

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**MATHEMATICS C (GRADUATED ASSESSMENT)**  
MODULE M3 – SECTION B

## B273B

Candidates answer on the question paper

**OCR Supplied Materials:**  
None

**Other Materials Required:**

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

**Tuesday 20 January 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.

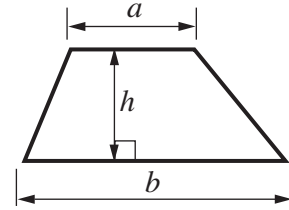
**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 6.
- 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.

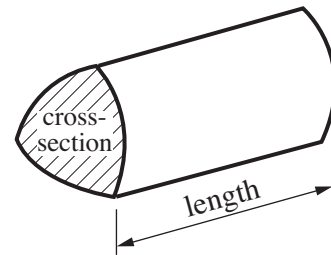
<b>FOR EXAMINER'S USE</b>	
<b>SECTION B</b>	

## Formulae Sheet

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

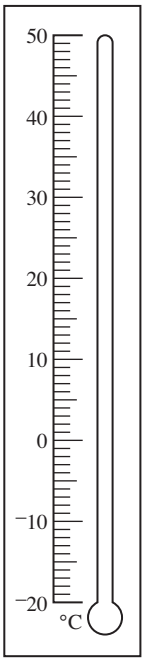


**Volume of prism** = (area of cross-section)  $\times$  length



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6 Put these temperatures in order, coldest first.



0°C

-4°C

1°C

$-3\frac{1}{2}$ °C

$1\frac{1}{2}$ °C

.....°C

.....°C

.....°C

.....°C

.....°C

*coldest*

[2]

7 Solve.

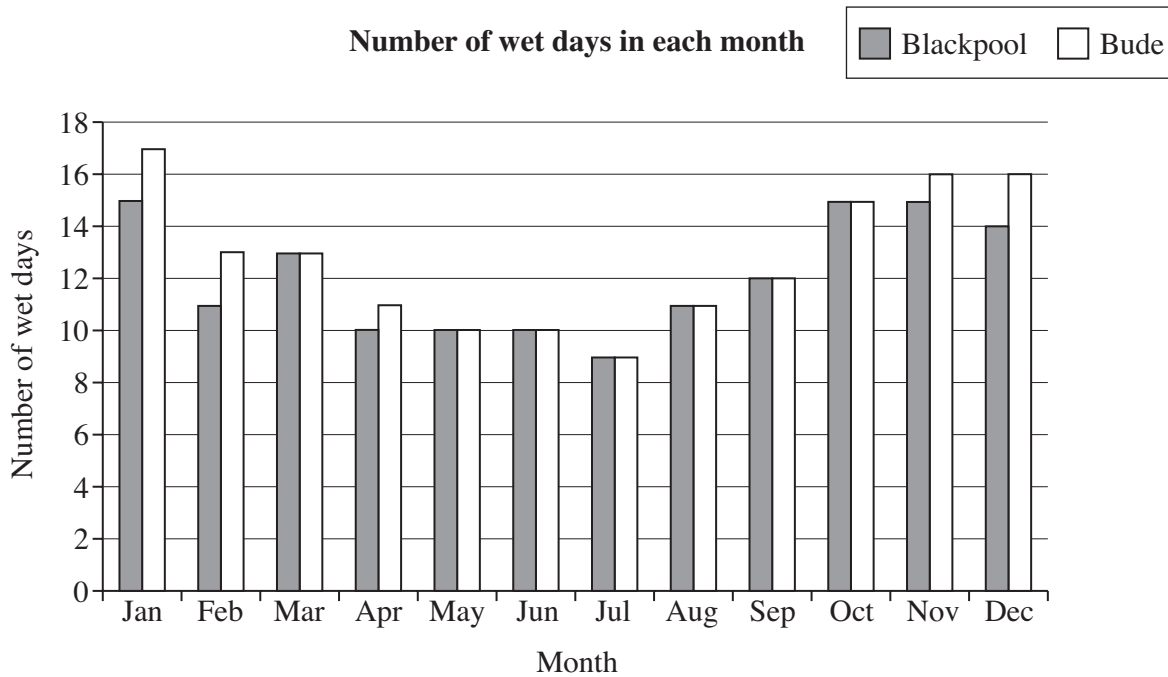
(a)  $2x = 8$

(a) ..... [1]

(b)  $x + 5 = 15$

(b) ..... [1]

- 8 (a) This chart shows the average number of wet days per month in Blackpool and Bude.



Use the chart to answer these questions.

- (i) How many wet days are there in Blackpool in January?

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

- (ii) For how many months do Blackpool and Bude have the same number of wet days?

(ii) ..... [1]

(b) This table shows the total amount of rain, in mm, falling each month in Sheffield. It shows this for 1906, 1931, 1956, 1981 and 2006.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1906	98	76	60	16	49	45	37	44	18	141	86	114
1931	61	83	5	84	78	112	104	145	94	20	105	36
1956	154	31	26	63	11	82	142	146	83	33	21	108
1981	56	89	150	111	65	33	19	57	108	88	70	94
2006	19	49	100	49	130	10	41	91	62	99	67	114

Use the table to answer these questions about rainfall in Sheffield.

(i) How much rain fell in June 2006?

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

(ii) Choy draws this conclusion from the table.



Use numbers from the table to show that she is wrong.

.....

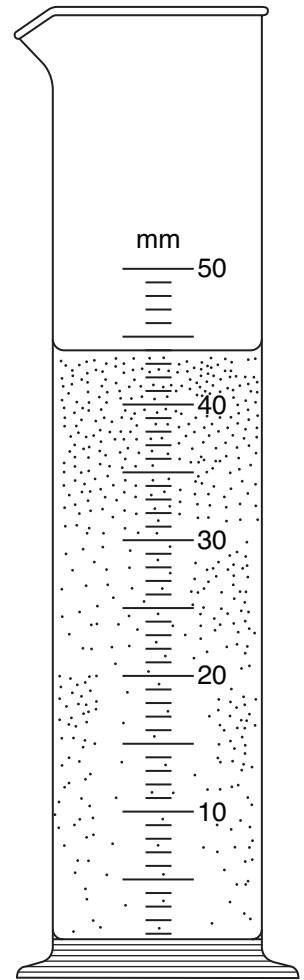
.....

..... [2]

- (c) A group of students gathers rainfall data.  
For eight days over half-term no one reads the rain gauge.

This was the gauge after half-term, showing the total rainfall in mm.

Work out the mean daily rainfall for these 8 days.

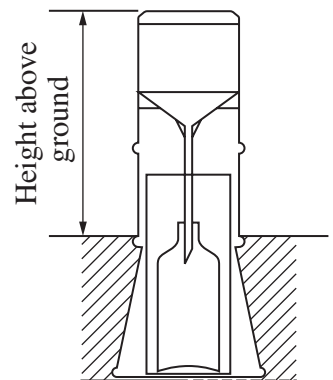


(c) ..... mm [3]

- (d) This is a scale drawing of a rain collector.

What is the height above the ground of the top of the real collector?

Scale: 1 cm represents 10 cm



(d) ..... cm [1]

(e) Here is the rainfall, in mm, for the following five days.

5      8      1      3      3

What is the range of these numbers?

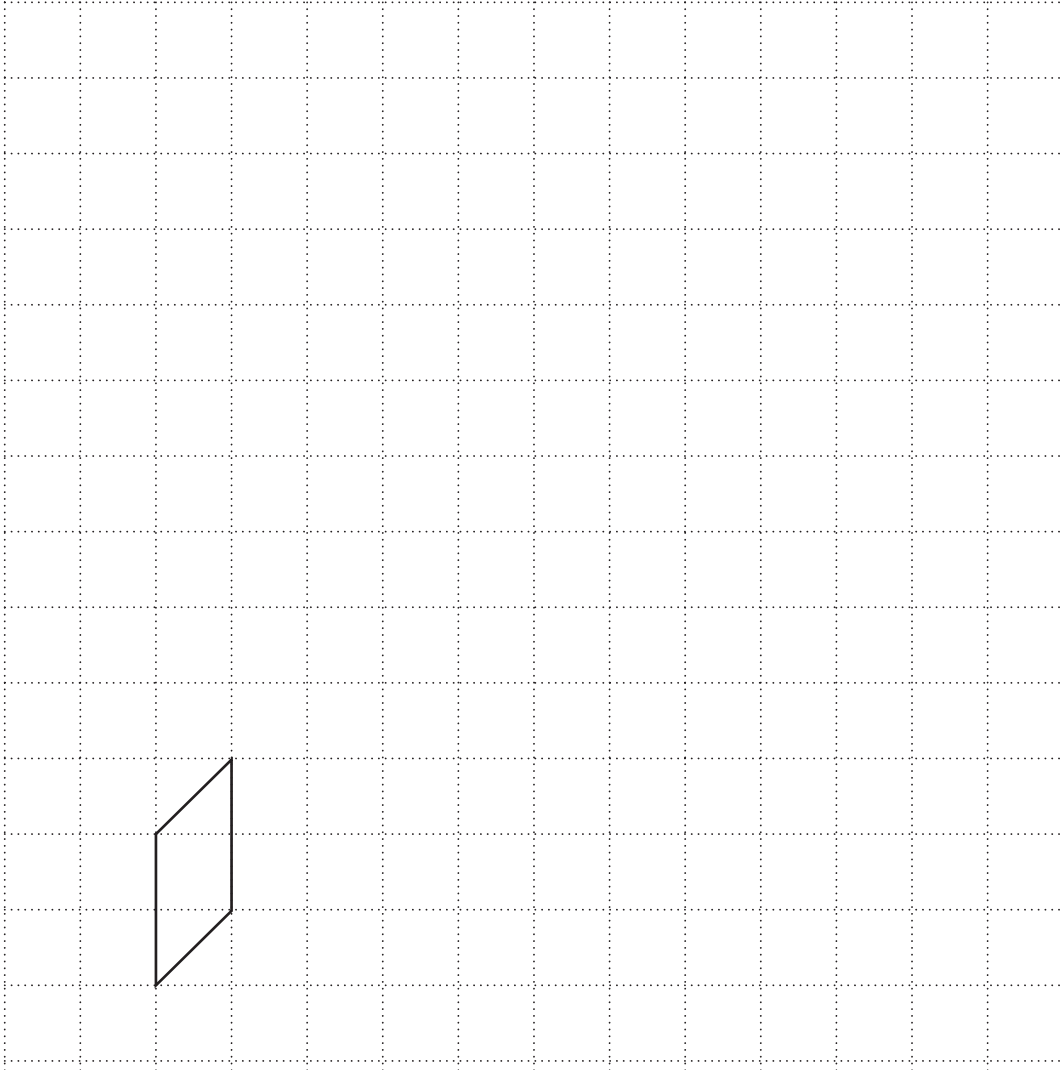
(e) .....mm [1]

(f) One day 2000 ml of rain falls into a bucket.

How many litres is 2000 ml?

(f) ..... litres [1]

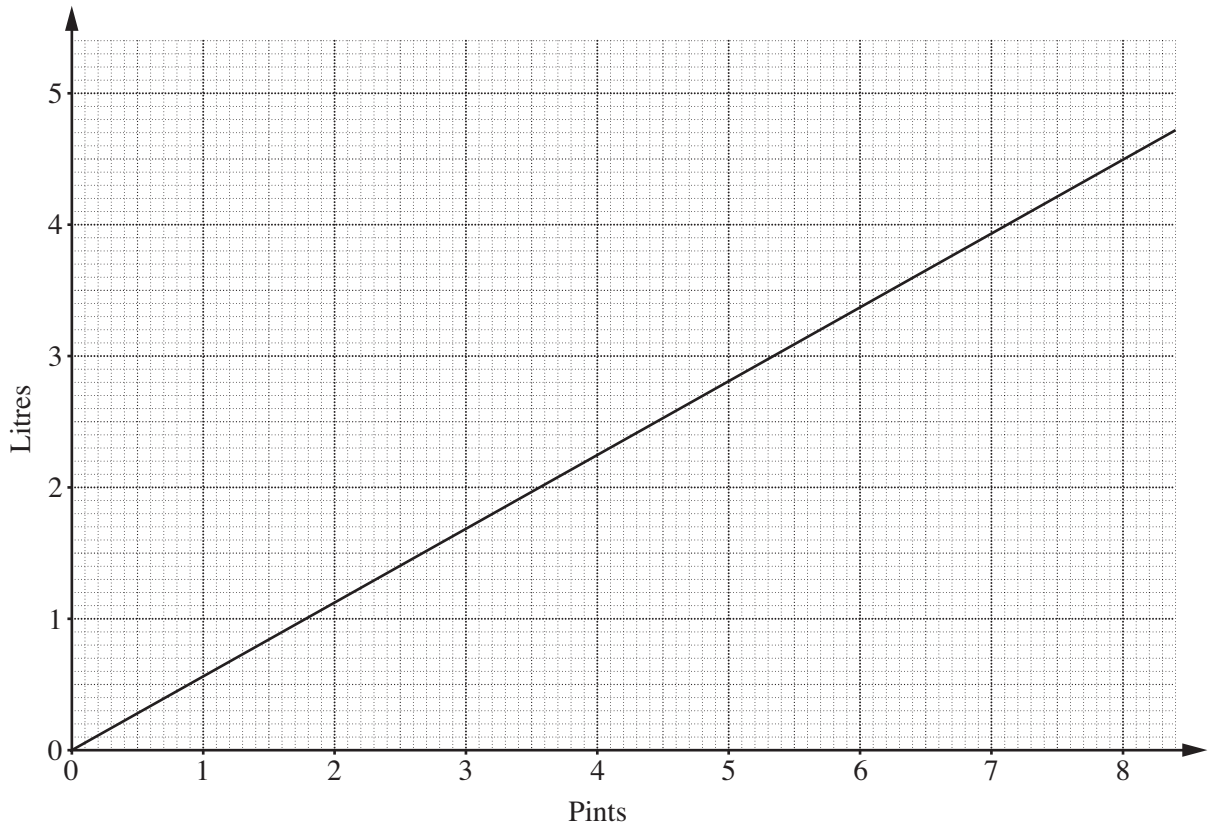
- 9 Draw an enlargement of this parallelogram.  
Use scale factor 3.



[3]



10 Use this conversion graph for pints and litres to answer the questions below.



(a) Convert 3.5 litres into pints.

(a) ..... pints [1]

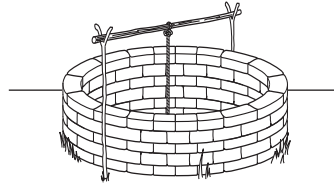
(b) A car holds 10 gallons of petrol.  
There are 8 pints in a gallon.

Convert 10 gallons into litres.  
Show how you used the graph to help you work out your answer.

(b) ..... litres [2]

**TURN OVER FOR QUESTION 11**

- 11 The time a stone takes to reach the bottom of a well and the depth of the well are connected.



(a) **To find the depth of the well**

- Square the number of seconds it takes the stone to fall to the bottom.
- Multiply your answer by 5.
- The result is the depth of the well, in metres.

A stone takes 4 seconds to fall to the bottom of a well.

How deep is the well?

(a) ..... m [2]

(b) **To find how long it takes the stone to reach the bottom of the well**

- Divide the depth of the well, in metres, by 5.
- Find the square root of your answer.
- The result is the time it takes the stone to reach the bottom, in seconds.

One of the deepest water wells is 2420 m deep.

How many seconds would it take a stone to reach the bottom?

(b) ..... seconds [2]

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