THIS IS A NEW SPECIFICATION

OCR
RECOGNISING ACHIEVEMENT

F

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS A

A501/01

Unit A (Foundation Tier)

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:
- Scientific or graphical calculator
- Geometrical instruments
- Tracing paper (optional)

Tuesday 9 November 2010
Morning

Duration: 1 hour

Candidate forename		Candidate surname	

Centre number						Candidate number				

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

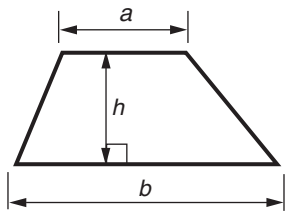
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.

You are permitted to use a calculator for this paper

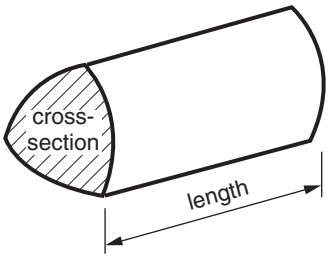
This paper has been pre modified for carrier language

Formulae Sheet: Foundation Tier

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



Volume of prism = (area of cross-section) × length



PLEASE DO NOT WRITE ON THIS PAGE

1 Here are the heights, in metres, of four mountains in Africa.

Mount Kenya	5199
Mount Zulia	2149
Mount Emin	4798
Mount Speke	4890

(a) Write these heights in order of size, smallest first.

_____ _____ _____ _____ **[1]**

smallest

(b) Calculate the difference between the height of Mount Zulia and the height of Mount Speke.

(b) _____ metres **[2]**

(c) Mount Emin is 4798 metres high.

Write 4798 correct to the nearest hundred.

(c) _____ **[1]**

(d) Mount Kenya is 5199 metres high.

Write 5199 correct to one significant figure.

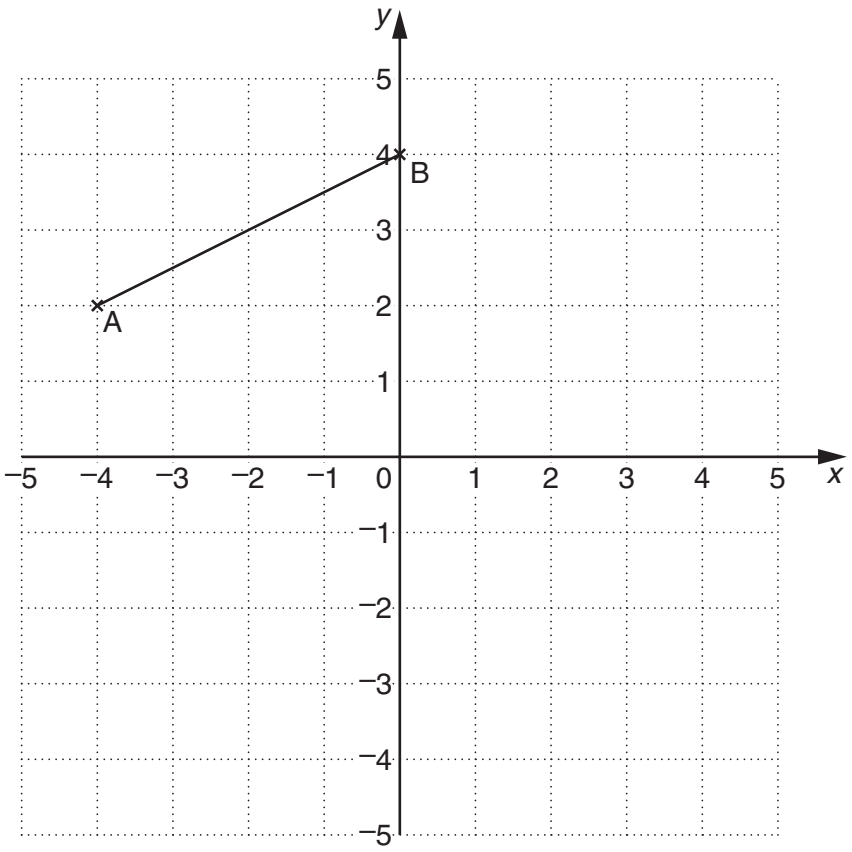
(d) _____ **[1]**

(e) The height of another mountain, Mount Mulanje, is three thousand and two metres.

Write this height in figures.

(e) _____ metres **[1]**

2



(a) Plot the point (3, 1).
Label it C. **[1]**

(b) Write down the coordinates of point B.

(b) (_____ , _____) **[1]**

(c) Write down the coordinates of the midpoint of the line AB.

(c) (_____ , _____) **[1]**

3 **(a)** Choose from the words in this list to complete each of the sentences.

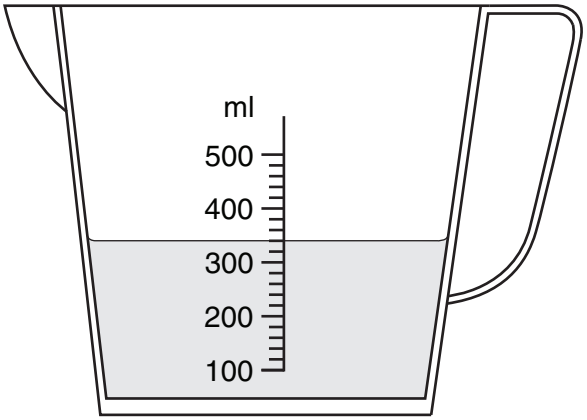
centimetres	grams	tonnes	millimetres
litres	kilograms	metres	

(i) An apple weighs 100 _____. **[1]**

(ii) A table has length 1.2 _____. **[1]**

(iii) A newborn baby has length 50 _____. **[1]**

(b) Matt has a full 1 litre carton of orange juice.
He uses the amount of orange juice shown in the diagram in a recipe.

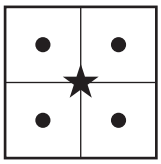


Does he have enough orange juice left **in the carton** to fill two glasses which each hold 300 ml?
Show how you decide.

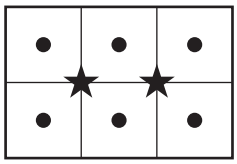
(b) _____ **[3]**

4 In a park there are flower beds of different lengths.
The gardener plans this design using roses (★) and lavenders (●).

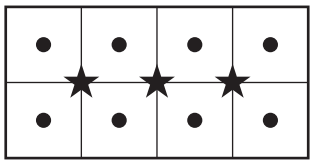
2 metre flower bed



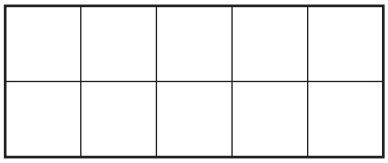
3 metre flower bed



4 metre flower bed



(a) On the grid below, draw her design for a 5 metre flower bed.



[1]

(b) Complete this table to show the number of roses and lavenders used.

Length of flower bed (metres)	2	3	4	5	6
Number of roses	1	2	3		
Number of lavenders	4	6	8		

[1]

(c) How many roses are needed for a 10 metre flower bed?

(c) _____ **[1]**

(d) How many lavenders are needed for a 10 metre flower bed?

(d) _____ **[1]**

(e) This table shows the total number of plants used altogether in each flower bed.

Length of flower bed (metres)	2	3	4	5	6
Total number of plants	5	8	11	...	...

Look at the diagrams.
Explain why the total number of plants goes up by 3 each time the length of the bed increases by 1 metre.

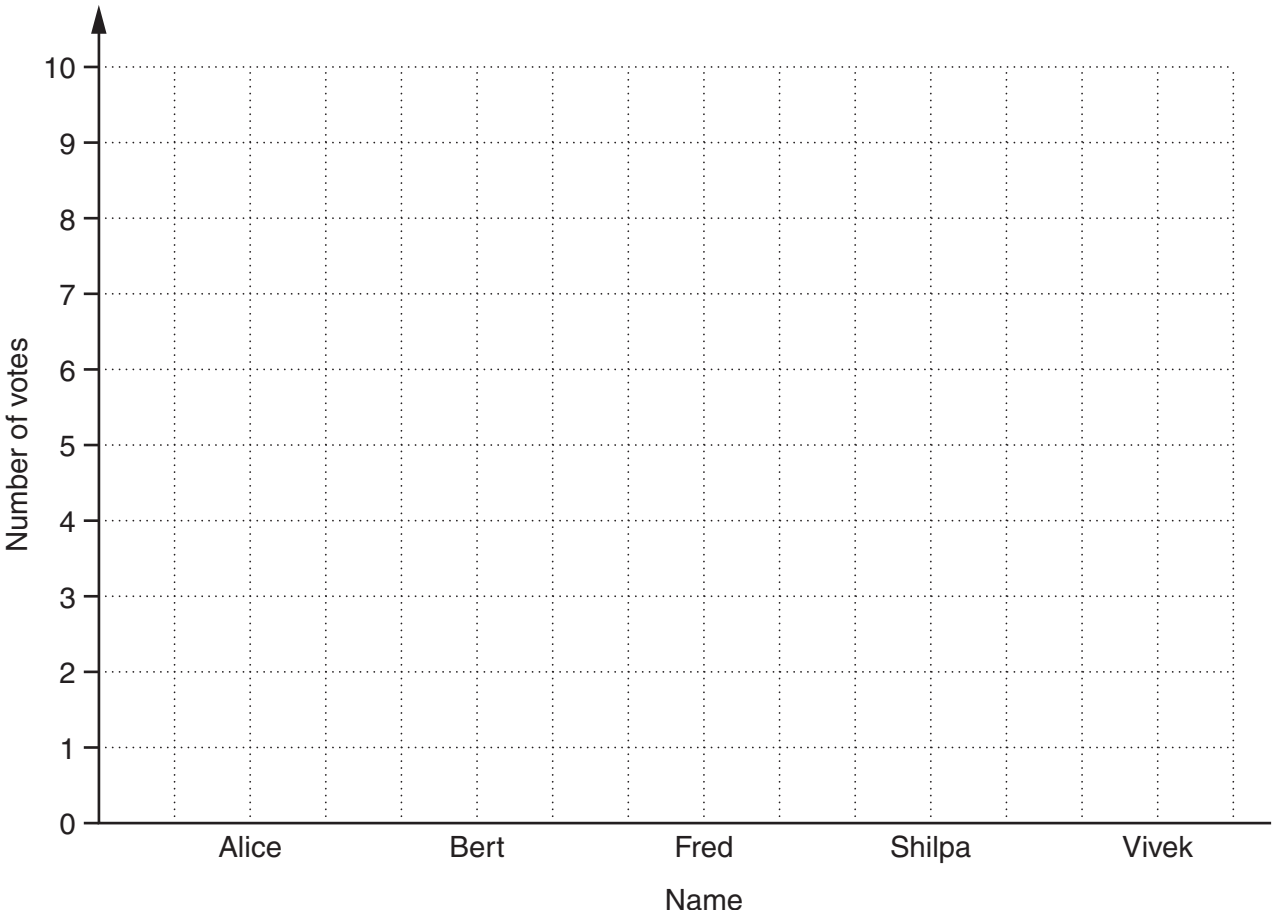
_____

_____ **[1]**

5 **(a)** Class 10Y voted between 5 students to represent them on the School Council.
Here are the results.

Name	Number of votes
Alice	5
Bert	6
Fred	3
Shilpa	9
Vivek	7

(i) Draw a bar chart to show these results.



[2]

(ii) The student with the highest number of votes won.

Who was this?

(a)(ii) _____ **[1]**

(b) The School Council meets three times each term.
These were the times, in minutes, that the meetings lasted in 2009.

48 54 28 32 42 51 26 34 36

(i) Calculate the mean of these times.

(b)(i) _____ minutes **[3]**

(ii) Find the range of these times.

(ii) _____ minutes **[2]**

(c) For the School Council meetings in 2008,

- the mean was 30 minutes,
- the range was 29 minutes.

Make **one** comparison between the lengths of times of the meetings in 2008 and 2009.

_____

_____ **[1]**

6 **(a)** Write down two odd numbers which are between 62 and 68.

(a) _____ and _____ **[1]**

(b) Write down the multiple of 9 which is between 62 and 68.

(b) _____ **[1]**

(c) Write down a square number which is between 62 and 68.

(c) _____ **[1]**

7 Construct triangle ABC, where AB = 7.6 cm, angle A = 67° and AC = 4.8 cm.
AB has been drawn for you.

A B

[2]

8 Pali bought some apples and some bananas.
He bought 1.4 kg of bananas at 85p per kg.
He bought 1.2 kg of apples at £1.25 per kg.
He had only £10 with him.

Did he have enough money to buy a DVD costing £6.99 as well?
Show how you decide.

_____ **[4]**

9 Insert brackets to make these calculations correct.

(a) $6 + 2 \times 4 = 32$ **[1]**

(b) $6 + 2 \times 4 - 1 = 12$ **[1]**

(c) $6 + 2 \times 4^2 = 70$ **[1]**

10 Join each of the three algebra cards on the left with its correct simplified form.

$3a + 5a - 2a$	$11cd$
	$6a$
$3c + 4d - c + 5d$	$3a + 2$
	$10a$
	$2c + 9d$
$3(a + 2)$	
	$3a + 6$

[3]

11 **(a)** A group of teachers from Raydon School ran in a mini-marathon.

This stem and leaf diagram represents their ages when they ran.

2	2	3	4	4	6	7	9
3	0	1	3	5	7	9	
4	2	5	7	8			
5	1	3	4	6	9		
6	0	2					

Key: 2 | 7 represents 27 years

(i) What was the age of the oldest of these teachers?

(a)(i) _____ years **[1]**

(ii) Find the median age of these teachers.

(ii) _____ years **[2]**

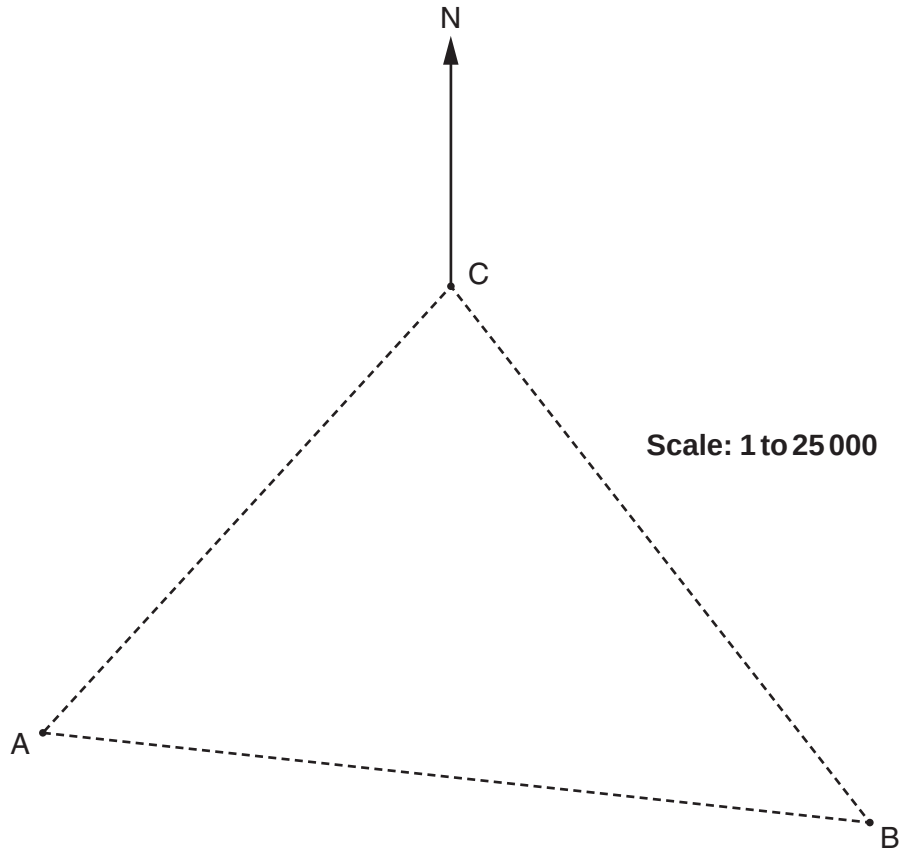
(b) The mini-marathon was in two age-groups.
This two-way table summarises the sex and age of all the runners.

Complete the table.

	18–39 years	40 years and over	Total
Men		24	104
Women	41		
Total		49	170

[2]

12 **(a)** This map shows three places A, B and C in some flat countryside.
They are joined by paths.



(i) By measuring, find the bearing of A from C.

(a)(i) _____ ° **[1]**

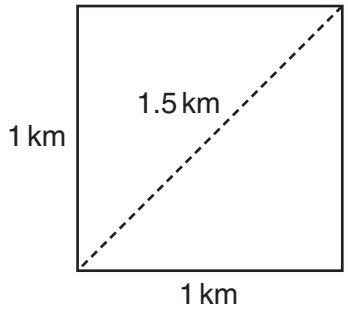
(ii) Ruth and Joy are planning a walk.
They want to start at A, walk to B, then to C and then to A along the paths shown.
Joy cannot walk more than 8 km.

Can Joy complete this walk?
Show how you decide.

(ii) _____ **[4]**

(b) A different map has a squared grid printed on it.
The distance between the gridlines represents 1 km.
A magazine for walkers gives this information to help estimate distances:

The distance across a diagonal of a square represents 1.5 km.



Use Pythagoras' theorem to calculate the length of a diagonal of a square and comment on the accuracy of the magazine's information.

[3]

TURN OVER FOR QUESTION 13

13 Solve.

$$3x + 7 = 15 - 2x$$

_____ **[3]**