OCR
RECOGNISING ACHIEVEMENT

B272A

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M2 – SECTION A

M2

MONDAY 21 JANUARY 2008

Morning
Time: 30 minutes

Candidates answer on the question paper
Additional materials: Geometrical instruments
Tracing paper (optional)

Candidate Forename		Candidate Surname	

Centre Number		Candidate Number	

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or 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.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
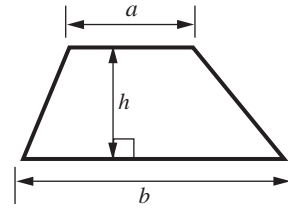- The total number of marks for this Section is 25.

WARNING

You are not allowed to use a calculator in Section A of this paper.

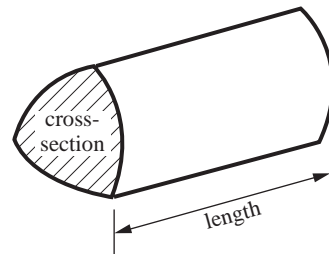| FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

This document consists of **8** printed pages.

Formula Sheet

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

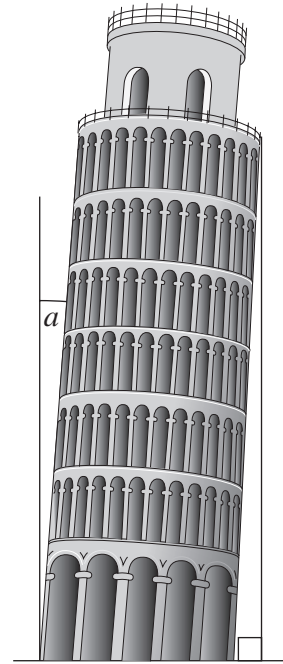**Volume of prism** = (area of cross-section) × length

PLEASE DO NOT WRITE ON THIS PAGE

1 Here is a picture of the Leaning Tower of Pisa.

   (a) What type of angle is *a*?
       Choose from this list.

       acute   obtuse
       right-angled reflex

                                                                  (a) .... [1]

   (b) Estimate the size of angle *a*.

                                                                  (b) ....$°$ [1]

   (c) It took 200 years to build the Leaning Tower of Pisa.
       It was started in 1173.

       In what year was it finished?

                                                                  (c) .... [1]

   (d) The Leaning Tower of Pisa weighs 14 700 tonnes.

       Write 14 700 in words.

       ....

       .... [1]

                                                                         [Turn over

2 Amy and three friends flew to Dublin.

(a) (i) The tickets cost £52 each.

Work out 52×4.

(a)(i).................................. [1]

(ii) There were 220 seats on the plane.
$\frac{3}{4}$ of the seats were occupied.

Work out $\frac{3}{4}$ of 220.

(ii)................................. [2]

(iii) Write $\frac{3}{4}$ as a decimal.

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

(b) Here is a map of central Dublin.
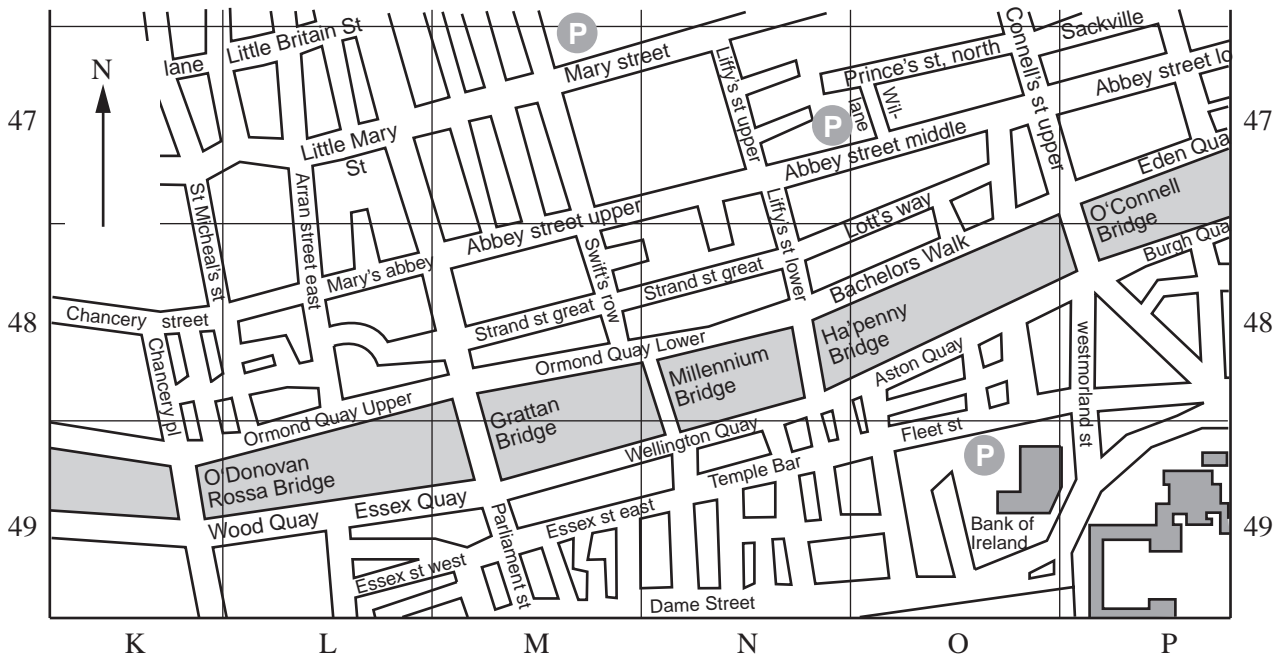
(i) Which bridge is in square K 49?

(b)(i) .... [1]

(ii) Travelling roughly East along the river from Grattan Bridge, which is the next bridge?

(ii) .... [1]

(iii) Jade crosses the Grattan Bridge walking roughly North. After she crosses the bridge she turns right.

Which road is first on the left?

(iii) .... [1]

[Turn over

(c) Here are the train times from Dublin to Athlone on a Sunday.

Dublin	0840	1305	1345	1515	1805	1845	2040
Newbridge		1335			1835		2110
Kildare	0918	1342			1842	1919	
Portarlington	0932	1355		1604	1856	1933	2138
Tullamore	0951	1413		1634	1914	1959	2146
Clara	1002	1424			1927		2157
Athlone	1026	1444	1511	1709	1950	2031	2215

Penny is in Dublin.
She wants to get to Athlone by 3 pm.

(i) At what time does the latest train that she can catch get to Athlone?

(c)(i) .... [1]

(ii) At what time does this train leave Dublin?

(ii) .... [1]

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3   The weights of diamonds are measured in carats.

(a) This number machine converts grams into carats.
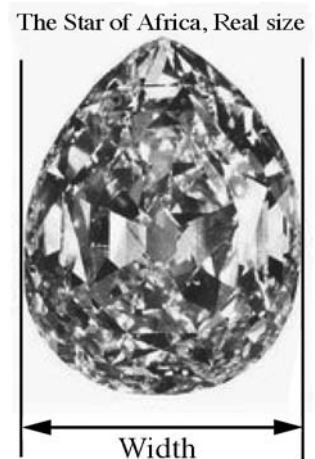
Weight in grams $\rightarrow$ **×5** $\rightarrow$ **Weight in carats**

One of the largest diamonds, The Star of Africa, weighs 106 g.

Use the number machine to convert 106 g into carats.

(a)..........................carats [2]

(b) Measure the **width** of the Star of Africa diamond.

Give the units of your answer.

The Star of Africa, Real size

Width

(b) .... [2]

(c) (i) A diamond has a weight of 3 carats.
The cost is £21 000.

Work out 21 000 ÷ 3.

(c)(i) .... [1]

(ii) What does your answer to part **(i)** tell you about this diamond?

Tick your choice.

A: The weight of 1 carat. ....

B: The weight of 1 gram. ....

C: The cost of 1 gram. ....

D: The cost of 1 carat. ....   [1]

(d) A jeweller buys a packet of eight diamonds.
Here are the weights, in carats, of the diamonds.

0·2   0·4   0·2   0·5   0·2   0·4   0·2   0·6
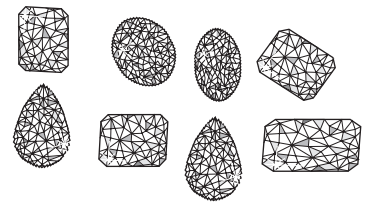
(i) What is the mode of these weights?

(d)(i).......................carats [1]

(ii) Work out the median of these weights.

(ii).......................carats [2]

(e) The Centenary diamond weighs 120 g.

What is 120 g in kilograms?

(e)................................ kg [1]

TURN OVER FOR QUESTION 3(f)

(f) This pie chart shows where diamonds are produced.
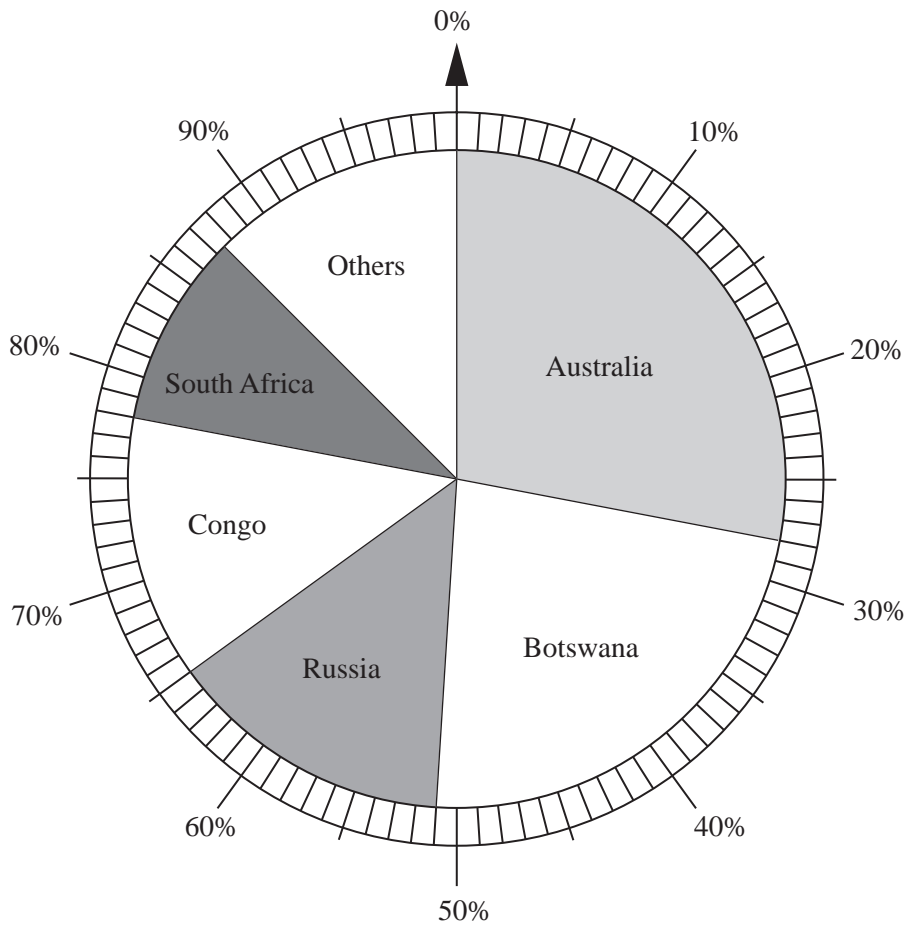
(i) Which country produces the most diamonds?

(f)(i)................................. [1]

(ii) What percentage of the World's diamonds are produced by Russia?

(ii)................................. [1]

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