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RECOGNISING ACHIEVEMENT

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B262A

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS B (MEI)

Paper 2 Section A (Foundation Tier)

MONDAY 2 JUNE 2008

Afternoon
Time: 1 hour

Candidates answer on the question paper
Additional materials (enclosed): None

Additional materials (required):
Geometrical instruments
Tracing paper (optional)

CUP/T45382

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.
- Answer **all** the questions.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Do **not** write in the bar codes.
- 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 **50**.

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

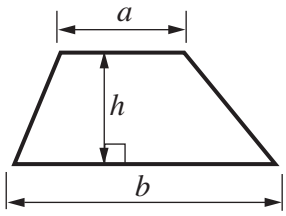
FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

This document consists of **14** printed pages and **2** blank pages.

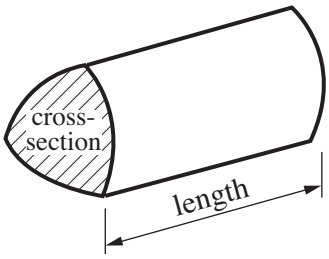
[Turn over

Formulae Sheet: Foundation Tier

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



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



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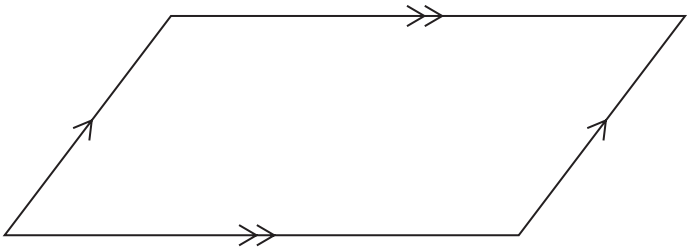
1 (a)



(i) Write down the mathematical name of this shape.

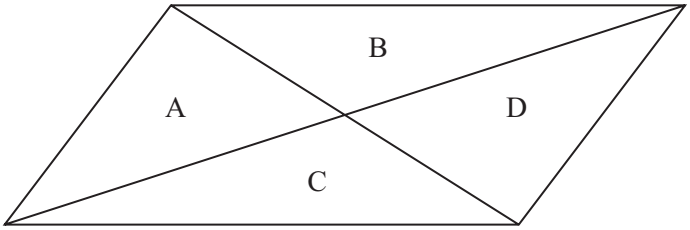
(a)(i) ..... [1]

(ii) How many lines of symmetry does the shape have?
Circle the correct answer.

Zero **One** **Two** **Four**

[1]

(b) Here is the same shape split into 4 triangles A, B, C and D.



Complete this statement.

Triangles ..... and ..... are congruent. [1]

2 Write these in order, smallest first.

$\frac{99}{100}$ $\frac{3}{4}$ 90%

..... , ... , ... [2]
smallest largest

3 A theatre is putting on a show.

(a) One night 90% of the theatre's seats are filled.

(i) What percentage of the seats are empty?

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

(ii) The theatre has 300 seats.

Calculate the number of seats that are filled.

(ii)..... [2]

(b) Another night 208 people come to the show.
Each person pays £9.95.

Estimate how much money the theatre takes on this night.

(b) £ ..... [2]

(c) The show starts at 7.30 pm and finishes at 10.30 pm.
It has an interval between the acts.

Act 1 is $1\frac{1}{2}$ hours long.

Act 2 is $\frac{3}{4}$ hour long.

Work out the length of the interval.

(c)..... [3]

4 Claire is trying to draw a regular hexagon.

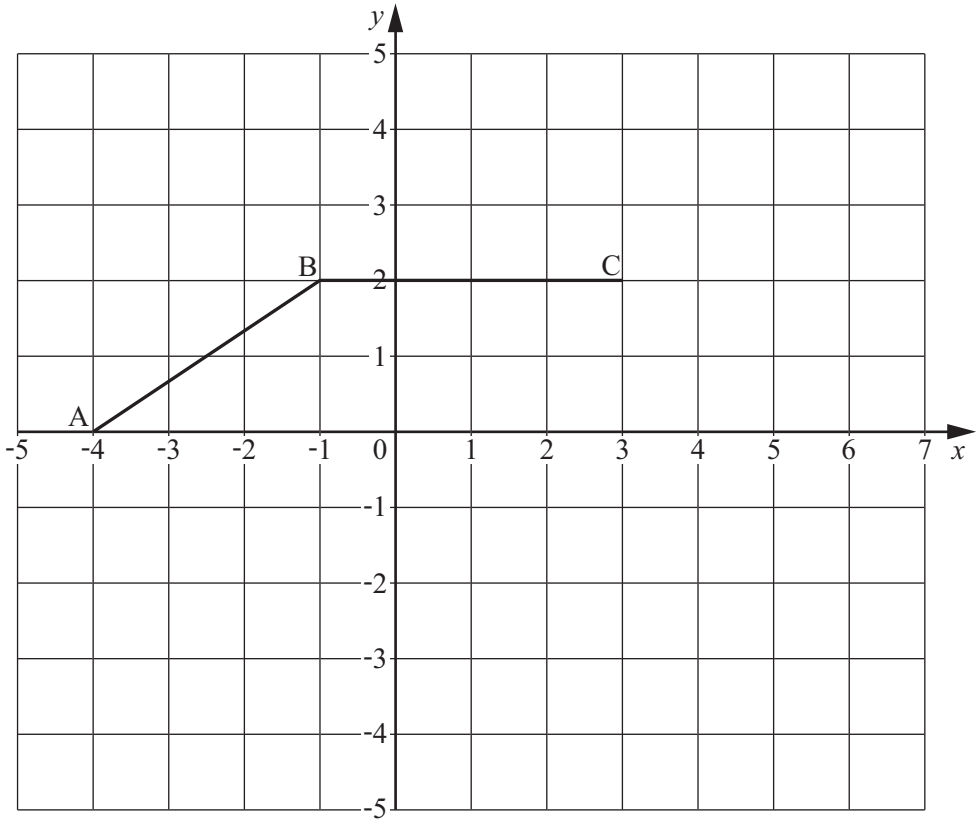
(a) The start of her first attempt is shown on the grid.

(i) Write down the co-ordinates of point C.

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

(ii) Mark the midpoint of the line BC. Label it M. [1]

(iii) Plot the point D, (6, 0), and complete the trapezium ABCD. [1]



(iv) Draw a reflection of the trapezium in the x-axis to form a hexagon. [1]

(v) How can Claire tell that this hexagon is not **regular**?
Give measurements to support your argument.

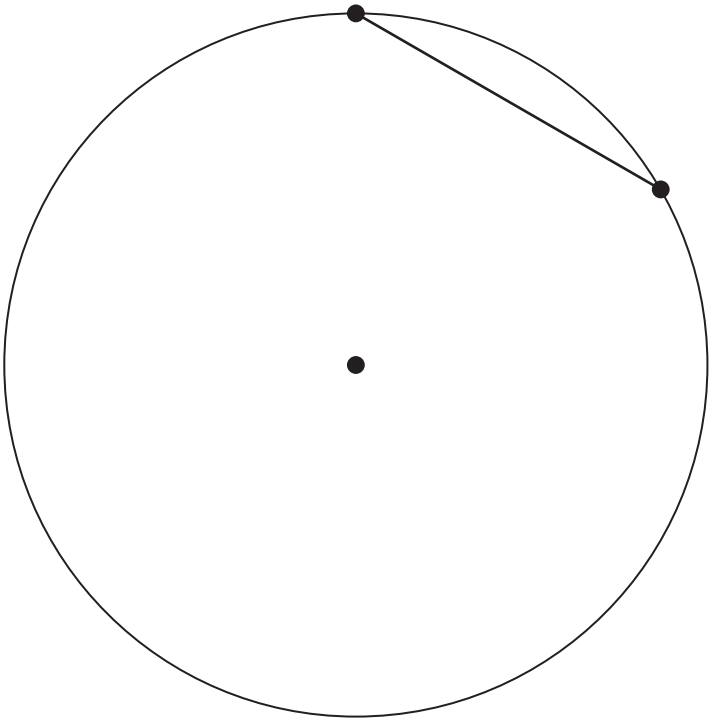
.....

.....

..... [2]

(b) Claire makes another attempt to draw a regular hexagon.
She starts with the circle below.

Complete her diagram as accurately as you can using compasses or protractor.



[3]

5 Here is a sequence of diagrams from Amy's notebook when she studied the growth of a plant.

diagram 1 diagram 2 diagram 3

(a) Sketch the next diagram in the sequence.

[1]

(b) Complete this table for the sequence.

Diagram number	1	2	3	4	5
Number of leaves	3	5	7		

[1]

(c) Describe the number pattern in the bottom line of the table.

.....

..... [1]

(d) Find the number of leaves in diagram 11.

(d) ..... [1]

6

On Sian's exercise bike there is a meter which measures calorie loss.
Each time she uses her exercise bike she records her calorie loss.
After 12 sessions on the bike her mean loss was 43 calories per session.
In her best session she lost 78 calories and in her worst she lost 29.

(a) What was the range of her calorie loss?

(a).....calories [1]

Next session, her calorie loss was 75 calories.
Sian works out the mean and range of her calorie loss for all 13 sessions.

(b) Choose from

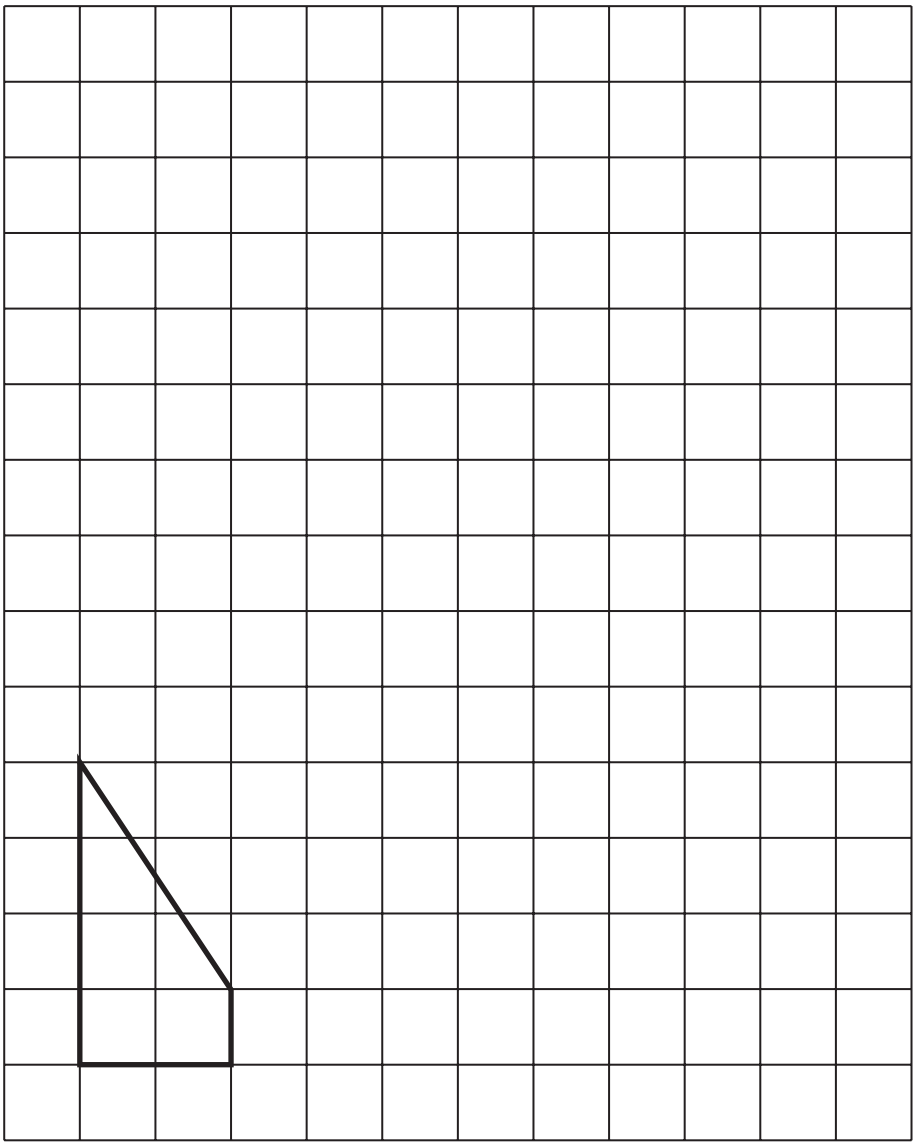
Increased Decreased Stayed the same

to complete these statements.

(i) Her mean calorie loss has ..... [1]

(ii) Her range of calorie loss has ..... [1]

7 Enlarge the shape by scale factor 3.



[2]

8 Glyn is making mortar.

He mixes sand and cement in the ratio 4 : 1.

(a) How much sand does he mix with 5 kg of cement?

(a)..... kg [1]

(b) How much of each does he need to make 45 kg of the mix?

(b) Sand ..... kg

Cement ..... kg [2]

9 Alan and Rachel bought a bag of sweets.

Alan ate $\frac{1}{4}$ of them.

Rachel ate $\frac{2}{5}$ of the sweets **that were left**.

(a) What fraction of the original bag of sweets did Rachel eat?

(a)..... [3]

(b) Rachel ate 12 sweets.

How many sweets did Alan and Rachel buy?

(b) ..... [2]

10 **(a)** Multiply out this expression.

$$3(x + 7)$$

(a)..... [1]

(b) Factorise this expression.

$$2y + 12$$

(b) ..... [1]

(c) Solve these equations.

(i) $x + 7 = 13$

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

(ii) $6(2y - 3) + 2(7 - y) = 9$

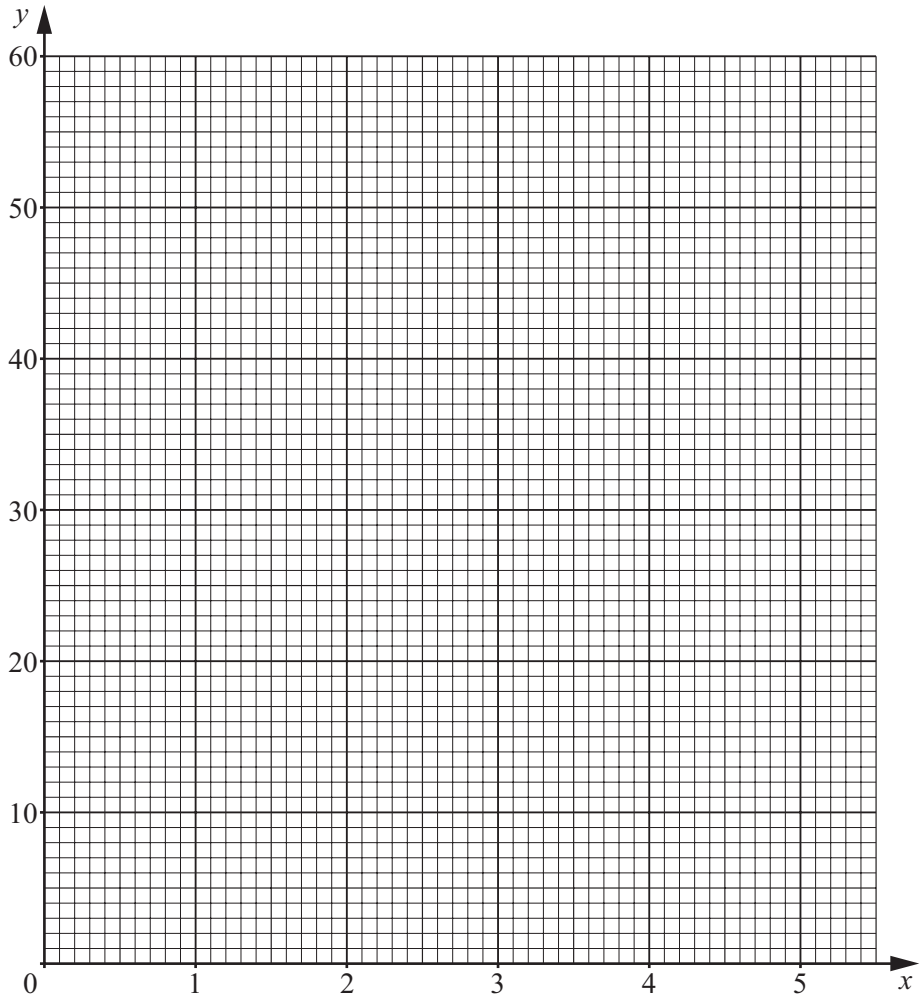
(ii)..... [3]

11 **(a)** Complete this table for $y = x^2 + 4x$.

x	0	1	2	3	4	5
y	0	5		21	32	

[2]

(b) Draw the graph of $y = x^2 + 4x$.



[2]

(c) Use the graph to find a solution of the equation $x^2 + 4x = 30$.

(c)..... [1]

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