OCR
RECOGNISING ACHIEVEMENT

M5

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT) B275A

MODULE M5 (SECTION A)

OCE/13027

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:
- Geometrical instruments
- Pie chart scale (optional)
- Tracing paper (optional)

Monday 21 June 2010
Afternoon

Duration: 30 minutes

B275A

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

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. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

INFORMATION FOR CANDIDATES

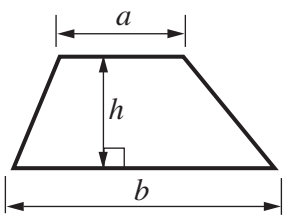
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

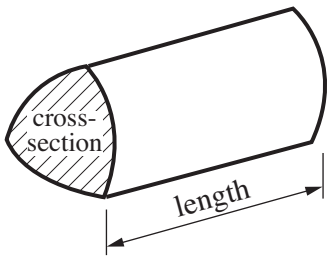
No calculator can be used for Section A of this paper

Formulae Sheet

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



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



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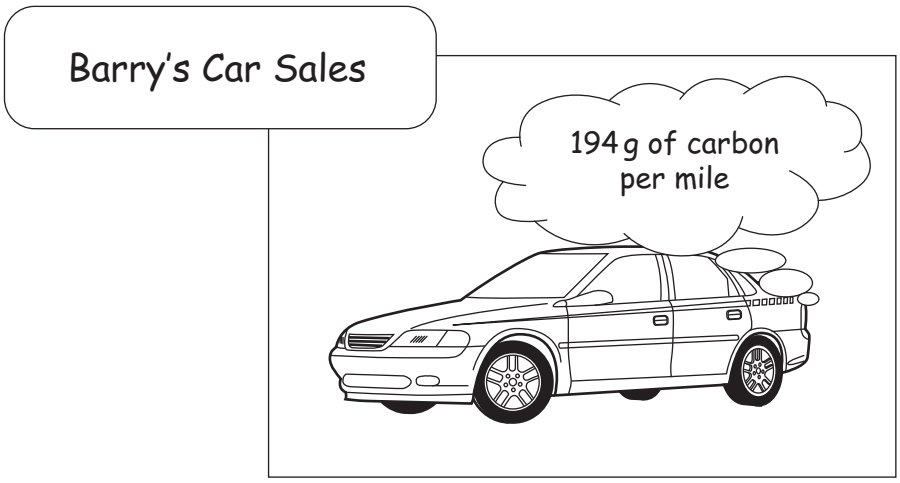
1



(a) Write down the number of grams of carbon per mile correct to 1 significant figure.

(a)..... **[1]**

(b) Barry did a simple calculation in his head and **estimated** how much carbon the car would produce on a journey of 307 miles.

Write down a calculation he could have used.

(b) .... = ...g **[2]**

2 **(a)** Look at this list of numbers.

3	5	8	9	
4	2	12	20	

(i) Using **two** numbers from the list, make two equivalent fractions.

$$\frac{1}{\square} = \frac{\square}{12}$$

[1]

(ii) Choose **one** number from the list to make a fraction that completes this statement.

20% is the same as $\frac{1}{\square}$

[1]

(b) Colette's train fare increases by 20%.
She used to pay £15.

Work out the increase in her train fare.

(b) £ ..... **[2]**

3 Vipin counted the number of words on each line of a page of his writing.
These are his results.

Number of words on a line	Frequency
9	2
10	4
11	5
12	6
13	2
14	1

(a) How many lines of writing did he count?

(a) ..... **[1]**

(b) Vipin said "My mode is 6."

Was Vipin correct?
You must explain your answer.

Write Yes or No.

..... because ..... **[1]**

(c) Deepika wrote on the same sized paper as Vipin.
She also counted the number of words on each line of a page of her writing.
This table shows her mode and range.

Mode	16
Range	4

Make two comparisons between Vipin's and Deepika's writing.

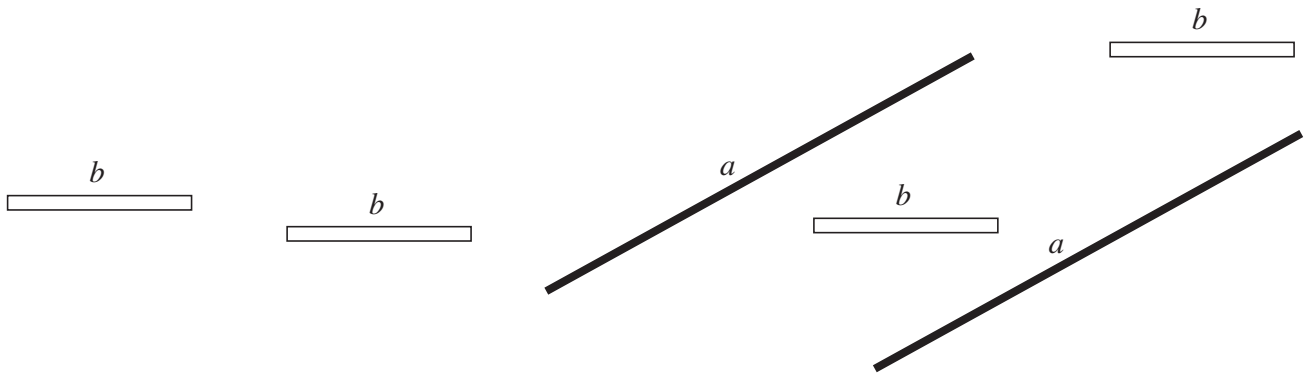
1. .....

..... **[1]**

2. .....

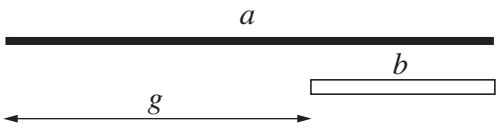
..... **[1]**

4 Billy has these algebra rods.
Some have length a and some have length b.



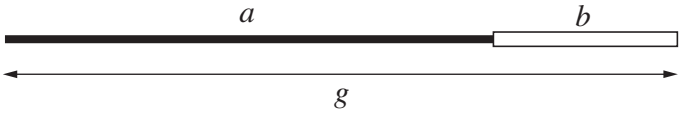
(a) Billy arranges some of the rods.

Write down an expression for the length, g, shown by the arrow in each arrangement.
The first one has been done for you.



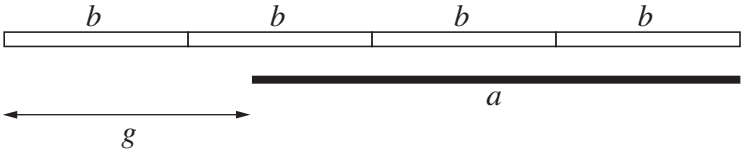
$g =$ $a - b$

(i)



(a)(i) $g =$ ..... **[1]**

(ii)



(ii) $g =$ ..... **[2]**

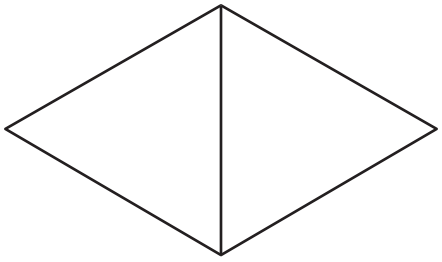
(b) If $a = 24$ and $b = 9$, what is the value of g when $g = a - b$?

(b) ..... **[2]**

5 **(a)** Use pencil, ruler and compasses to construct an equilateral triangle with each side 8 cm long.
One side has been drawn for you.
You must leave the arcs you use in your drawing.

[2]

(b) This is a drawing of two equilateral triangles joined together to make a quadrilateral.



(i) Jenny says:

All the sides are the same length so the quadrilateral is a square.

Explain how you know she is wrong.

.....

..... **[1]**

(ii) What is the special name for this quadrilateral?

(b)(ii)..... **[1]**

(iii) How many lines of symmetry does the quadrilateral have?

(iii) ..... **[1]**

TURN OVER FOR QUESTION 6

6 Evan and Irma decide to visit Portsmouth for a day.
They look up some places to visit.

(A) Aquarium
(H) Historic Dockyard
(S) Spinnaker Tower

They can only visit two places but cannot decide which two.
They write the names of the places on paper and put them in a hat.
Evan pulls out the place they will visit in the morning and Irma the place for the afternoon.

(a) Complete this table for the places they could visit.
The first one has been done for you.

You may not need to use all the lines.

Morning	Afternoon
S	A

[2]

(b) What is the probability that they visit the Spinnaker Tower in the morning and the Historic Dockyard in the afternoon?

(b) ..... **[1]**

(c) What is the probability that they visit the Aquarium?

(c) ..... **[1]**