OCR RECOGNISING ACHIEVEMENT

F

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS B (MEI)
Paper 2 Section A
(Foundation Tier)

B262A

**Wednesday 14 January 2009
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, 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.
* The total number of marks for this Section is **50**.
* This document consists of **16** pages. Any blank pages are indicated.

WARNING

No calculator can be used for Section A of this paper

FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

OCR is an exempt Charity

Turn over

Formulae Sheet: Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$
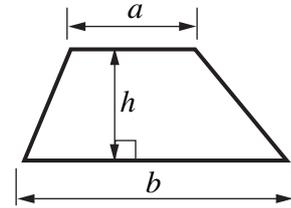
Volume of prism = (area of cross-section) × length
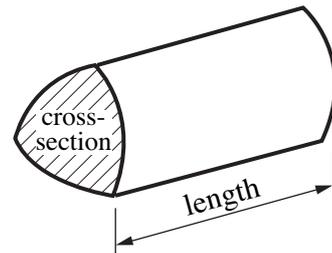
PLEASE DO NOT WRITE ON THIS PAGE

1 (a) What percentage of this shape has been shaded?
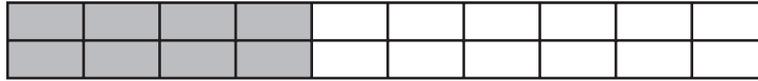
(a) .... % **[1]**

(b) Shade 75% of this circle.
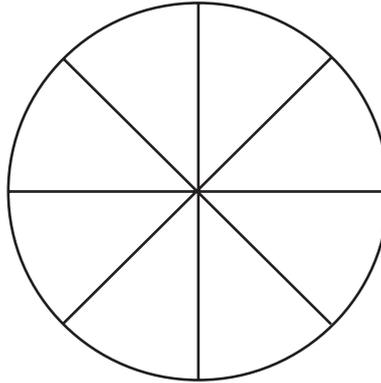
[1]

(c) Work out 20% of £600.

(c) £ .... **[2]**

2 Here is a sketch of a triangle, OAB, drawn on the corner of a sheet of cardboard.

B

Not to scale

62°

O   A
4.7 cm
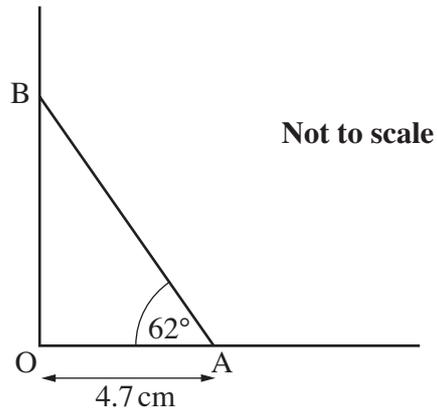
(a) The full-size diagram below shows the corner of the cardboard.

O

(i) Mark the point A, 4.7 cm from the corner O. **[1]**

(ii) At A, draw an angle of 62° and complete the triangle OAB. **[1]**

(iii) Measure the length of the line OB on your diagram.

(a)(iii) ....cm **[1]**

(b) The length of the cardboard sheet is 120 cm.

   (i) What is 120 cm in millimetres?

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

   (ii) What is 120 cm in metres?

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

                                                                                    Turn over

3 One month Gary collects data on the different types of film showing at his local cinema. The table shows some of his results.

Type of film	Frequency
Comedy	6
Romance	4
Adventure	3
Children's	
Horror	1

(a) Gary draws a bar chart to show his results.

(i) Complete his bar chart.
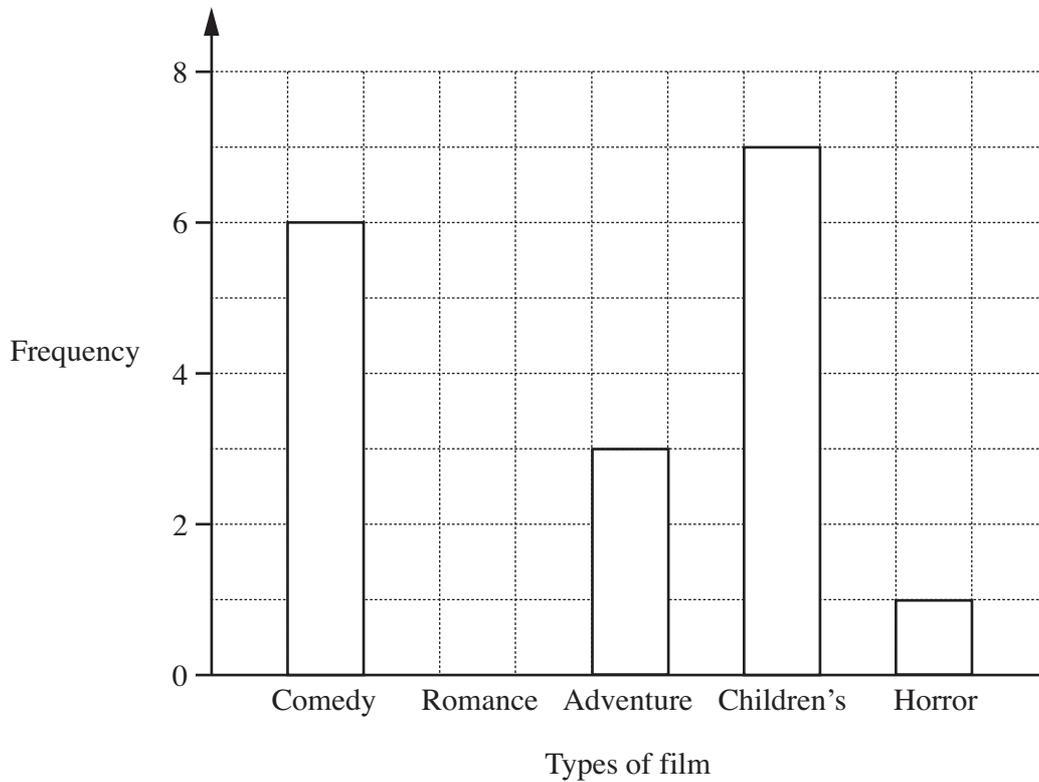
[1]

(ii) How many children's films were shown?

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

(b) Gary chooses one of these films at random.

What is the probability that it is an adventure film?

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

4
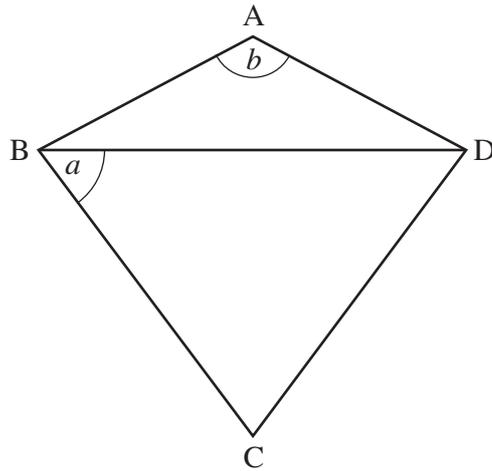
Not to scale

In this kite, triangle BCD is equilateral.

(a) What is the size of angle *a*?

(a) ....° **[1]**

Lengths AB and AD are equal.

(b) Complete this sentence.

Triangle ABD is an .... triangle. **[1]**

CB is perpendicular to BA.

(c) Work out angle *b*.
Give a reason for each step of your working.

Angle *b* is ....° because ....

....

....

....

.... **[4]**

5
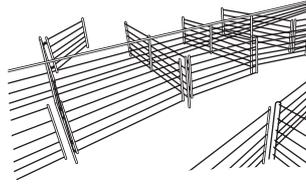
This sequence of diagrams shows how hurdles are placed when building cattle pens.
Each line represents one hurdle.

| 1 pen | 2 pens | 3 pens |
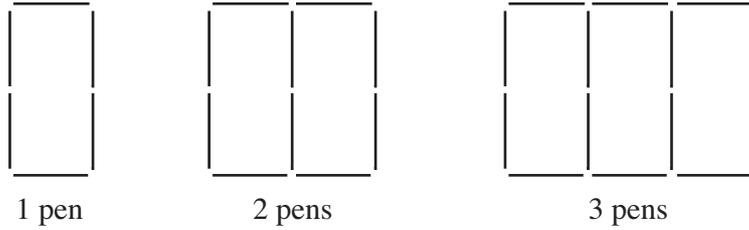
(a) Sketch the next diagram in the sequence. **[1]**

(b) Complete this table for the sequence.

Number of pens	1	2	3	4	5
Number of hurdles	6	10	14		

[2]

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

....

.... **[1]**

(d) This sequence of pens is continued.

    (i) Find the number of hurdles needed to make 8 pens.

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

    (ii) What is the greatest number of pens that can be made using 46 hurdles?

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

6 This table gives the average temperature for each month in London and Auckland.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°C) in London	4	4	6	8	12	15	17	17	14	11	7	5
Temperature (°C) in Auckland	18	19	18	16	14	12	10	11	12	13	15	16

The data for London have been plotted as a time series graph.
Some of the data for Auckland have also been plotted.

(a) Complete the graph for Auckland. **[1]**
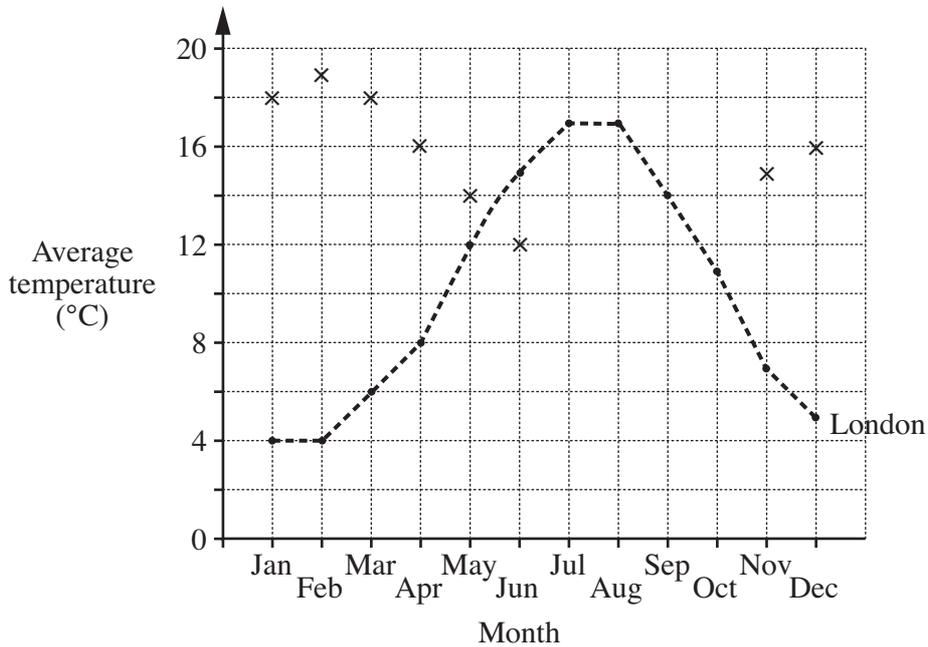
(b) Give one comparison between average temperatures in London and Auckland.

....

.... **[1]**

(c) In which month is there the greatest difference in average temperature between London and Auckland?

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

7 Work out the following.

   (a) $10 - 4 \times 2$

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

   (b) $\dfrac{15 + 25}{5}$

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

   (c) $3(1 + 4^2)$

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

8   **(a)** Complete this statement.

$$\frac{3}{4} \;=\; \frac{\boxed{}}{16}$$

   **[1]**

   (b) Write these fractions in order, smallest first.
       Show clearly how you decide.

$$\frac{3}{4} \qquad \frac{11}{16} \qquad \frac{5}{8}$$

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

Turn over

9   Here is a sketch of a roof section for a small doll's house.
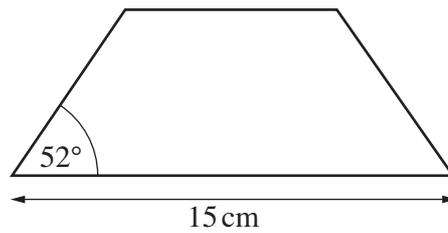
Not to scale

A large doll's house is an enlargement of a small doll's house with scale factor 3.

(a) In a large doll's house, what is the length of the base of the roof section?

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

(b) The roof section for a small doll's house has an angle of 52°.

What is the angle of the roof section for a large doll's house?

(b) ....° **[1]**

(c) The length of the top of the roof section for a **large** doll's house is 27 cm.

What is the length of the top of the roof section for a small doll's house?

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

10 **(a)** **Estimate** the answers to the following.

    (i) $\sqrt{66}$

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

    (ii) $\dfrac{398 \times 8.1}{103.6}$

(ii) .... **[2]**

(b) You are given that $832 \times 56 = 46\ 592$.

Use this calculation to work these out.

    (i) 8.32×5.6

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

    (ii) 0.832×560

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

    (iii) $4659.2 \div 83.2$

(iii) .... **[1]**

11 **(a)** Factorise $14a - 7$.

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

(b) Multiply out $3(p + 5)$.

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

(c) Multiply out $x(2x^2 + 5)$.

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

12
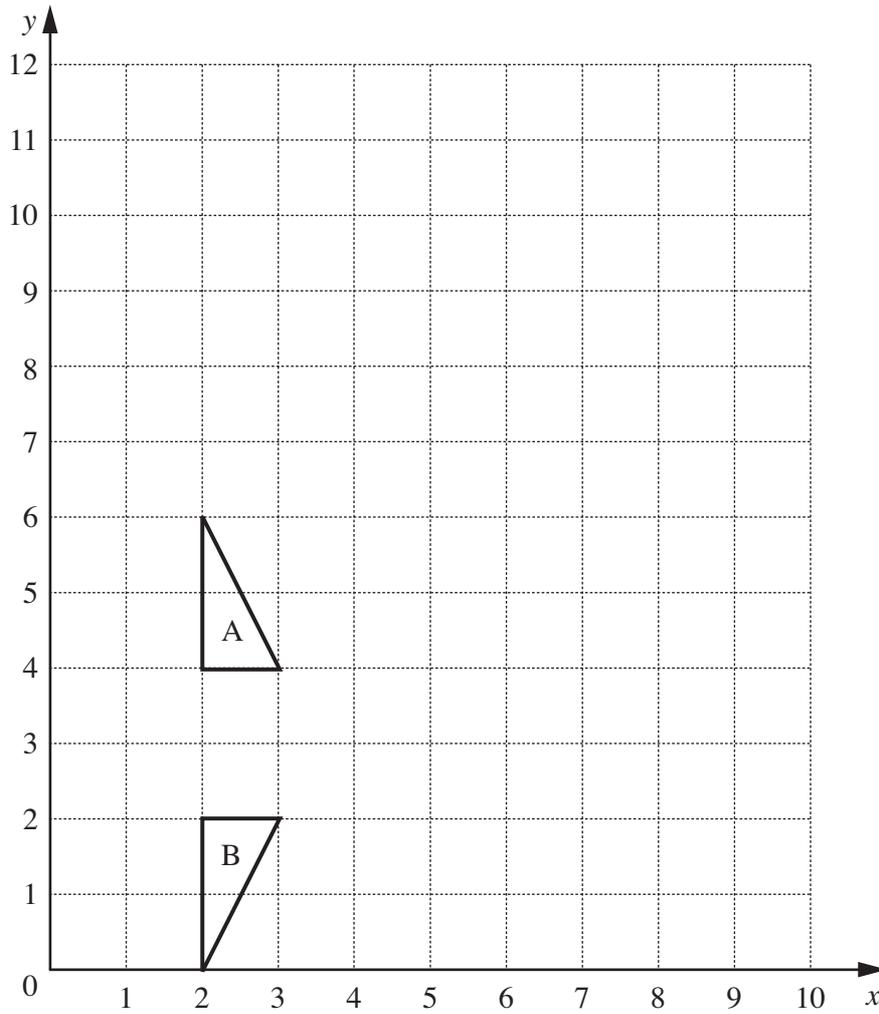
Describe fully the **single** transformation that will map triangle A onto triangle B.

.... **[2]**

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