

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M4 – SECTION B

B274B

Candidates answer on the question paper

OCR Supplied Materials:

None

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)
- Electronic calculator

Monday 9 March 2009
Morning

Duration: 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

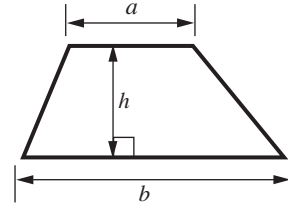
INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- Section B starts with question 7.
- You are expected to use a calculator in Section B of this paper.
- The total number of marks for this Section is **25**.
- This document consists of **12** pages. Any blank pages are indicated.

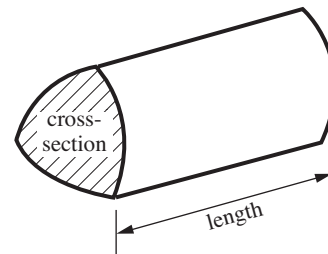
FOR EXAMINER'S USE	
SECTION B	

Formulae Sheet

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

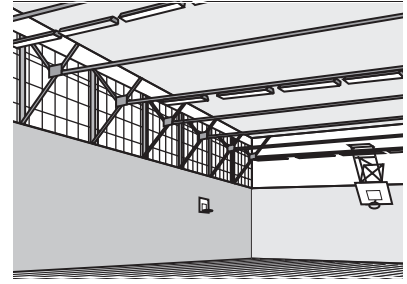


Volume of prism = (area of cross-section) \times length

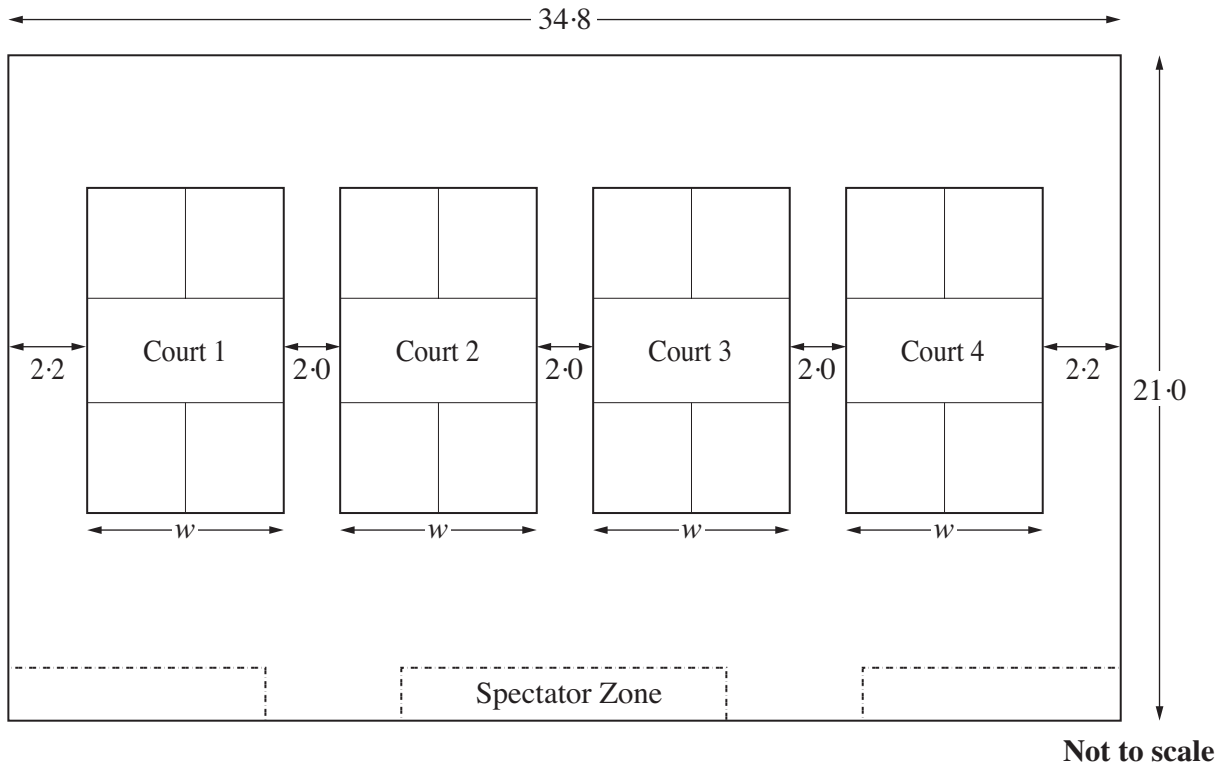


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7 Sports halls can be laid out in many different ways.



This sketch shows one way of laying out a sports hall.
 There are four identical games courts.
 All the lengths on the sketch are in metres.

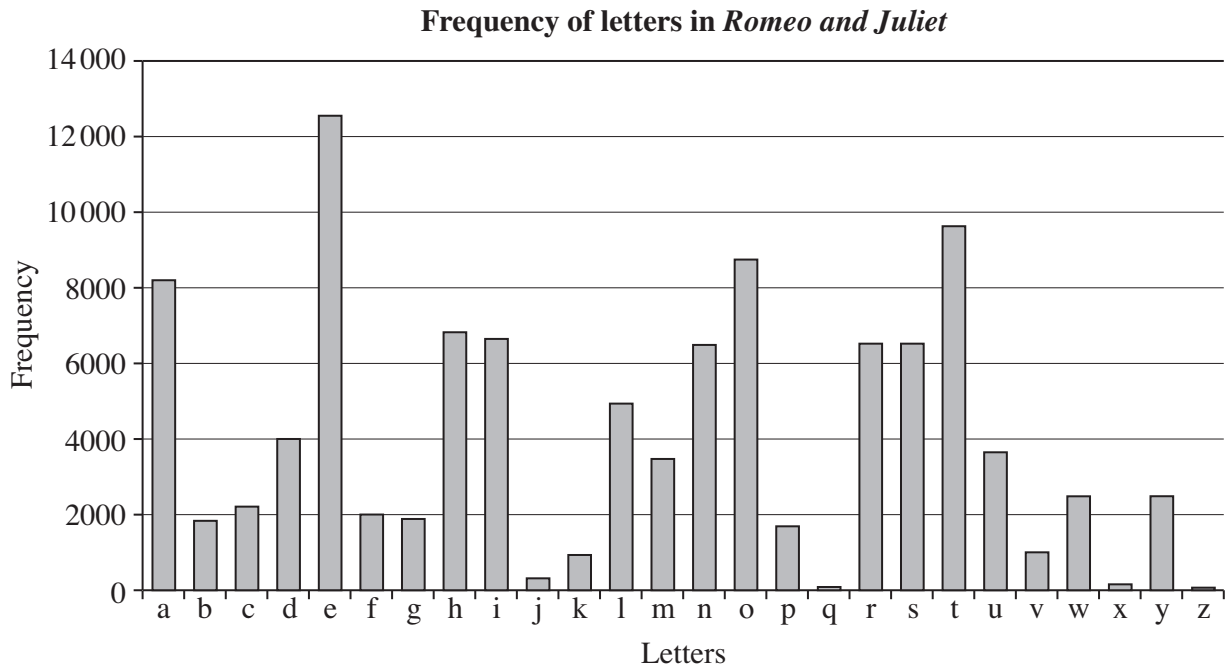


Calculate the width, w , of **one** court.

..... m [4]

Turn over

8 (a) This chart shows the frequencies of letters occurring in the play *Romeo and Juliet*.



Which four letters occurred the **least** often?

(a) [1]

(b) *Romeo and Juliet* has been translated into German.

	Total number of letters	Total number of words
English <i>Romeo and Juliet</i>	105 687	27 028
German <i>Romeo and Juliet</i>	131 649	27 260

The mean number of letters in a word in the English version is 3.9.

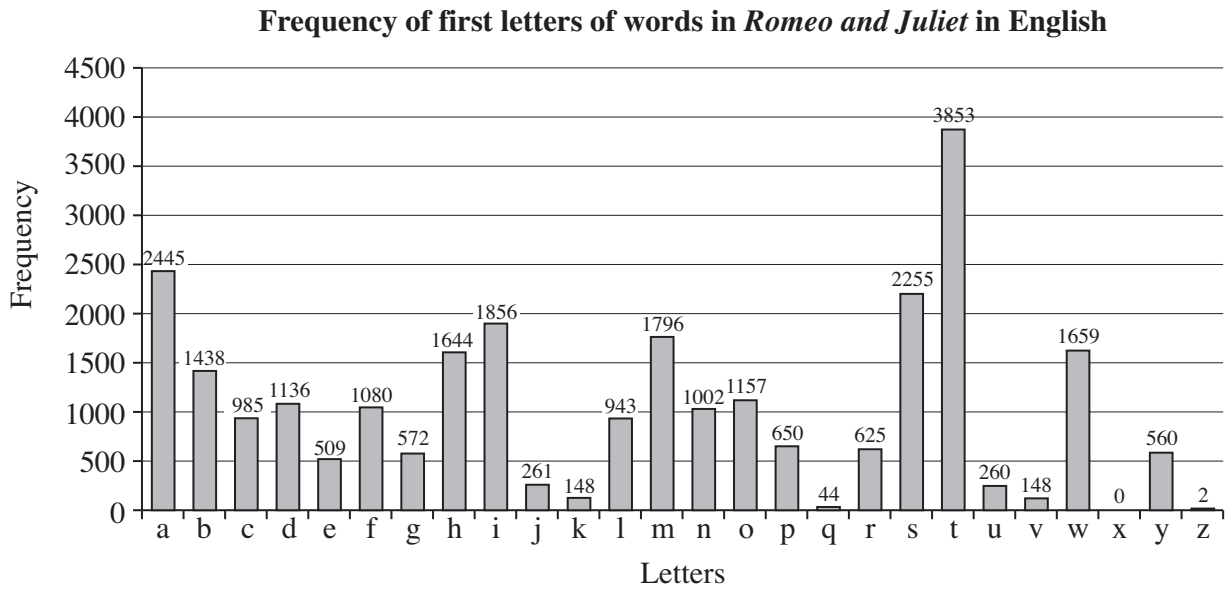
(i) Use information from the table to calculate the mean number of letters in a word in the German version.

(b)(i) [2]

(ii) Make one comparison between word lengths in the English and German versions.

.....
 [1]

(c) This bar chart shows the frequency of the first letters of the 27 028 words in *Romeo and Juliet*.



Use the bar chart to answer these questions.

A word is chosen at random from the English version of *Romeo and Juliet*.

- (i) Which letter is **most likely** to be the first letter of the word?
Give a reason for your answer.

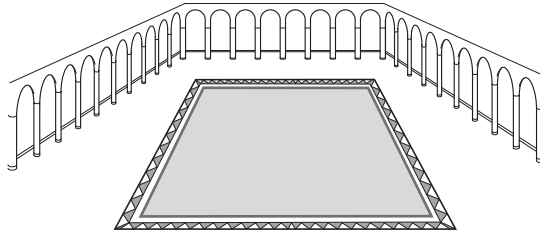
The letter because

..... [2]

- (ii) Write down the probability that the first letter of the chosen word is 'a'.

(c)(ii) [2]

- 9 The world's largest hand-woven carpet was produced in Iran, in 2000.



- (a) It is rectangular in shape.
It measures 70.1 m by 60.9 m.

Calculate the area of the carpet.

(a) m² [2]

- (b) One square metre of the carpet weighs 11 pounds.

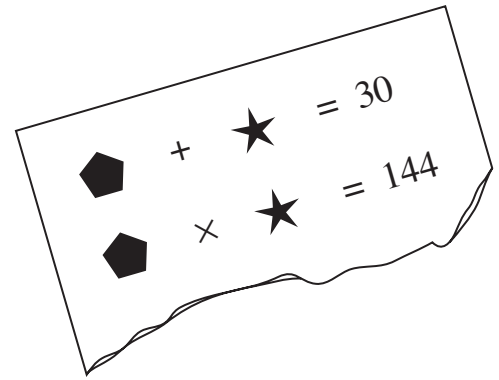
Roughly, what is 11 pounds in kilograms?

(b) kg [1]

- 10 Noni is doing a puzzle.
She has to find two whole numbers which

- added together give 30
- multiplied together give 144.

Use trial and improvement to find Noni's two numbers.
Record your trials in the table below.
Two have been done for you.

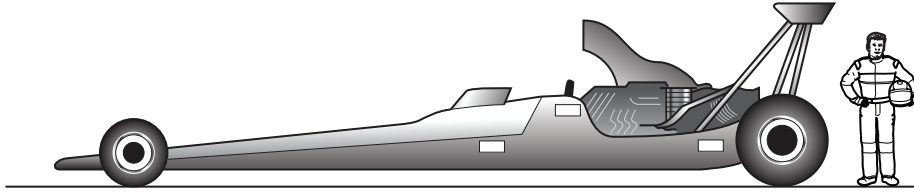


First number (\blacklozenge)	Second number (\star)	(First number) \times (Second number)	Too small	Too large
1	29	$1 \times 29 = 29$	✓	
10	20	$10 \times 20 = 200$		✓

The two numbers are and[3]

11 In drag racing, dragsters are timed over a quarter of a mile.

(a) Estimate, in metres, the length of this dragster.



(a) m [1]

(b) Here are the times for the winner of the Las Vegas drag races in 2006.

Race	Time (seconds)
Round One	4.488
Quarter-final	4.538
Semi-final	4.494
Final	4.469

(i) Which race took the longest time?

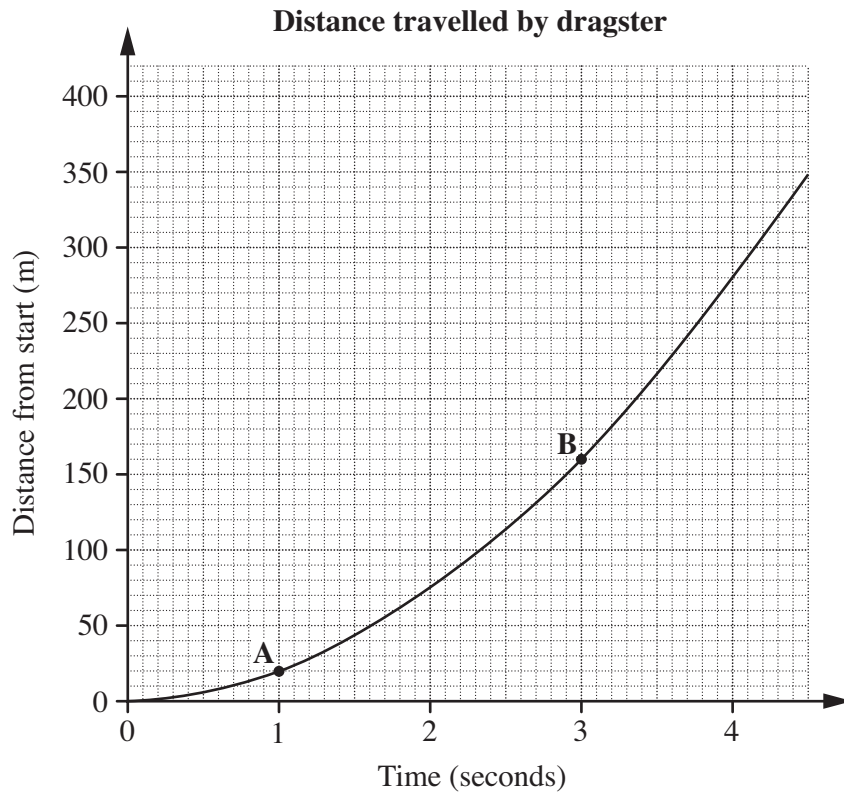
(b)(i) [1]

(ii) In the final, the winner took 0.081 seconds less than his opponent.

How long did his opponent take?

(ii) seconds [1]

- (c) This graph shows the distance travelled by a dragster in a race. Use the graph to answer the questions below.



- (i) How far did the dragster travel in the first second?

(c)(i) m [1]

- (ii) How long did the dragster take to cover the first 100 m?

(ii) seconds [1]

- (iii) How far did the dragster travel between A and B?

(iii) m [2]

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