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OCR
RECOGNISING ACHIEVEMENT

M8

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT) **B278B**

MODULE M8 – SECTION B

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:
- Geometrical instruments
- Tracing paper (optional)
- Scientific or graphical calculator

Thursday 20 January 2011
Morning

Duration: 30 minutes

B278B

11LMP01018

Candidate forename		Candidate surname	

Centre number						Candidate number				

MODIFIED LANGUAGE

INSTRUCTIONS TO CANDIDATES

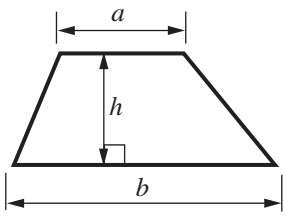
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- 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).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

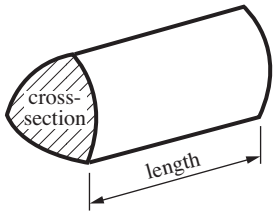
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Section B starts with question 8.
- You are expected to use a calculator in Section B of this paper.
- Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

Formulae Sheet

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



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

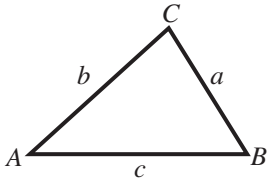


In any triangle ABC

Sine rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

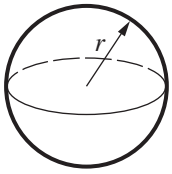
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

Area of triangle = $\frac{1}{2}ab\sin C$



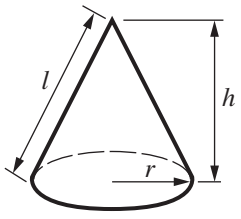
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

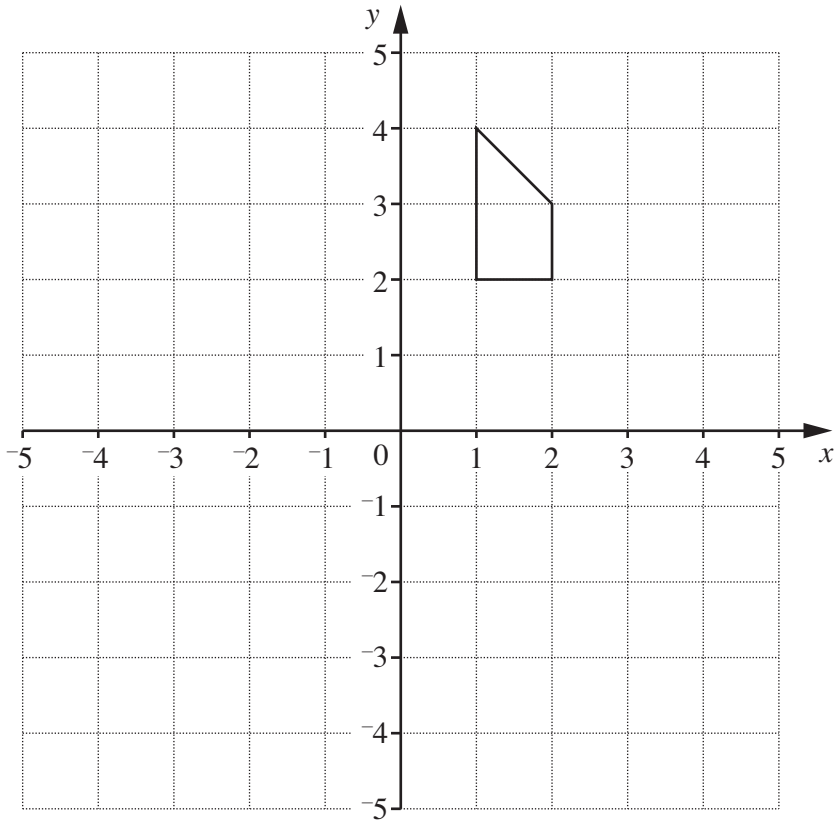
PLEASE DO NOT WRITE ON THIS PAGE

8 Anna writes:

> The single transformation equivalent to a reflection in the line $x = -1$ and then a reflection in the line $y = 1$ is a reflection.

Bob writes:

> The single transformation equivalent to a reflection in the line $x = -1$ and then a reflection in the line $y = 1$ is a rotation.



Decide who is correct and then describe **fully** the **single** transformation.
You may use the shape on the grid to help you.

..... is correct because the single transformation is .....

..... **[3]**

9 A local newspaper reports that the value of houses fell by 12% between 1st September 2007 and 1st September 2008.

(a) On 1st September 2007 the value of Mike's house was £180 000.

What was its value on 1st September 2008?

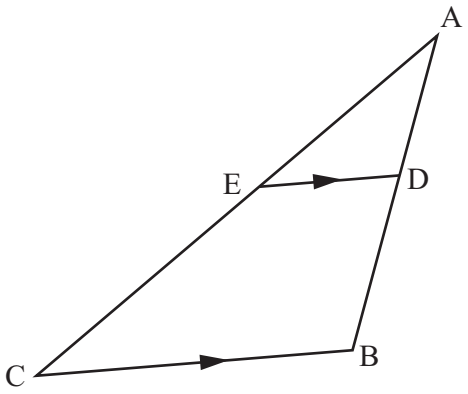
(a) £ ..... **[2]**

(b) On 1st September 2008 the value of Jane's house was £275 000.

What had been its value on 1st September 2007?

(b) £ ..... **[3]**

10 ABC and ADE are triangles.
ED is parallel to CB.



Not to scale

(a) Explain why triangles ADE and ABC are similar.

.....

.....

.....

..... **[2]**

(b) AE = 4 cm, AC = 10 cm and ED = 3 cm.

Calculate length CB.

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

11 Joe invests £6500 at 4% **compound** interest for three years.

Calculate the value of his investment after three years.

£ ..... **[3]**

12 This table shows some of Anne's monthly phone bills.

	January	February	March	April	May	June
Phone bill (£)	45	36	81	39	42	57

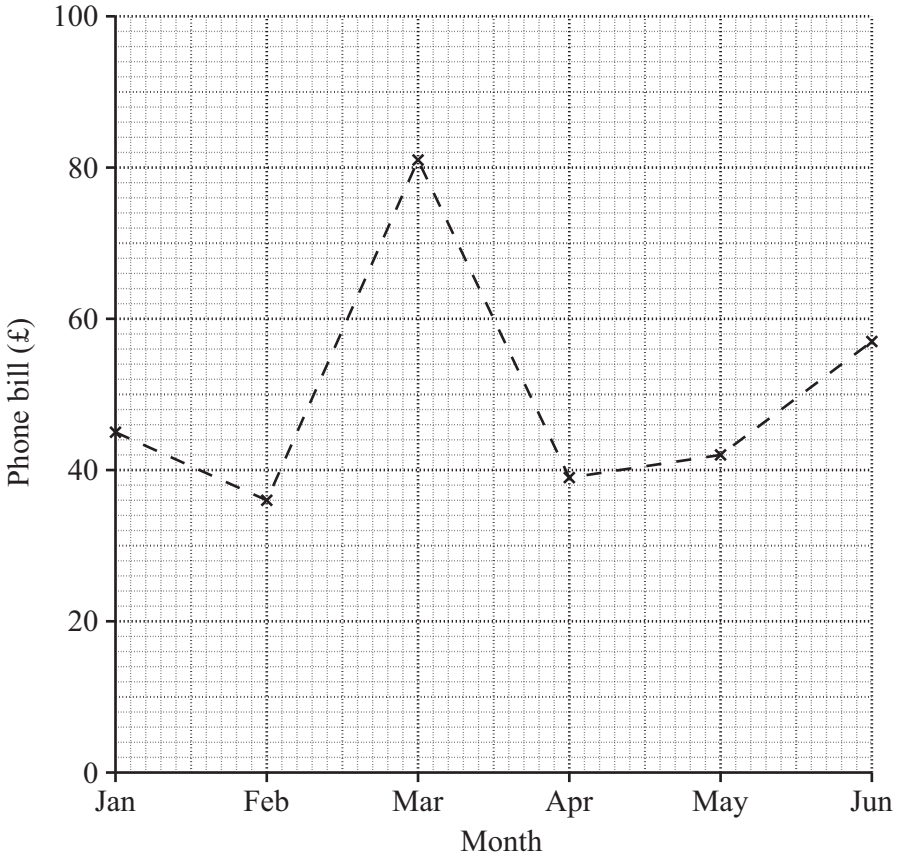
The 3-month moving average for January, February and March is £54.

(a) Calculate the next three moving averages.

(a) £54 £..... £..... £..... **[2]**

(b) The graph shows the monthly bills.

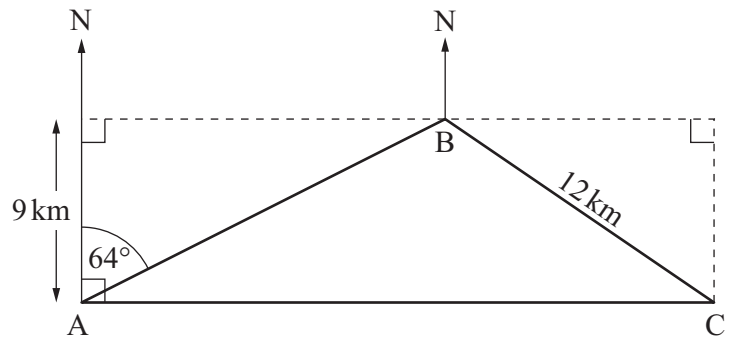
Plot the moving averages.



[2]

TURN OVER FOR QUESTION 13

13



Not to scale

Jules sails from A on a bearing of 064° to reach B.
B is 9 km North of A.

(a) Calculate the distance from A to B.

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

(b) Jules then sails 12 km from B to C. C is due East of A.

On what bearing does he sail?

(b) .....° **[3]**