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RECOGNISING ACHIEVEMENT

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)   **B281B**
Terminal Paper – Section B (Foundation Tier)

Monday 7 June 2010
Afternoon

Duration: 1 hour

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.
* Section B starts with question 12.
* You are expected to use a calculator in Section B of this paper.
* Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.
* The total number of marks for this Section is **50**.
* This document consists of **16** pages. Any blank pages are indicated.

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Turn over

Formulae Sheet

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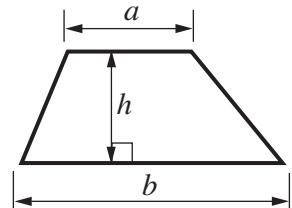
Volume of prism $=$ (area of cross-section) $\times$ length
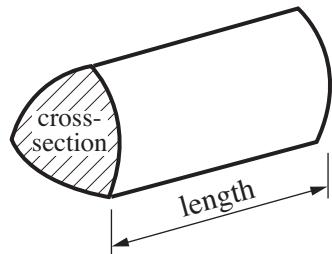

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12 Here are the first three patterns in a sequence of patterns made from straight lines.
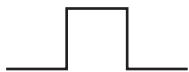
Pattern 1   Pattern 2   Pattern 3

(a) On the grid below, draw Pattern 4.

Pattern 4

[1]

(b) Complete this table.

Pattern number	1	2	3	4
Number of straight lines	5	9		

[1]

(c) How many straight lines are there in Pattern 7?
Explain how you found your answer.

.... straight lines because ....

.... **[2]**

13 Tim makes bread.

(a) He has a bag containing 1·5 kg of flour.
He uses 420 g of the flour.

How many grams of flour are left in the bag?

(a) .... g **[2]**

(b) Tim puts the ingredients into a bread machine at this time.
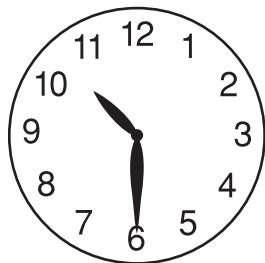
The machine takes 1 hour 55 minutes to make the bread.

At what time is the bread ready?

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

(c) The bread machine cost £88.
Tim has used it to make 400 loaves.

How many pence has this machine cost per loaf?

(c) .... p **[2]**

14 An electrician calculates how much he charges for a job using this formula.

Charge = £25 × number of hours worked + £30

   (a) Work out his charge for a job lasting 2 hours.

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

   (b) Work out his charge for a job lasting half an hour.

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

   (c) How long does a job last when he charges £180?

                                                      (c) .... hours **[2]**

15 (a) Ten people were asked how many films they had watched in the last month.
Here are their answers.

12   26   2   5   7   16   9   11   18   8

Calculate the mean number of films watched.

(a) .... **[3]**

(b) Another group of people were asked how many DVDs there were in their homes.
This stem and leaf diagram shows the results.

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

Key: 3 | 5 represents 35 DVDs

(i) How many people took part in the survey?

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

(ii) What was the greatest number of DVDs?

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

(iii) Find the median number of DVDs.

(iii) .... **[2]**

(c) Three friends Aisha (A), Beth (B) and Cara (C), go to the cinema.

(i) They sit in seats numbered 11, 12 and 13.

Complete the table to show all the different ways they can sit.
One way has been done for you.

You may not need all the rows.
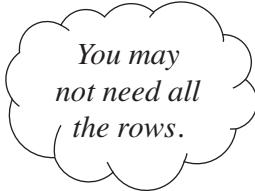
Seat 11	Seat 12	Seat 13
A	B	C

[2]

(ii) The probability that Beth buys popcorn is 0·4.

What is the probability that Beth does not buy popcorn?

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

16 (a) Complete the description of symmetry for this logo.

(a) Number of lines of symmetry = ...

Order of rotation symmetry = ... **[2]**

(b) Complete the drawing of the logo below so that it has one line of symmetry and rotation symmetry order 1.
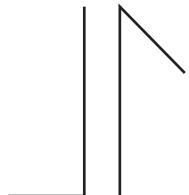
[2]

**17** The map shows two viewpoints, P and Q, on an island.

N

N

P

Q
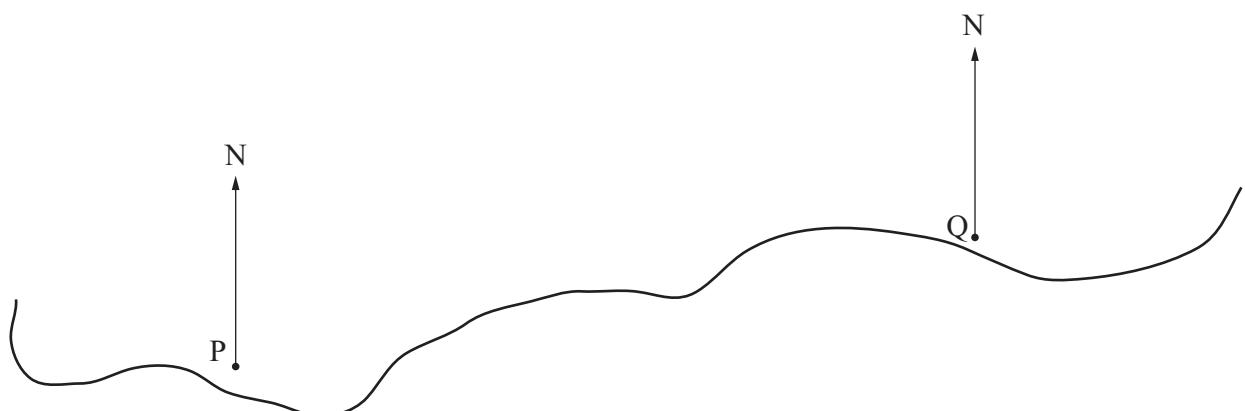
A boat is seen on a bearing of 126° from P and 208° from Q.

Construct on the map the position of the boat.
Label it B. **[3]**

18 The sketch shows a triangular prism.
All the measurements are in centimetres.
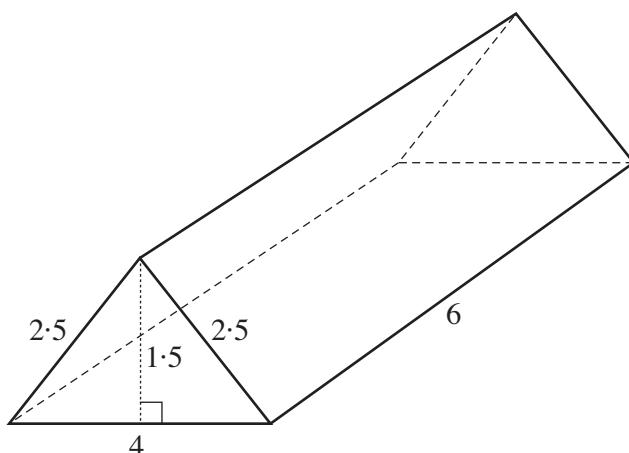
(a) On the grid, complete an accurate net of the prism.
The base has been drawn for you.

[3]
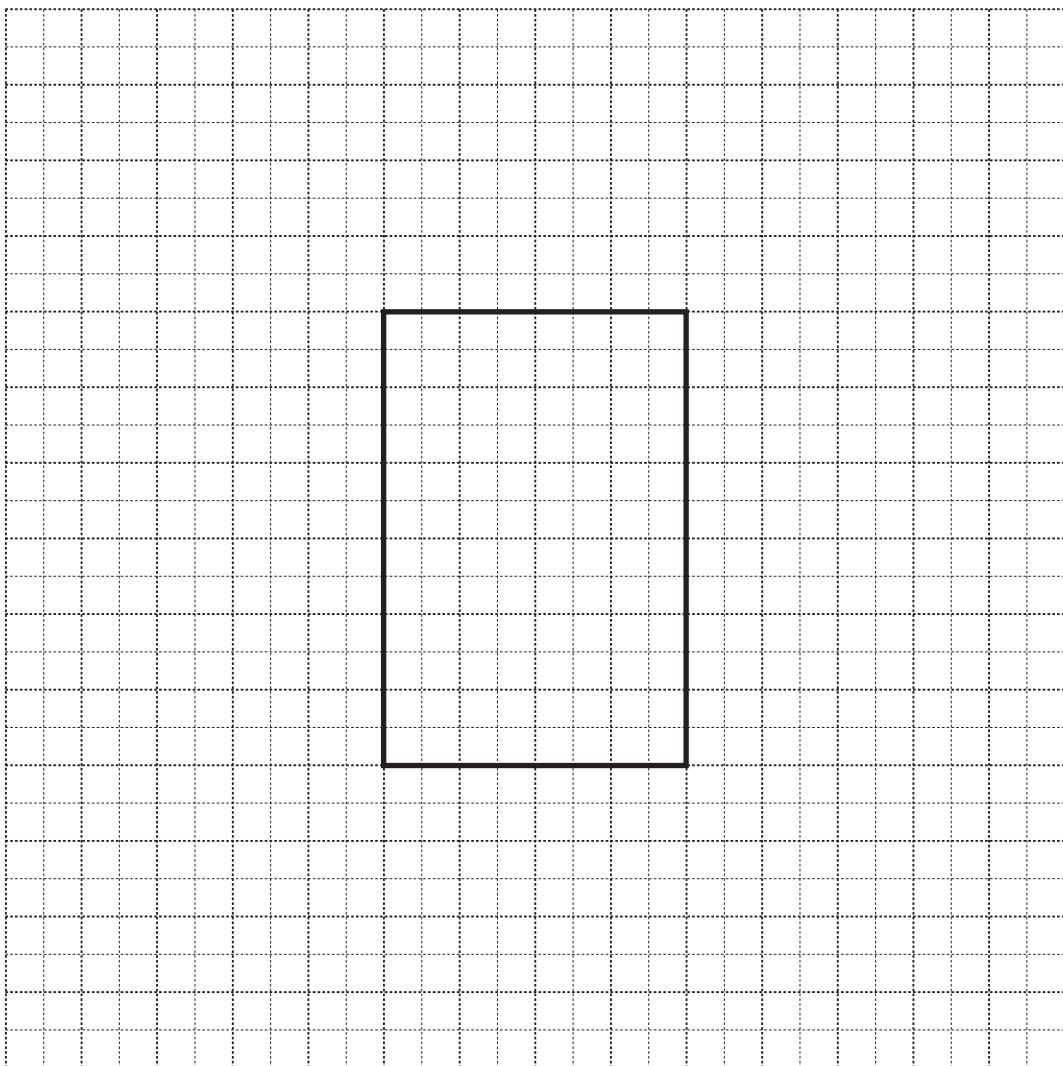
(b) Calculate the volume of the prism.
Show your method clearly.
Give the units of your answer.

(b) .... **[4]**

19 (a) Simplify.

$$2a - 6c + 5a + c$$

(a) .... **[2]**

(b) Multiply out.

$$5(x - 4)$$

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

(c) Factorise.

$$x^2 + 3x$$

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

(d) Rearrange $y = 5x - 2$ to make x the subject.

(d) .... **[2]**

20 There are three businesses in an office block.
The three businesses decide to share the cleaning costs in the ratio of the number of their employees.

- Ace Accountancy has 16 employees
- Basic Insurance has 12 employees
- Classic Finance has 20 employees

(a) Write the ratio 16 : 12 : 20 in its simplest form.

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

(b) The cleaning cost is £42 000.

Work out how much of this cost Classic Finance pays.

(b) £ .... **[2]**

TURN OVER FOR QUESTION 21

21 This table gives information about three burgers.

	Total Weight (g)	Carbohydrate (g)
Bumper burger	274	47
Cheese burger	173	29
Veggie burger	252	54

Which of these burgers has the highest percentage of carbohydrate by weight?
Show your working clearly.

.... **[3]**

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