Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B278B

MATHEMATICS C

(GRADUATED ASSESSMENT)

MODULE M8 (SECTION B)

THURSDAY 20 JANUARY 2011: Morning
DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator

READ INSTRUCTIONS OVERLEAF

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INSTRUCTIONS TO CANDIDATES

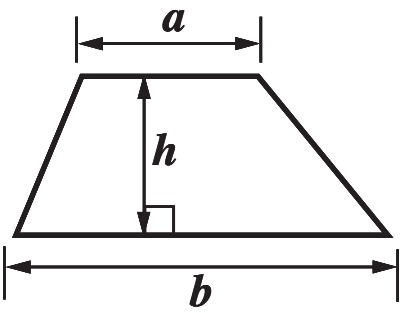
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **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.**

INFORMATION FOR CANDIDATES

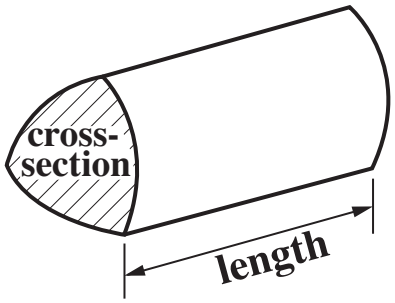
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 8.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.**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

FORMULAE SHEET

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



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

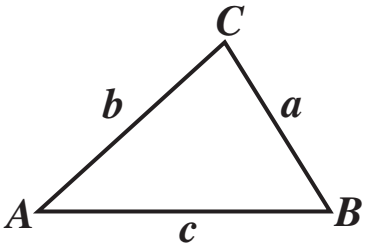


In any triangle ABC

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

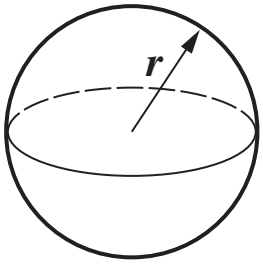
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



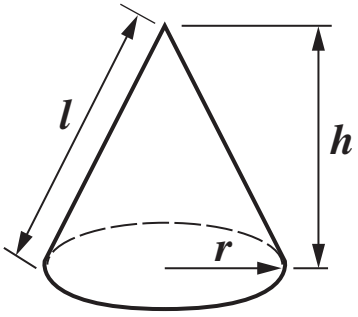
Volume of sphere $= \frac{4}{3}\pi r^3$

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



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

Curved surface area of cone $= \pi rl$



The Quadratic Equation

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

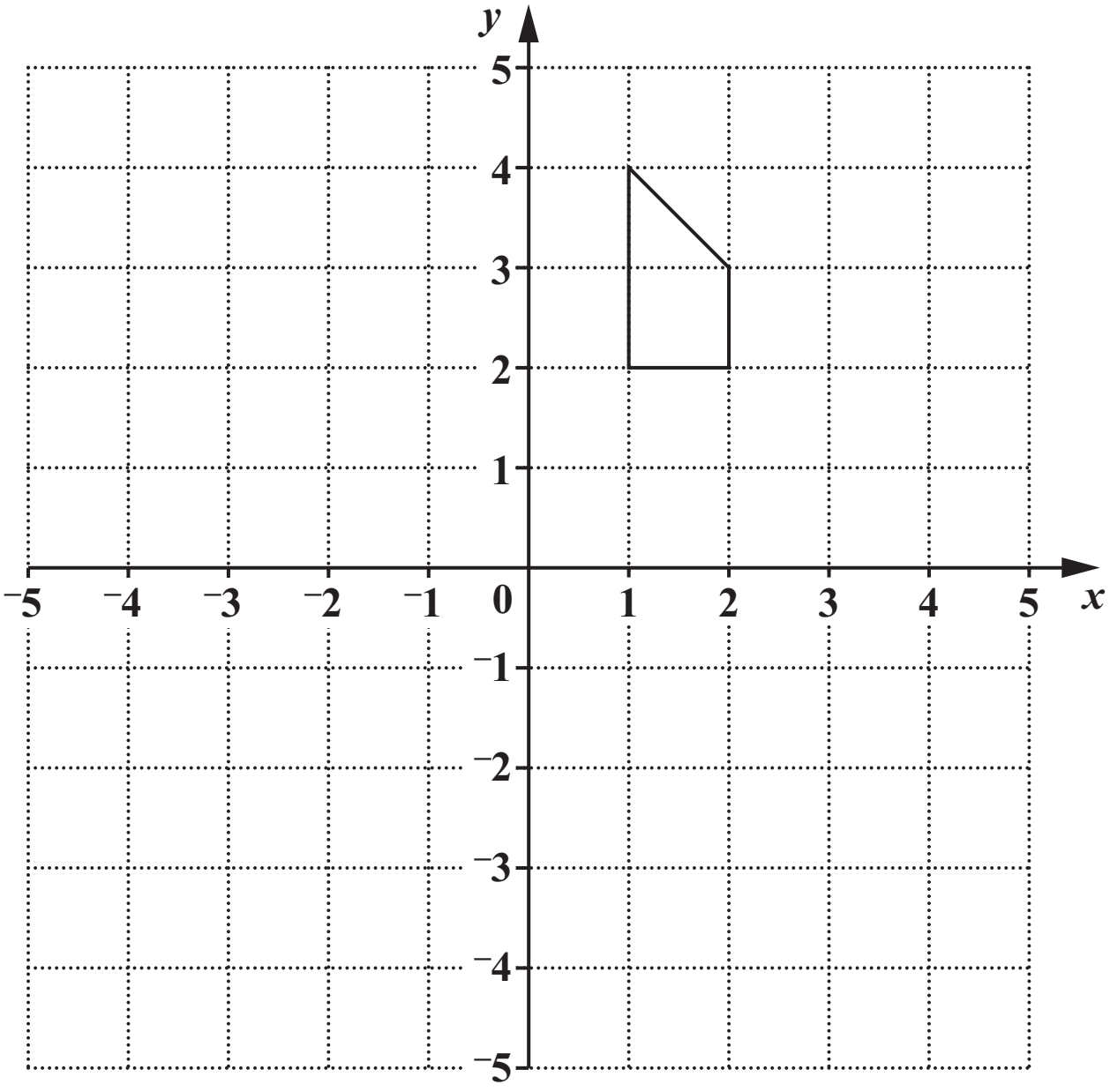
$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

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?

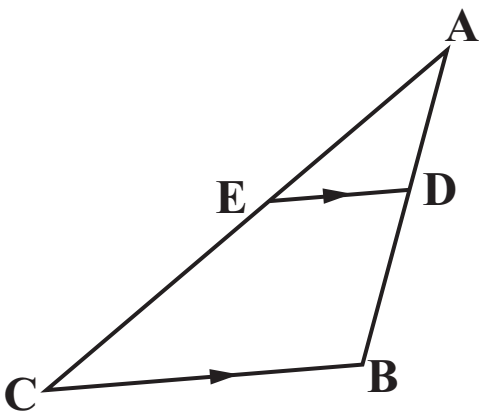
(a) £ _____ [2]

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

What was 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]

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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**

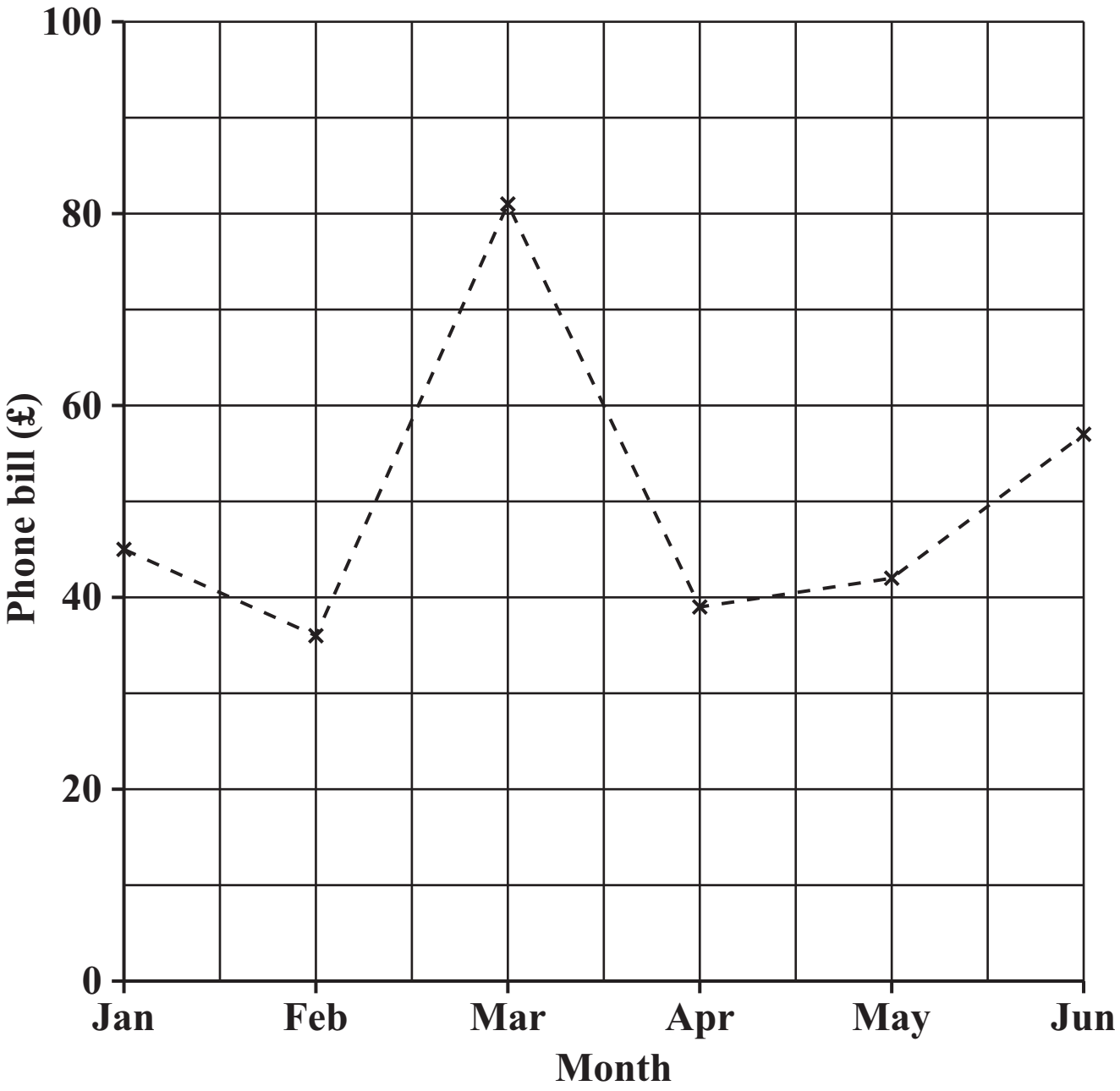
The 3-month moving average for January, February and March is £54.

(a) Calculate the next three moving averages.

(a) £54 £_____ £_____ £_____ [2]

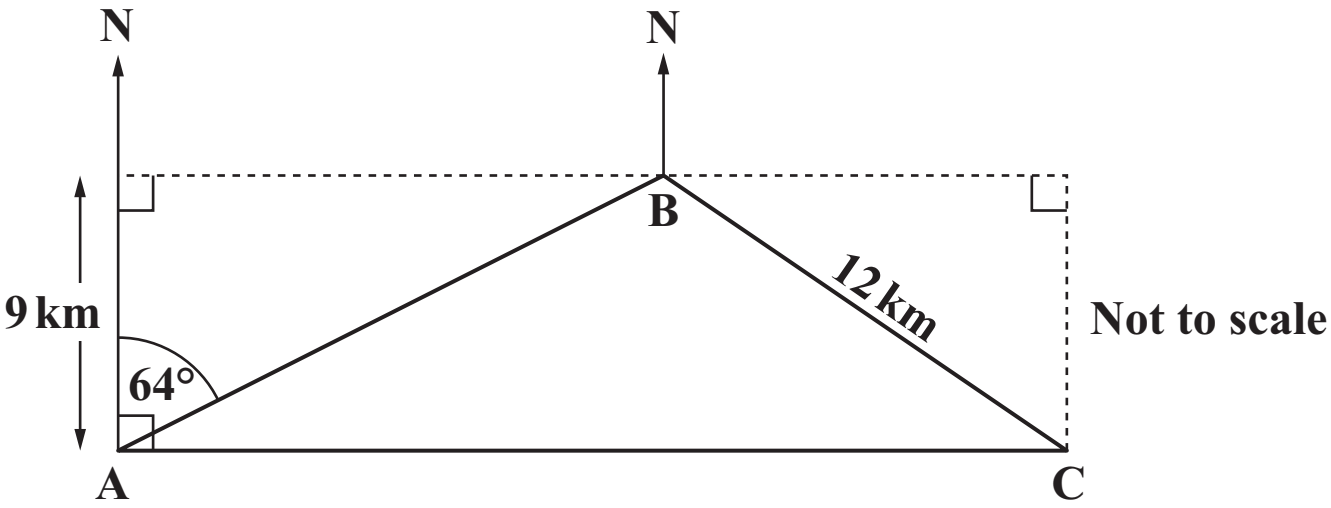
(b) The graph shows the monthly bills.

Plot the moving averages.



[2]

13 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, where C is due East of A.

On what bearing does he sail?

(b) _____ ° [3]