Surname		Centre Number	Candidate Number
Other Names			0

WJEC CBAC

GCSE

4353/01

MATHEMATICS (UNITISED SCHEME)
UNIT 3: Calculator-Allowed Mathematics
FOUNDATION TIER

A.M. MONDAY, 11 November 2013

1 hour 30 minutes

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3·14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **7**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	8	
2.	3	
3.	3	
4.	6	
5.	9	
6.	3	
7.	8	
8.	4	
9.	5	
10.	3	
11.	3	
12.	2	
13.	5	
14.	5	
15.	4	
16.	3	
17.	6	
Total	80	

Formula List

Area of trapezium $= \frac{1}{2}(a + b)h$
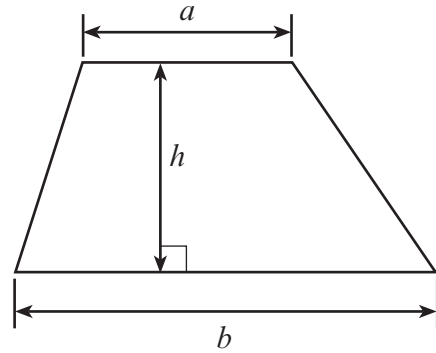
Volume of prism = area of cross-section × length

(4353-01)

1. *(a)* Mr Jones does some shopping at a fruit and veg shop.

Complete his bill. [4]

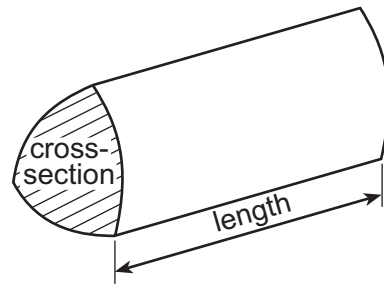| 2 kg of apples at £1.75 per kg	....
6 oranges at 32p each	....
2·5 kg of bananas at £0.68 per kg	....
1 pack of strawberries	....
TOTAL	£9.37

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(b) Mr Jones paid for the fruit with a twenty-pound note.
What change should he receive? [2]

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(c) Mr Jones later notices a special offer.
"Buy 3 packs of strawberries for £5.49".

Using this special offer, what would be the price of each pack of strawberries? [2]

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2. *(a)* Write 126·72 correct to the nearest whole number. [1]

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(b) Write 138 264 correct to the nearest 1000. [1]

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(c) Write 14·182 correct to 1 decimal place. [1]

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3. Sioned made a heart for a wall display.
Her design is shown on the centimetre-squared grid below.
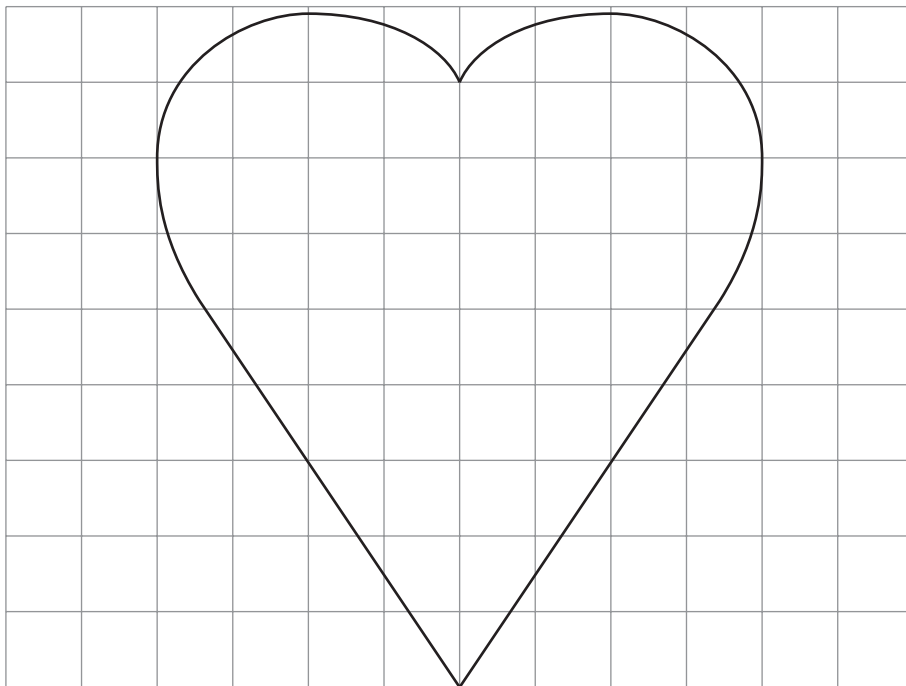
Each square on the grid represents 10 cm^2.

What is the approximate area of the heart that Sioned made? [3]

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4. Gareth caught a train from Cardiff to Holyhead and then he sailed on a ferry from Holyhead to Dublin.

(a) Gareth's train journey should have taken 4 hours and 50 minutes.
The train was delayed and the journey took 310 minutes.
By how many minutes was the train delayed? [2]

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(b) The ferry left Holyhead at 13:50.
The crossing took 3 hours and 15 minutes.
At what time did the ferry arrive in Dublin? [2]

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(c) Gareth left his house at 6:30 a.m. and arrived at his hotel in Dublin at 5:55 p.m.
Altogether, how long did his journey take?
Give your answer in hours and minutes. [2]

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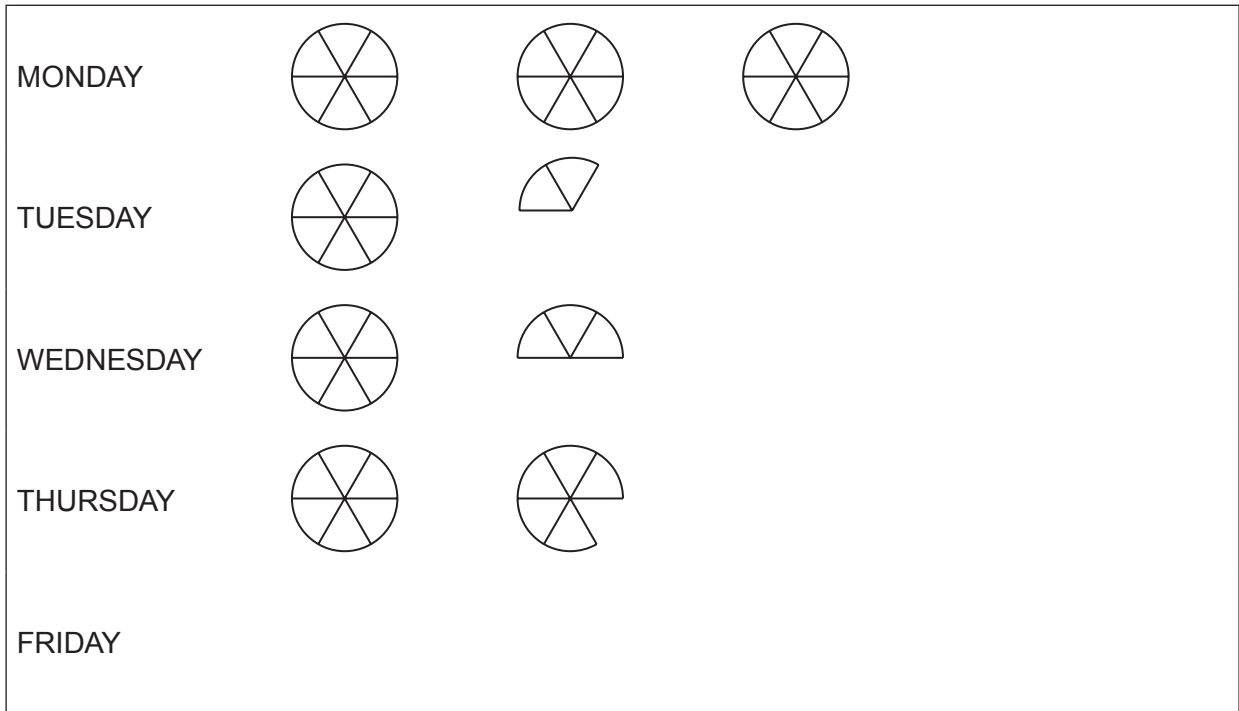
(4353-01) **Turn over.**

5. A farmer keeps hens on his farm.

The pictogram shows the number of eggs that the farmer collected on 5 days last week.

The symbol representing 12 eggs is

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

(a) 30 eggs were collected on Friday.
Complete the pictogram above. [1]

(b) Complete the table to show the number of eggs collected on each day. [2]

Day	Mon	Tues	Wed	Thurs	Fri
Number of eggs collected					30

(c) What is the median number of eggs collected per day over the 5 days? [2]

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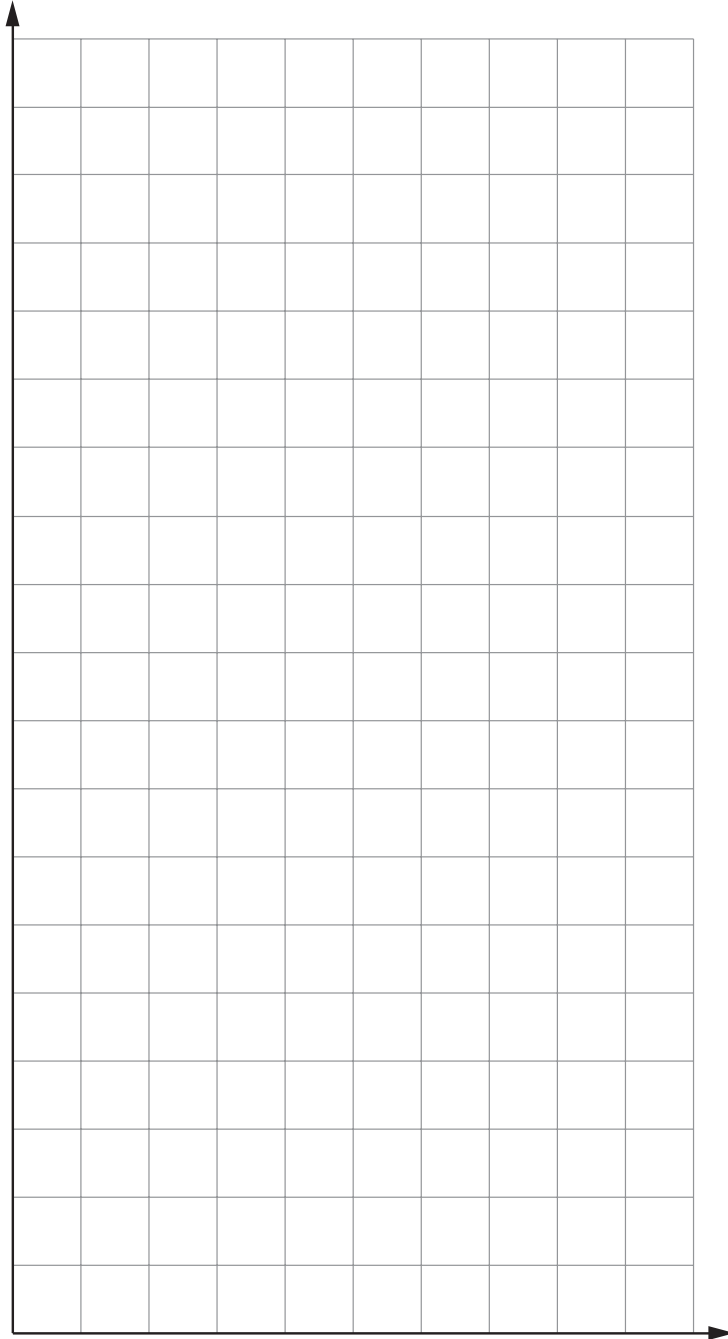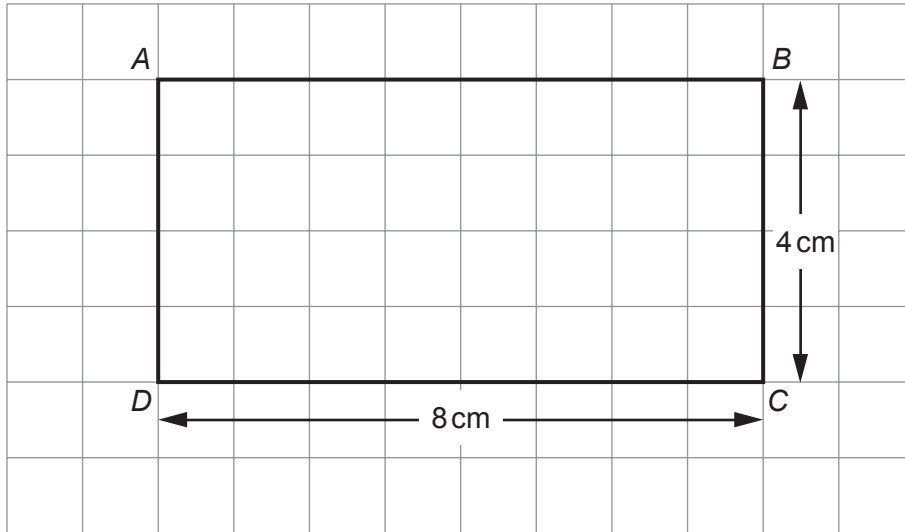
(d) On the squared paper below, draw a bar chart to represent the number of eggs collected on each of these five days. [4]

6. The diagram below shows a rectangle *ABCD*, with *AB* = 8 cm and *BC* = 4 cm.

On the grid below, draw **one different** rectangle that has

- the same perimeter as rectangle *ABCD* and
- a larger area than rectangle *ABCD*.

[3]
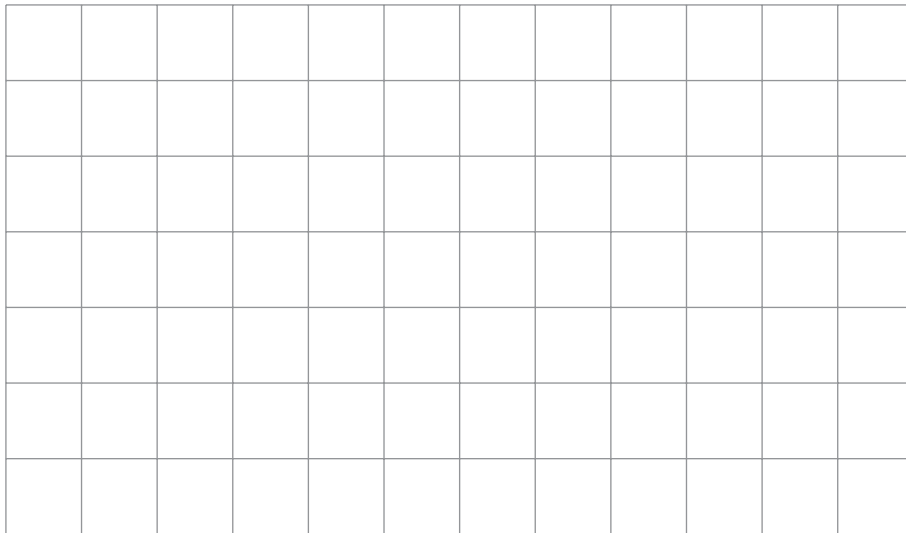
Space for working:

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7. *You will be assessed on the quality of your written communication in this question.*

Three friends are going to have a Chinese meal.

<table>
<tr><td>

KIM WOK

**SET DINNER
£23.40
FOR THREE PEOPLE**

**Special offer
10% OFF THIS PRICE**

</td><td>

KIM WOK

GENERAL MENU

**MAIN DISHES £4.50 each
FRIED RICE £1.85 per portion
PRAWN CRACKERS £1.59 per portion**

</td></tr>
</table>

The three friends consider two options:

Option 1.   Order the Set Dinner that is on special offer.

Option 2.   From the General Menu, order 3 main dishes,
3 portions of fried rice and 1 portion of prawn crackers.

The three friends choose the cheaper of the two options and they agree to share the total cost equally.

How much will each friend pay?
You must show all your working.   [8]

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8. Jane is given three calculations to work out.

$$\text{Calculation A:} \quad \sqrt{2 \cdot 25} + 1 \cdot 4^2$$

$$\text{Calculation B:} \quad \sqrt{2 \cdot 25 + 1 \cdot 4^2}$$

$$\text{Calculation C:} \quad \sqrt{(2 \cdot 25 + 1 \cdot 4)^2}$$

She thinks that they all work out to have the same answer.
Show that she is wrong and write the answers in ascending order. [4]

9. *(a)* Solve the equation $a + 3 = 11$. [1]

(b) Solve the equation $2y - 7 = 9$. [2]

(c) Solve the equation $\frac{x}{3} + 5 = 15$. [2]

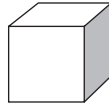**10.** Aled has a bag of 2500 small cubes, each with a volume of 1 cm^3.

He can place them together to make bigger cubes.
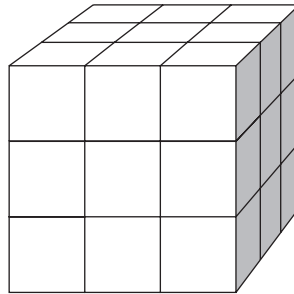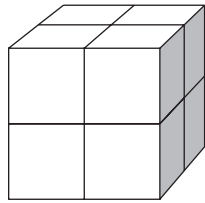
What is the volume of the largest cube that he can make with his bag of 2500 cubes? [3]

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11. Using a ruler and a pair of compasses, construct an accurate drawing of a triangle with sides of length 12·5 cm, 10 cm and 7·5 cm.
You must show all your construction arcs. [3]

12. The maximum heart rate that an athlete can safely reach when training is given by H.

Male athletes and female athletes use different formulae.

The formulae are:

$H = 202 - 0.55M,$ where M is the age of a male athlete,

$H = 216 - 0.71F,$ where F is the age of a female athlete.

Alan is a male athlete aged 24 and Bethan is a female athlete aged 20.

Which athlete has the higher maximum heart rate?
You **must** show all your working. [2]

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13. A doctor carried out tests to investigate possible cases of high blood pressure in the male work force of a factory.
She collected data from a sample of 8 male workers and recorded their age and blood pressure.

Worker	A	B	C	D	E	F	G	H
Age, in years	24	36	40	45	49	50	53	60
Blood pressure	120	125	146	137	128	138	140	147

(a) Plot the 8 points on the scatter diagram below. [2]

Blood pressure
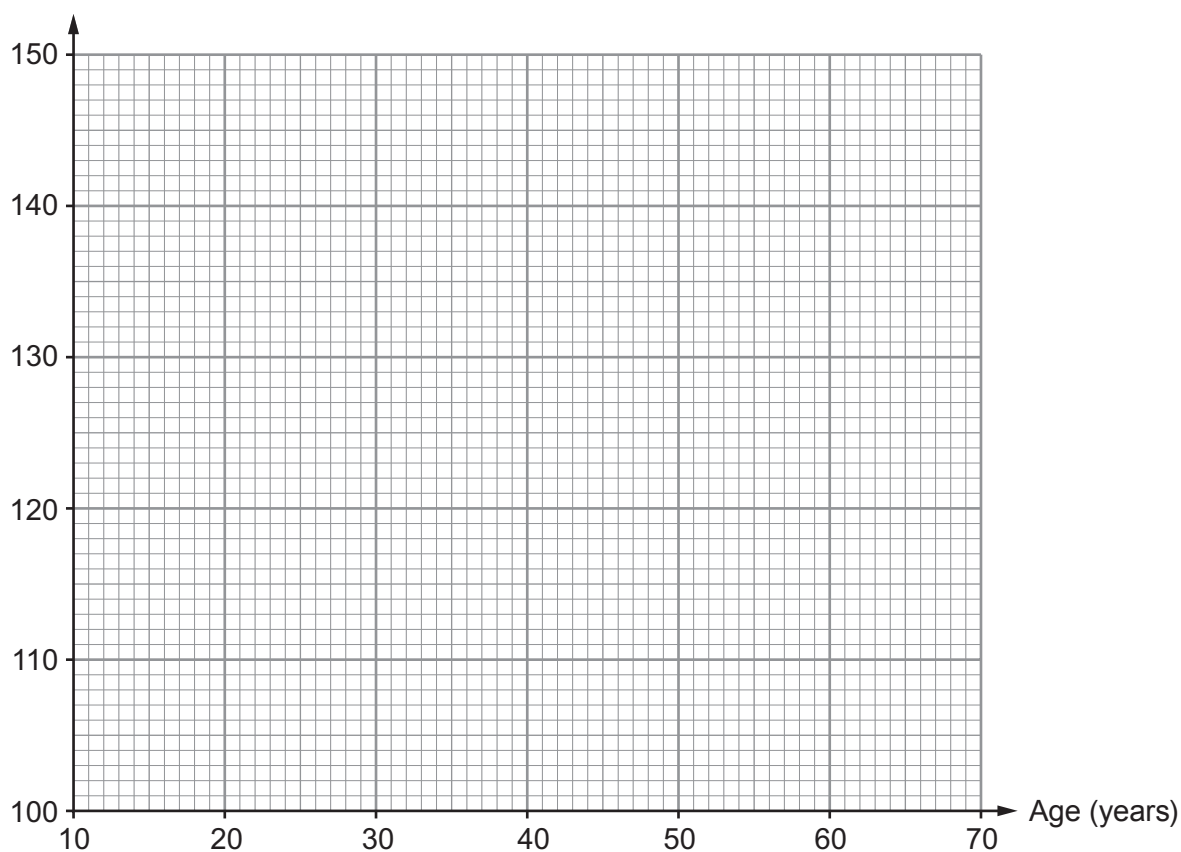
(b) Draw a line of best fit, by eye, on the scatter diagram. [1]

(c) One worker has high blood pressure for his age.

(i) Use the scatter diagram to decide which worker has high blood pressure for his age. [1]

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(ii) Use your line of best fit to estimate the normal blood pressure for a man of his age. [1]

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14. Two swimmers, Michael and Jordan, have a race over two lengths of a swimming pool. The travel graph for the race is shown below.

Distance from the start, in metres
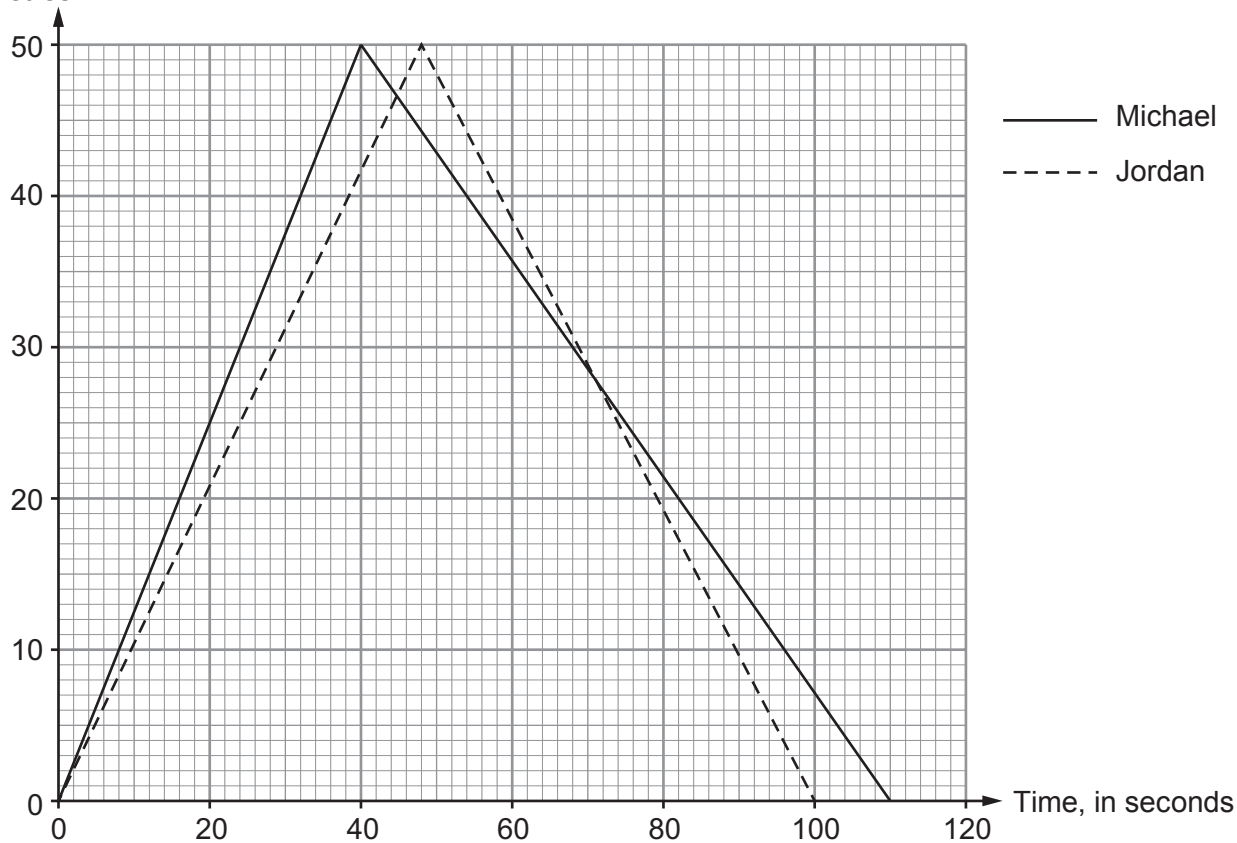
(a) Who was in the lead during the first length of the race?
Use the graph to explain your answer. [1]

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(b) What was Michael's average speed for the first length of the race?
Give the units of your answer. [3]

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(c) For what length of time were Michael and Jordan swimming in opposite directions? [1]

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Turn over.

15. A solution to the equation $x^3 + 3x = 90$ lies between 4 and 5.
Use the method of trial and improvement to find this solution correct to 1 decimal place. [4]

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16. Calculate the length of the line *AB* in the diagram below.　　　　　　　　[3]
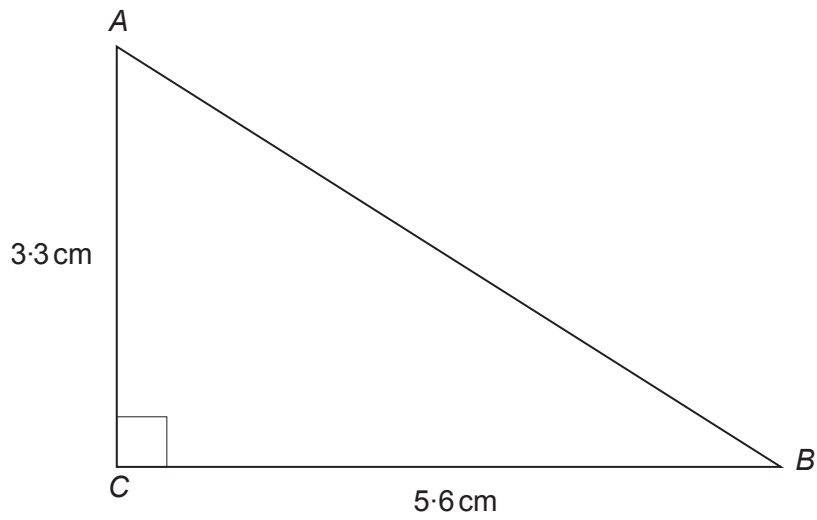
Diagram not drawn to scale

Triangle with vertex *A* at top, *C* at bottom left with right angle, *B* at bottom right. Side *AC* = 3·3 cm, side *CB* = 5·6 cm.

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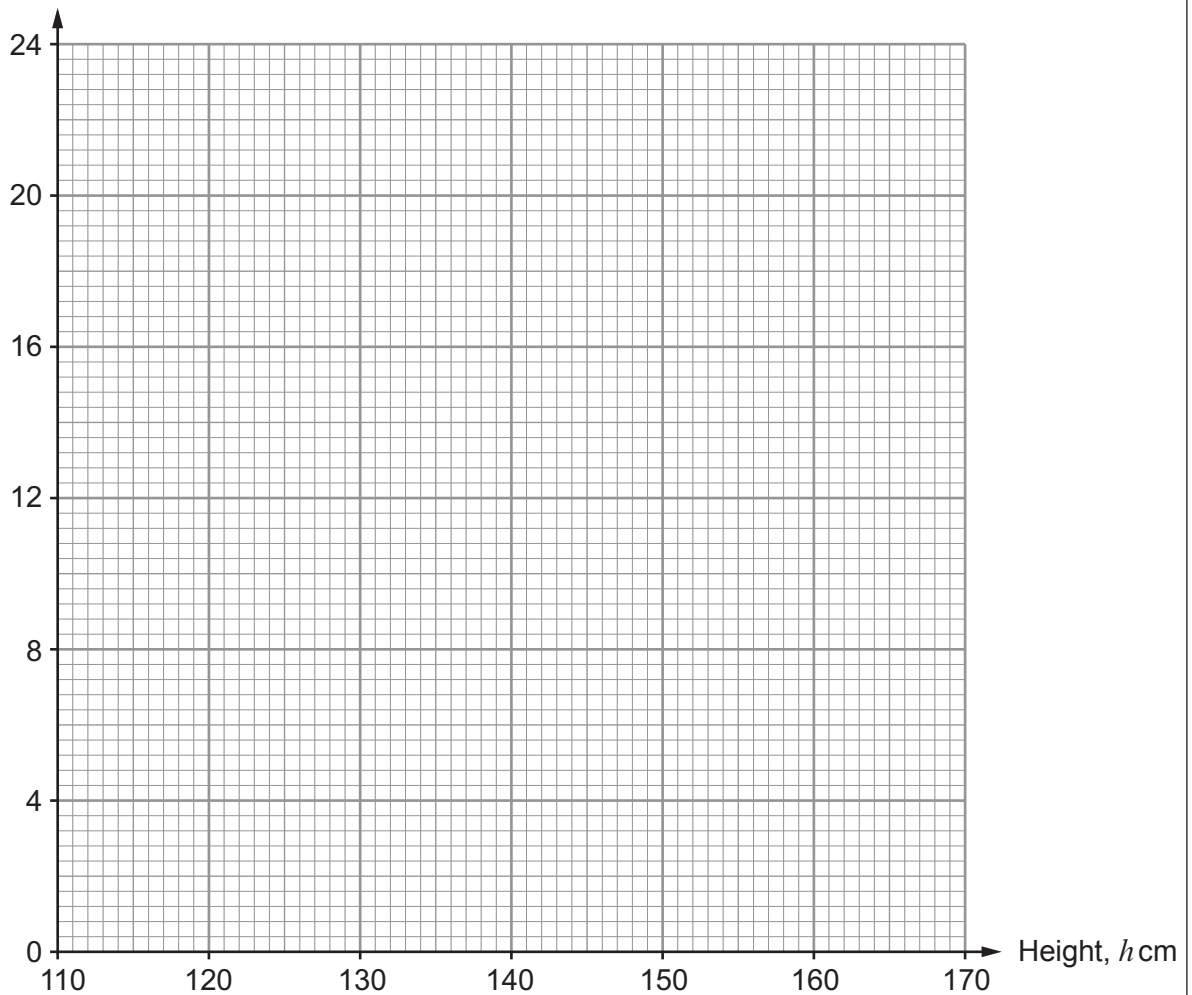
17. The heights, in centimetres, of 55 children are shown in the grouped frequency table below.

Height, h cm	Frequency
$120 < h \leqslant 130$	2
$130 < h \leqslant 140$	8
$140 < h \leqslant 150$	13
$150 < h \leqslant 160$	22
$160 < h \leqslant 170$	10

(a) Draw a frequency polygon for the heights of the children. [2]

Frequency

(b) Calculate an estimate of the mean height of the children. [4]

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END OF PAPER