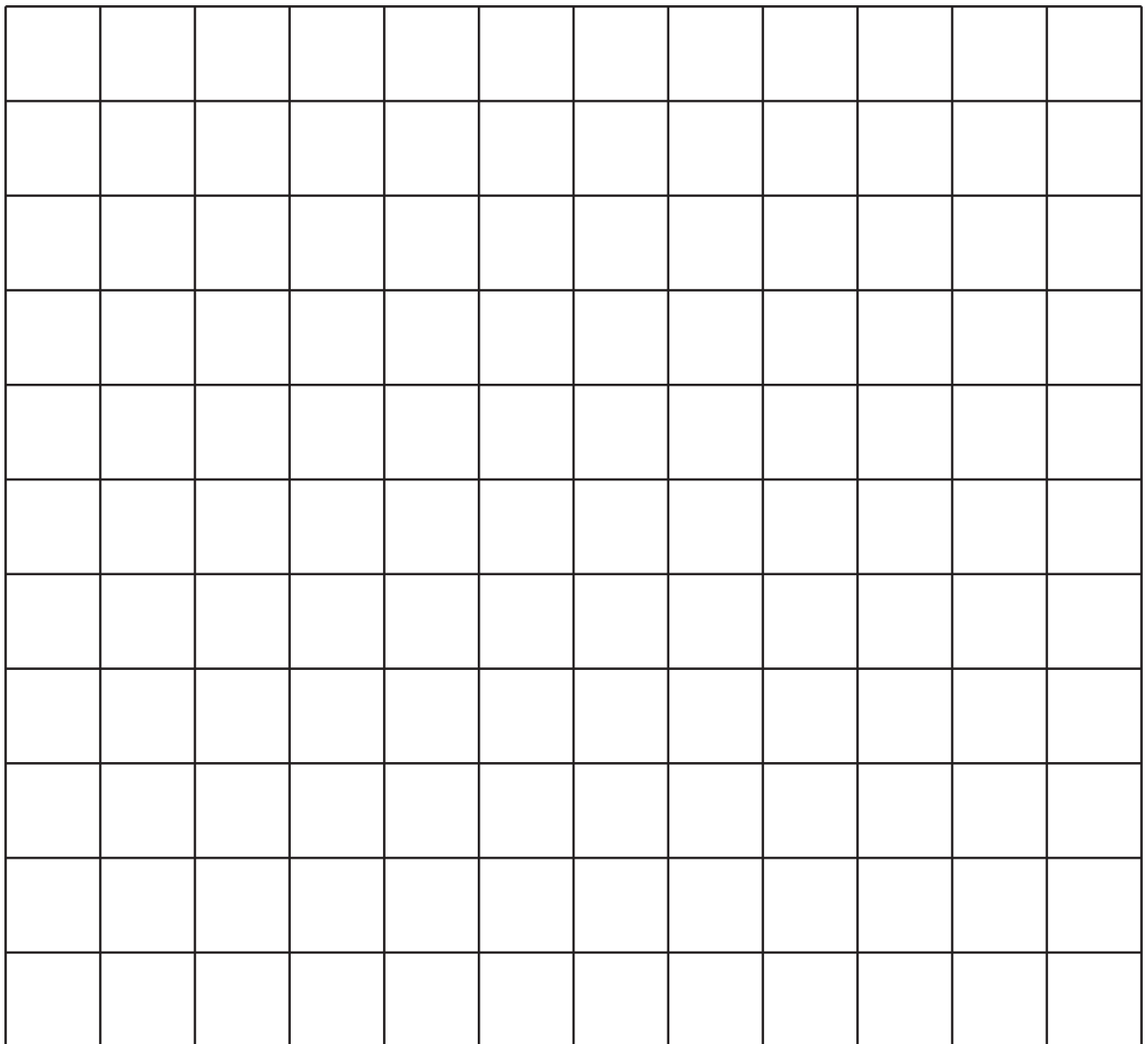
(d) What type of correlation does your graph show?
[1 mark]

Answer _____

16 The increase in height of 100 children over a period of time was recorded.

Increase in height (h cm)	$0 < h \leq 2$	$2 < h \leq 4$	$4 < h \leq 6$	$6 < h \leq 8$	$8 < h \leq 10$
Frequency	12	34	42	10	2

(a) Show this information on a bar chart. [3 marks]



(b) Write down the modal class interval. [1 mark]

Answer _____

(c) Describe how you would construct a frequency polygon for the data. [2 marks]

17 Donna wants to investigate the hypothesis

‘Children play more computer games than adults.’

She surveys 10 girls in her class and their parents.

Give two reasons why her sample is unsuitable.

Reason 1 [1 mark] _____

Reason 2 [1 mark] _____

18 A window cleaning firm is employed to clean the windows of an office block.

The firm charges a basic fee of £50 plus £4 for each window they clean.

They clean w windows and charge £230

(a) Write an **equation** in terms of w using this information.
[2 marks]

Answer _____

(b) Solve this equation to find the number of windows cleaned. [2 marks]

Answer _____ windows

19 (a) Solve $3p + 1 = 13 - p$ [3 marks]

Answer $p =$ _____

(b) Write down the n th term for the sequence [2 marks]

3, 8, 13, 18,

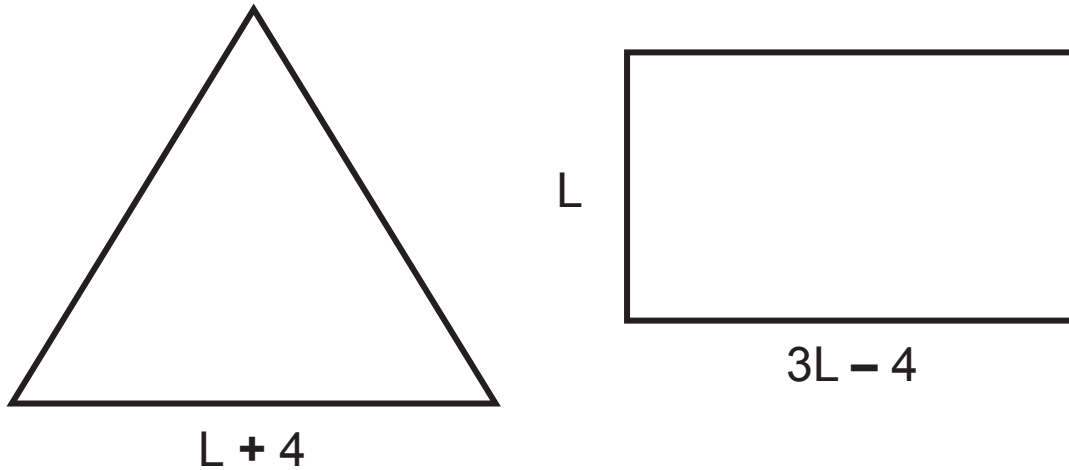
Answer _____

(c) Expand and simplify $m(2 + m) + 3(2 - m)$ [2 marks]

Answer _____

20 An equilateral triangle has sides of length $(L + 4)$ and a rectangle has sides of length L and $(3L - 4)$ as shown.

diagrams not
drawn accurately



The **perimeters** of the triangle and the rectangle are equal.

Set up and solve an equation to find the value of L .
[3 marks]

A solution by trial and improvement will not be accepted.

Answer $L =$ _____

21 Express 378 as a product of prime factors. [2 marks]

Answer _____

22 Half of the chimpanzees in a zoo weigh less than 45 kg.

$\frac{4}{5}$ of the chimpanzees weigh less than 55 kg.

No chimpanzees weigh exactly 45 kg.

What fraction of the chimpanzees weigh between 45 kg and 55 kg? [3 marks]

Answer _____

23 Sammy borrows £400 for nine months.

He is charged 12.5% per annum simple interest.

How much does he have to pay back? [3 marks]

Answer £ _____

24 The interior angle of a regular polygon is 144°

Work out the number of sides of the polygon. [3 marks]

Show your working.

Answer _____ sides

25

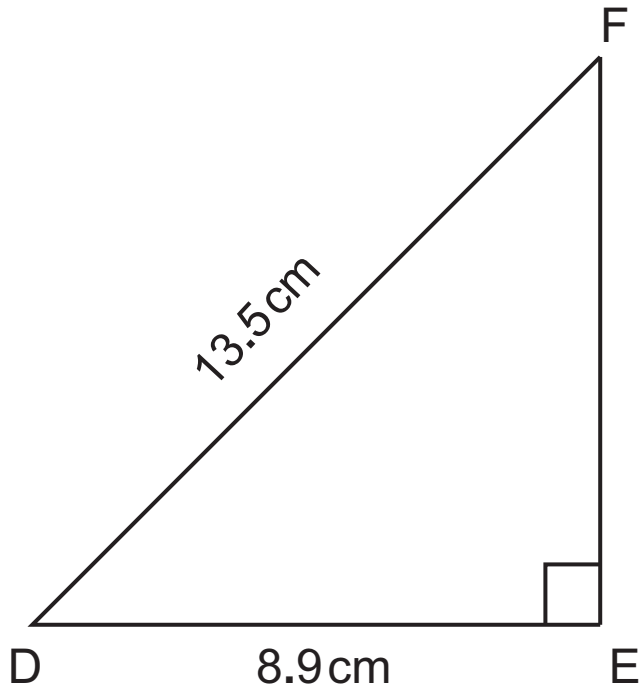


diagram not
drawn accurately

DEF is a right-angled triangle.

$DF = 13.5 \text{ cm}$ and $DE = 8.9 \text{ cm}$.

Calculate the length of EF. [3 marks]

Answer EF = _____ cm

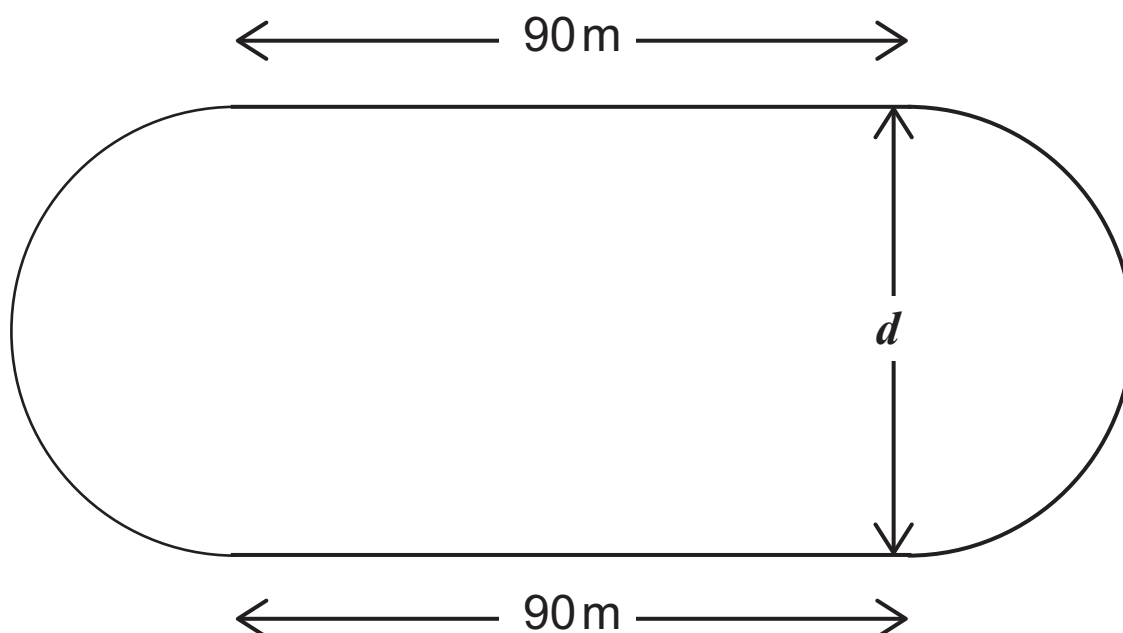
Quality of written communication will be assessed in this question.

26 The diagram below represents a running track.

It consists of two parallel straight lines and two semicircles.

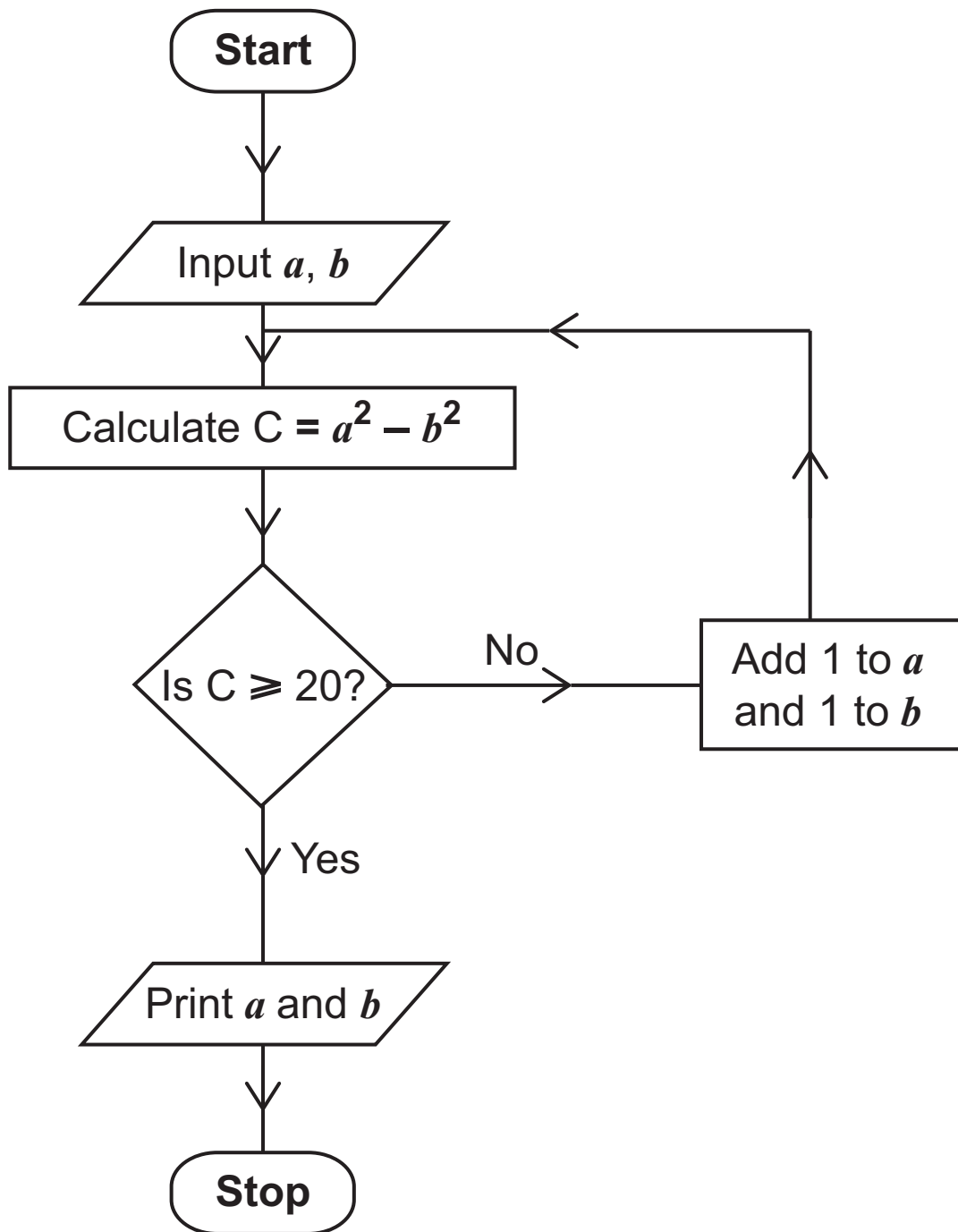
The straight lines are each 90 metres in length.

The running track has a total perimeter of 400 metres.



Calculate the distance, d , between the two straight lines.
[4 marks]

Answer $d =$ _____ metres



Starting with $a = 8$ and $b = 7$ use the flow chart to find the values printed. [3 marks]

a	b	C
8	7	

Answer $a =$ _____ $b =$ _____

THIS IS THE END OF THE QUESTION PAPER

For Examiner's use only	
Question Number	Marks
1	
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Total Marks	
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Examiner Number

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