



Rewarding Learning

General Certificate of Secondary Education
2014

Centre Number

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Candidate Number

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Mathematics

Unit T2

(With calculator)



Foundation Tier

[GMT21]



GMT21

TUESDAY 27 MAY, 9.15am–10.45am

TIME

1 hour 30 minutes.

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. Do not write outside the box, around each page, on blank pages or tracing paper.

Complete in blue or black ink only. **Do not write with a gel pen.**

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 down the right-hand side of pages 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**.

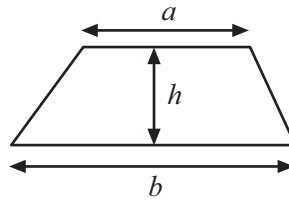
You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

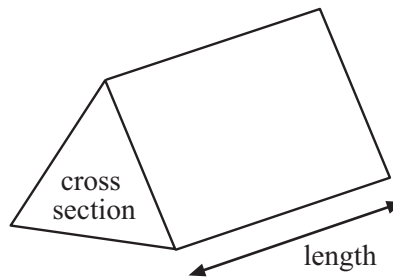


Formula Sheet

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



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



1 Calculate

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

Answer _____ [2]

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

Answer _____ [1]

Examiner Only**Marks Remark**

Total Question 1

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

How many flights were on time?

Answer _____ [2]

Total Question 2

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?

Answer _____ [3]

Total Question 3

[Turn over]

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

2	5	6	7	9		
3	1	3	7	8	8	9
4	2	3	5	7	9	
5	3	4	5	6	8	
6	2	4	6			

Key $2 \mid 5 = 2.5 \text{ kg}$

Write down

(a) the range,

Answer _____ kg [1]

(b) the median.

Answer _____ kg [1]

Examiner Only

Marks Remark

Total Question 4



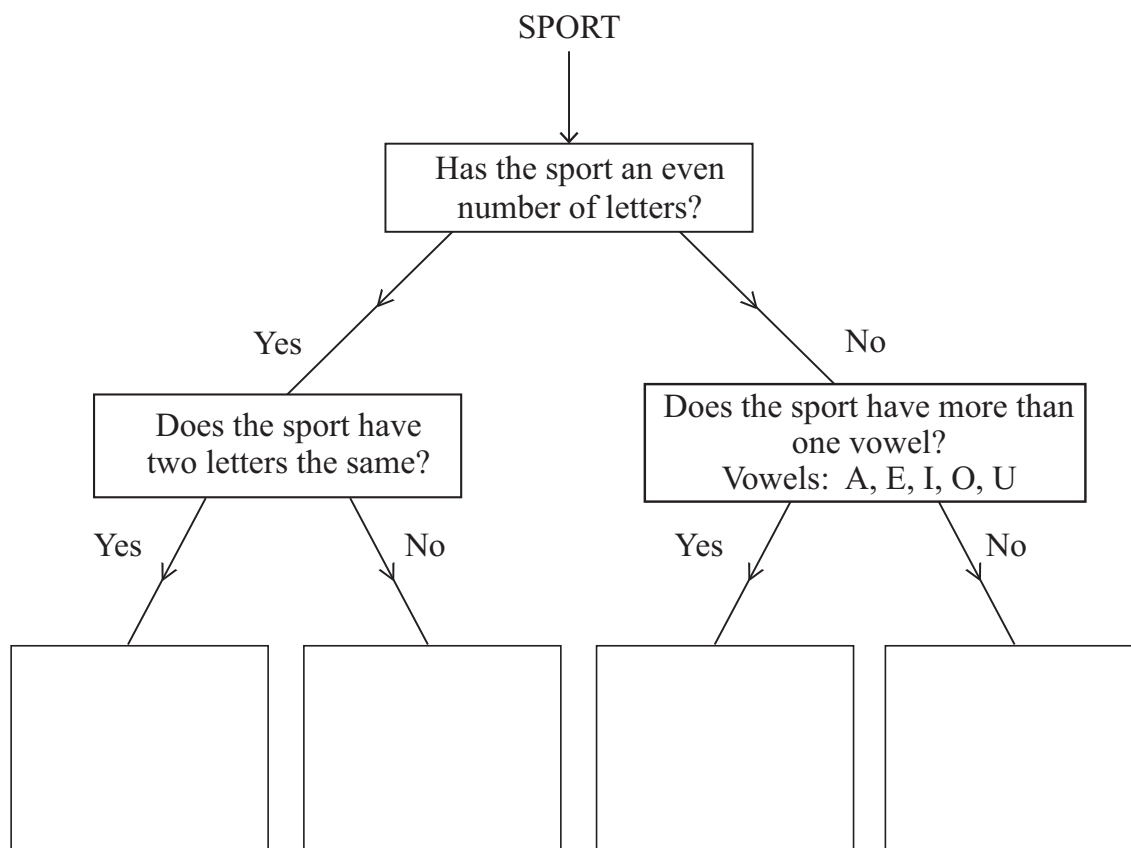
5 (a) Use the decision tree diagram to write the sports in the correct boxes.

CYCLING

GYMNASTICS

ROWING

TENNIS



[2]

Examiner Only

Marks

Remark



- 6 (a) The diagram shows a triangle.

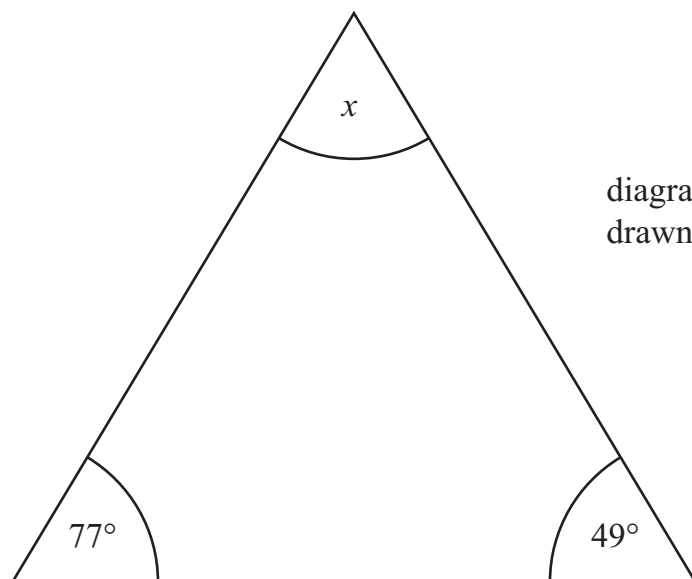


diagram not
drawn accurately

Work out the size of the angle marked x

Answer $x =$ _____ $^{\circ}$ [2]

- (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.

Answer _____ cm^2 [2]

Examiner Only

Marks

Remark

[Turn over]



(c) ABCD is a quadrilateral.

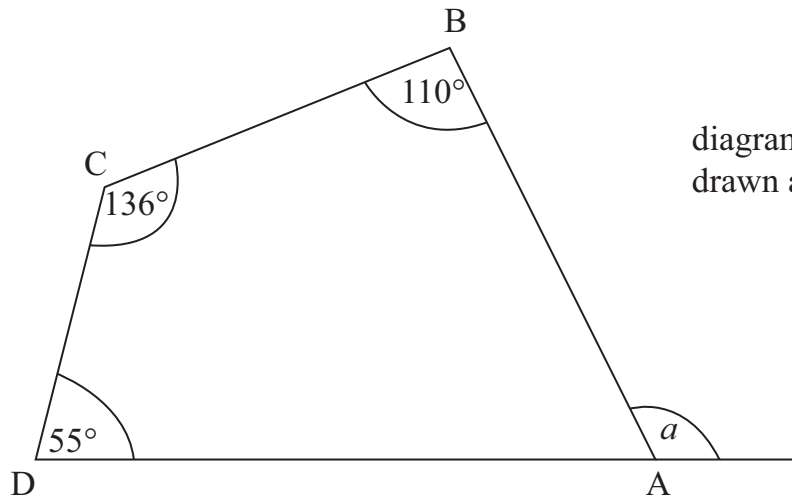


diagram not
drawn accurately

Work out the size of the exterior angle, a .

Answer $a = \underline{\hspace{2cm}}^\circ$ [3]

(d) PQR is an isosceles triangle.

$PQ = QR$

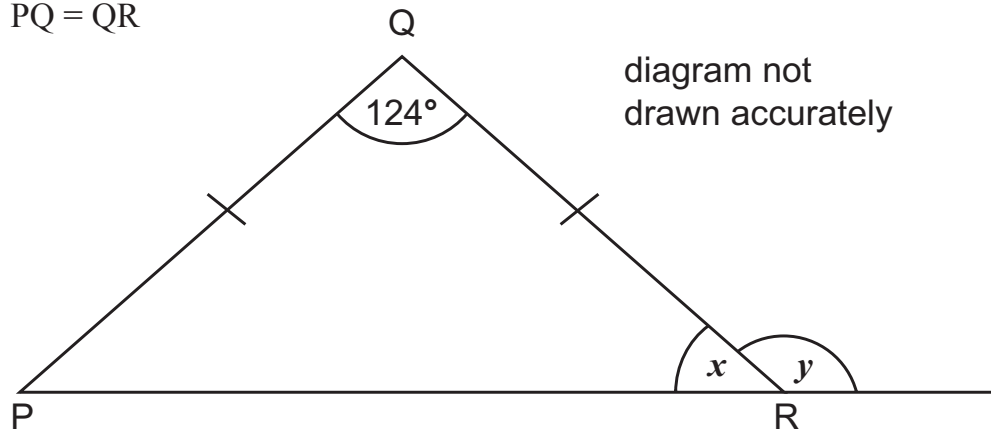


diagram not
drawn accurately

Calculate the angles x and y .

Answer $x = \underline{\hspace{2cm}}^\circ$
 $y = \underline{\hspace{2cm}}^\circ$ [3]

Examiner Only

Marks Remark

Total Question 6



7 Solve

(a) $\frac{y}{4} = 12$

Answer $y =$ _____ [1]

(b) $2d - 4 = 5$

Answer $d =$ _____ [2]

Examiner Only

Marks

Remark

Total Question 7

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

Answer _____ [2]

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

Answer _____ [2]

Total Question 8



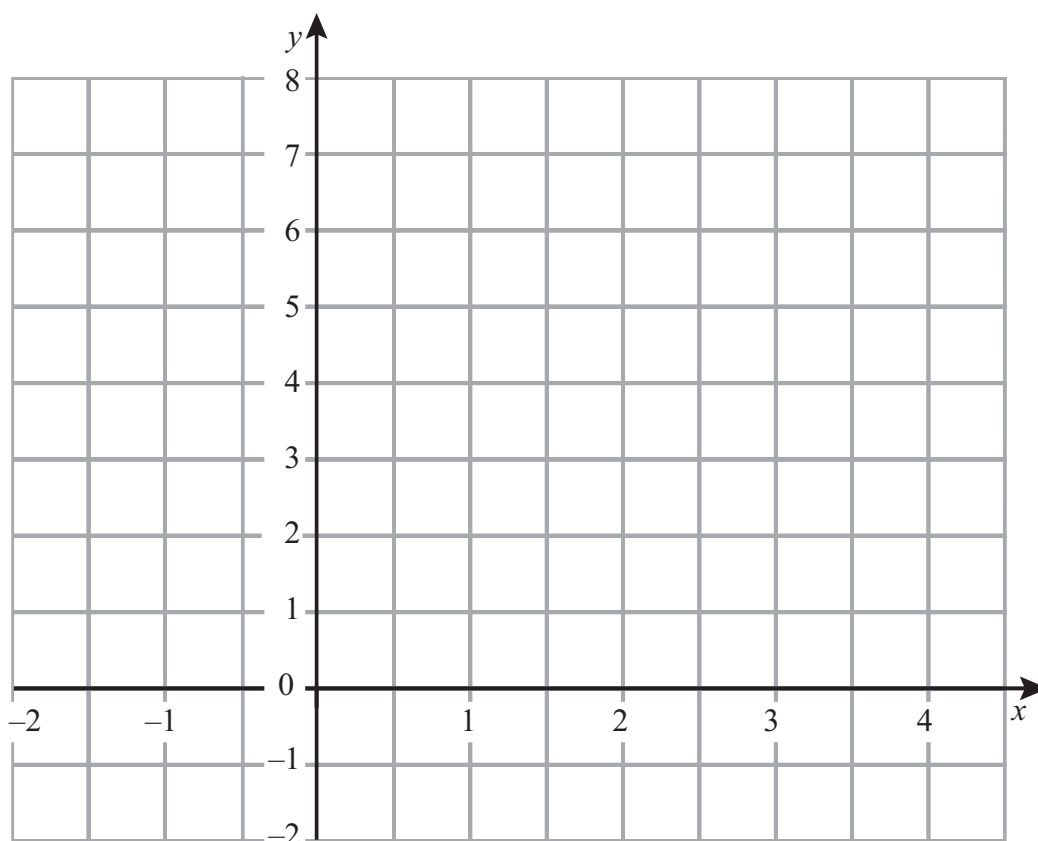
9 (a) Complete the table of values for $y = 5 - 2x$

x	-1	0	1	2	3
y	7				

[2]

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

[1]



Examiner Only

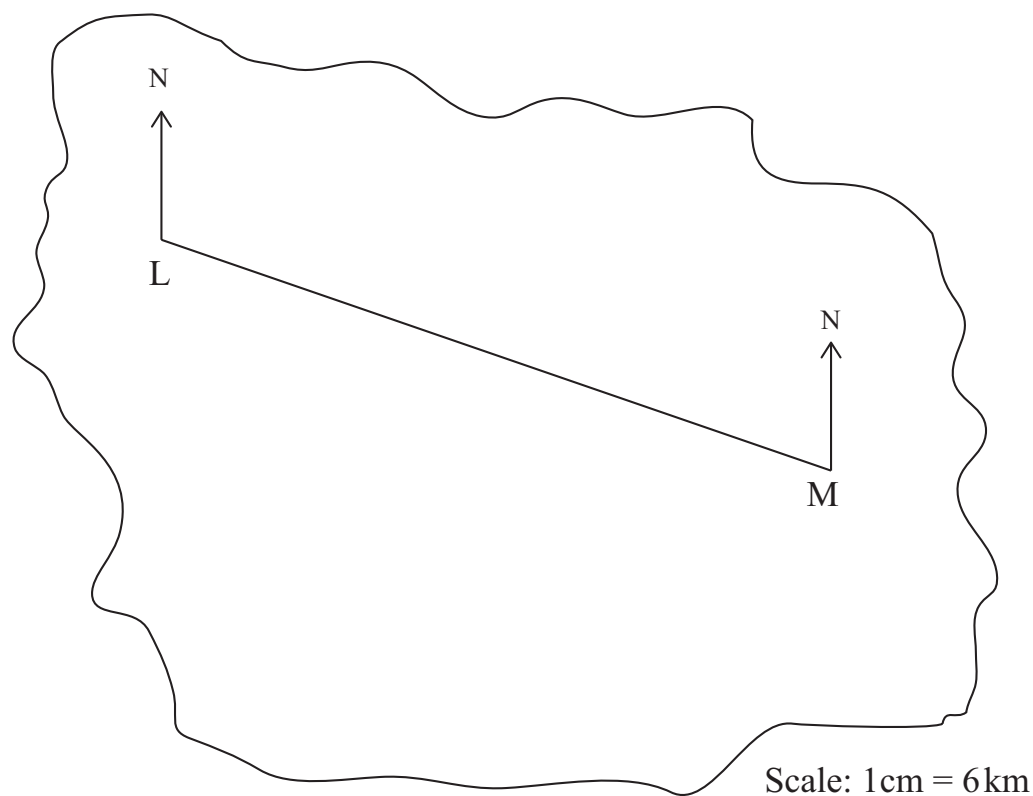
Marks Remark

Total Question 9



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?

Answer _____° [1]

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

Answer _____ km [2]

- (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 above.

[3]

Examiner Only	
Marks	Remark
Total Question 10	

[Turn over



- 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?

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 11	
Total Question 12	

- 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?

Answer _____ [3]



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.

Answer Option _____ is cheaper by £ _____ [3]

Examiner Only

Marks

Remark

Total Question 13

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?

Answer _____ % [2]

Total Question 14

[Turn over]

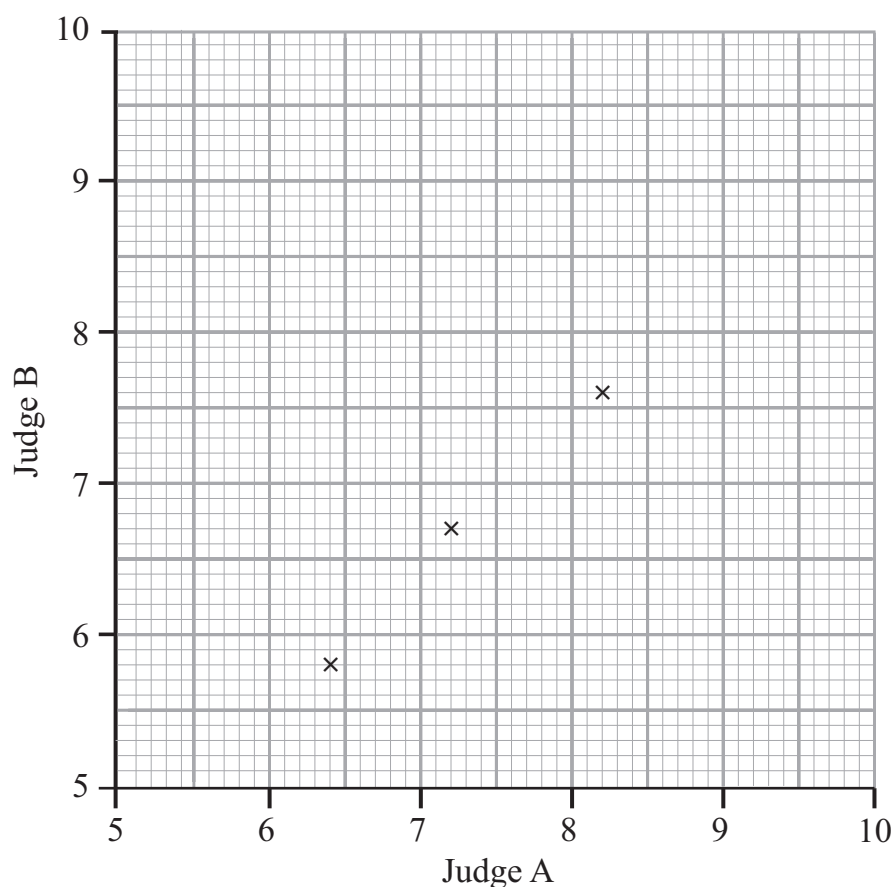
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24GMT2113

- 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]
- (b) Draw the line of best fit. [1]
- (c) Another competitor was awarded 7.7 marks by Judge A.
Estimate the marks awarded to this competitor by Judge B.

Answer _____ [1]

- (d) What type of correlation does your graph show?

Answer _____ [1]

Examiner Only

Marks Remark

Total Question 15



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]

(b) Write down the modal class interval.

Answer _____ [1]

(c) Describe how you would construct a frequency polygon for the data.

_____ [2]

Examiner Only

Marks

Remark

Total Question 16

[Turn over



Examiner Only	
Marks	Remark
Total Question 17	
Total Question 18	

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

Answer $p =$ _____ [3]

(b) Write down the n th term for the sequence

3, 8, 13, 18,

Answer _____ [2]

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

Answer _____ [2]

Examiner Only

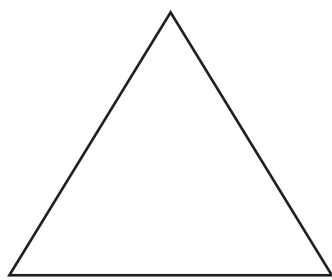
Marks Remark

Total Question 19

[Turn over]

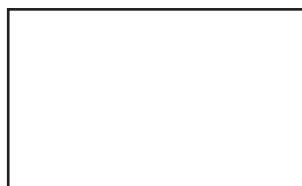


- 20 An equilateral triangle has sides of length $(L + 4)$ and a rectangle has sides of length L and $(3L - 4)$ as shown.



$L + 4$

L



$3L - 4$

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 .

A solution by trial and improvement will not be accepted.

Answer $L =$ _____ [3]

Total Question 20

- 21 Express 378 as a product of prime factors.

Total Question 21

Answer _____ [2]



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?

Answer _____ [3]

Examiner Only

Marks Remark

Total Question 22

23 Sammy borrows £400 for nine months.

He is charged 12.5% per annum simple interest.

How much does he have to pay back?

Answer £ _____ [3]

Total Question 23

[Turn over



Show your working.

Answer _____ sides [3]

Examiner Only	
Marks	Remark
Total Question 24	

A right triangle with vertices D, E, and F. The right angle is at vertex E, indicated by a square symbol. The horizontal leg DE is labeled 8.9 cm. The hypotenuse DF is labeled 13.5 cm. The vertical leg is EF.

diagram not
drawn accurately

Calculate the length of EF.

Answer EF = _____ cm [3]

Total Question	25	

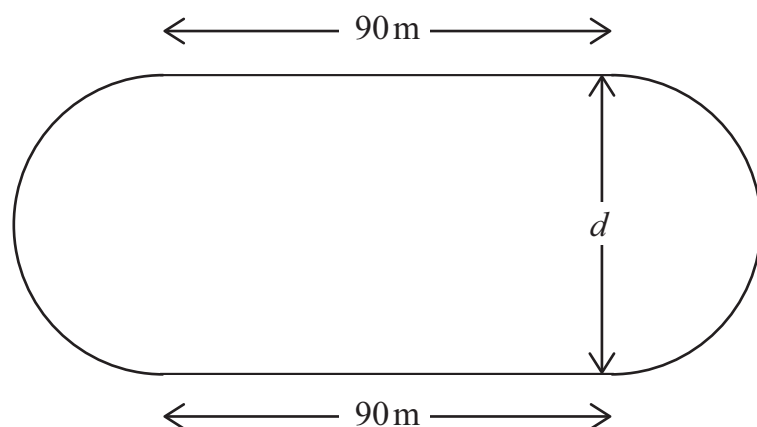
Quality of written communication will be assessed in this question.

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.

Examiner Only

Marks Remark

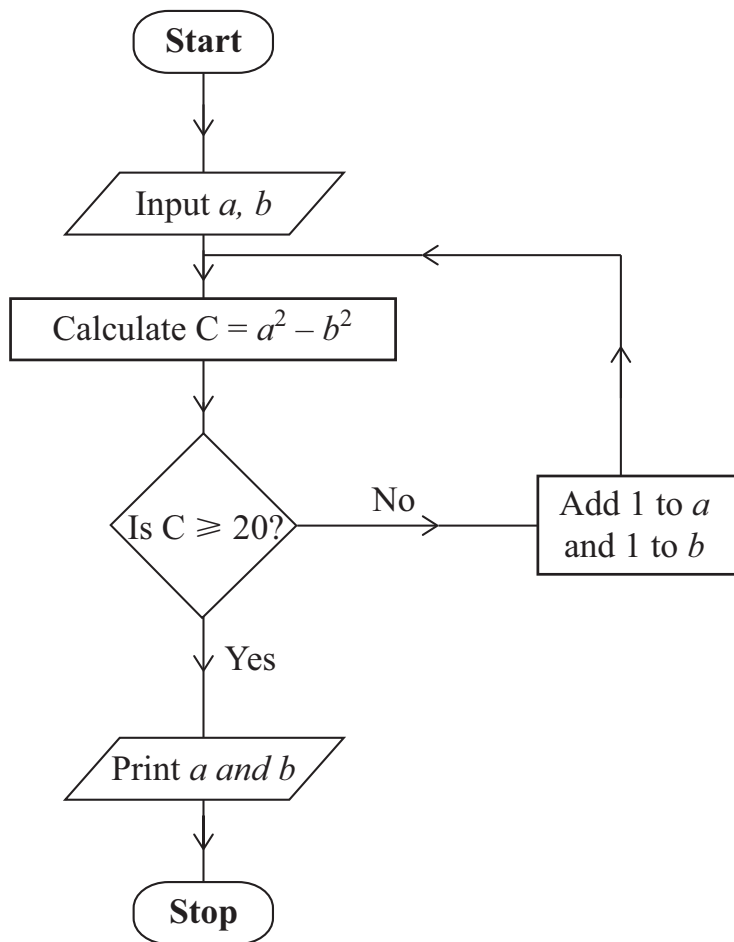
Total Question 26

Answer $d =$ _____ metres [4]

[Turn over]



27



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

a	b	C
8	7	

Answer $a =$ _____ $b =$ _____ [3]

Examiner Only

Marks Remark

Total Question 27



THIS IS THE END OF THE QUESTION PAPER

8798



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

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