For Examiner's Use

General Certificate of Secondary Education
November 2008

MATHEMATICS (MODULAR) (SPECIFICATION B)   **43005/2F**
Module 5 Foundation Tier
Paper 2 Calculator

F

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Wednesday 12 November 2008   9.00 am to 10.15 am

For this paper you must have:
- a calculator
- mathematical instruments.

For Examiner's Use	
Pages	Mark
3	
4−5	
6−7	
8−9	
10−11	
12−13	
14−15	
16−17	
18	
TOTAL	
Examiner's Initials	

Time allowed: 1 hour 15 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Use a calculator where appropriate.
- Do all rough work in this book.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information
- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. This must be tagged securely to this answer book.
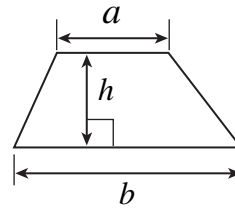
Advice
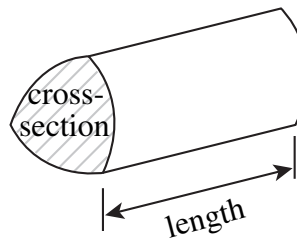- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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

Volume of prism = area of cross-section × length

*Areas outside
the box will
not be scanned
for marking*

Answer **all** questions in the spaces provided.

1 The grids in this question are made from centimetre squares.

1 (a)
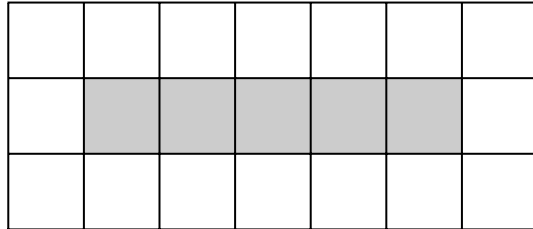
Work out the perimeter of the shaded rectangle.

....

Answer .... cm   *(1 mark)*

1 (b)
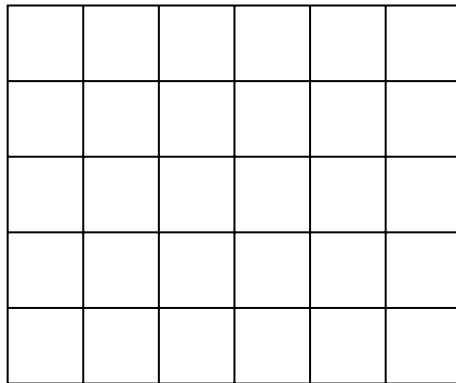
On the grid, draw and shade a different rectangle which has the same perimeter.

....

(2 marks)

Turn over ▶

2 (a) What fraction of this shape is shaded?
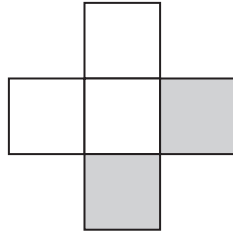
Answer .... *(1 mark)*

2 (b) Shade $\frac{2}{3}$ of this square.
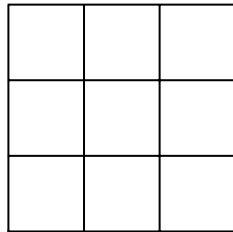
(1 mark)

2 (c) Which **two** of these fractions are **not** equal to $\frac{2}{3}$?

$$\frac{4}{6} \qquad \frac{8}{9} \qquad \frac{14}{21} \qquad \frac{22}{32} \qquad \frac{30}{45}$$

....

....

Answer .... and .... *(2 marks)*

3 From the following lists of numbers

3 (a) circle **two** factors of 70

3   7   11   12   20   28   35

(2 marks)

3 (b) circle **three** multiples of 4

3   7   11   12   20   28   35

(2 marks)

3 (c) circle a number which is one less than a cube number.

3   7   11   12   20   28   35

(1 mark)

Turn over for the next question

9

Turn over ▶

4 Quadrilateral *ABCD* is drawn on the grid.
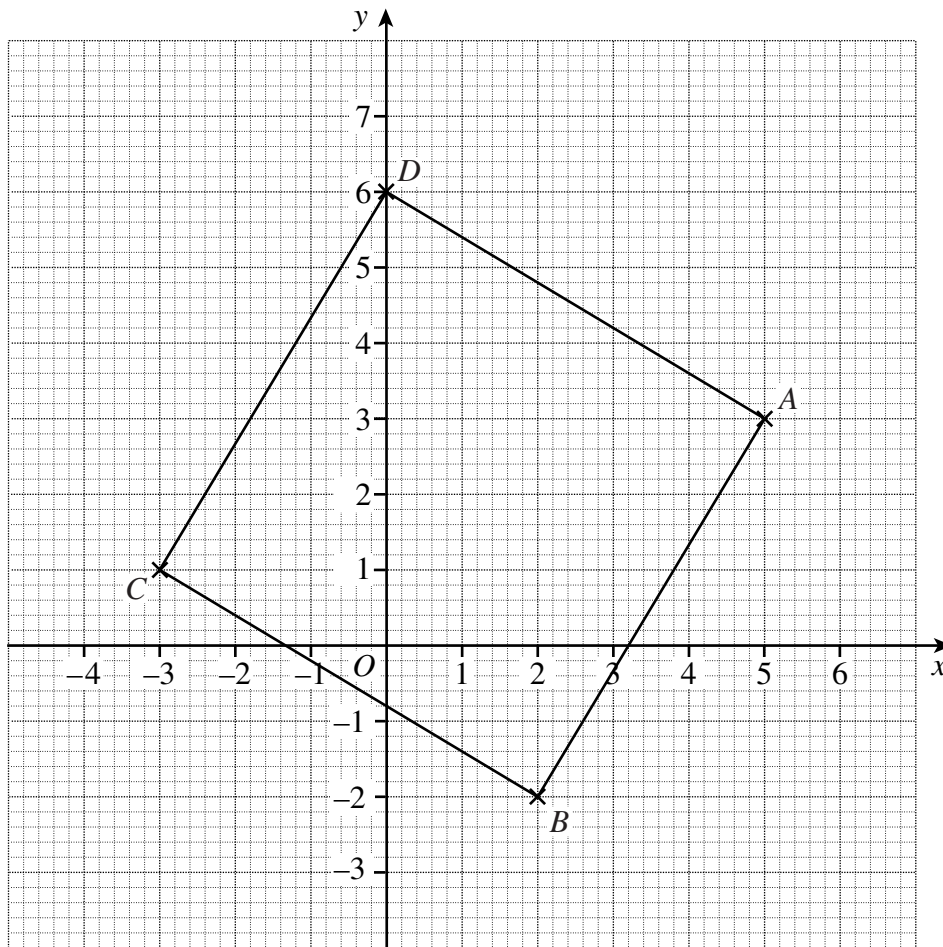
4 (a) Write down the coordinates of *A*.

Answer (.......................... , ...)   *(1 mark)*

4 (b) Write down the coordinates of *C*.

Answer (.......................... , ...)   *(1 mark)*

4 (c) (i) Draw the line *AC*.
Mark the midpoint of *AC* and label it *M*.

(1 mark)

4 (c) (ii) Write down the coordinates of *M*.

Answer (.......................... , ...)   *(1 mark)*

4 (d) Write down **two** facts that show *ABCD* is a square.

Fact 1 ....

Fact 2 ....

(2 marks)

5 (a) What value is shown by the arrow on this diagram?

50 g   55 g   60 g
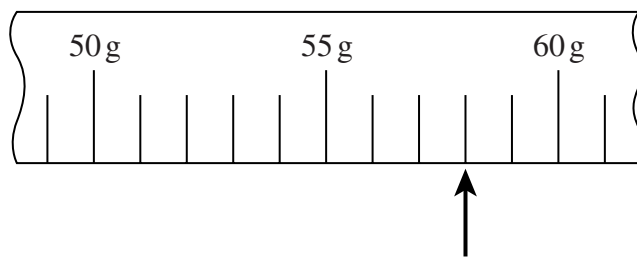
Answer .... g   *(1 mark)*

5 (b) Draw an arrow on this diagram to show 9.3 cm.

9 cm   10 cm   11 cm
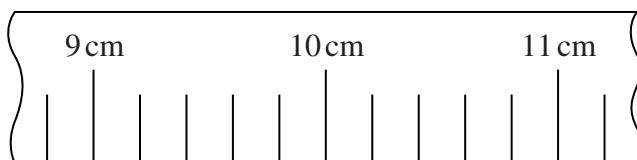
(1 mark)

5 (c) Ethan says that this arrow shows 3.29 litres.

litres

3.3 —

3.2 —
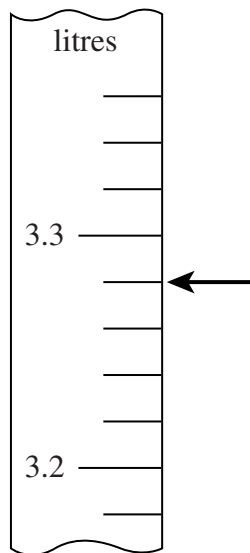
Ethan is **not** correct.

What mistake has Ethan made?

....

....

(1 mark)

9

Turn over ▶

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for marking*

6 (a) *ABC* is a straight line.
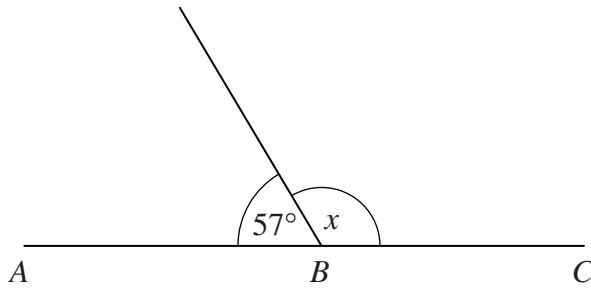
Not drawn accurately

Work out the value of *x*.

....

....

Answer .... degrees   *(1 mark)*

6 (b) *PQR* is a straight line.
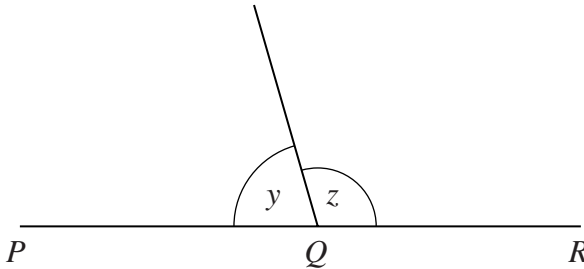
Not drawn accurately

6 (b) (i) Complete the statement.

An acute angle is an angle which is ....
(1 mark)

6 (b) (ii) Angle *y* is an acute angle.

Explain why angle *z* cannot also be acute.

....

....
(1 mark)

7 Here is an approximate rule for changing Celsius, *C*, to Fahrenheit, *F*.

double *C* and add on 30

7 (a) Work out the value of *F* when *C* = 27

....

....

Answer *F* = ... *(2 marks)*

7 (b) Work out the value of *C* when *F* = 52

....

....

Answer *C* = ... *(2 marks)*

Turn over for the next question

7

Turn over ▶

*Areas outside
the box will
not be scanned
for marking*

8 The diagram shows a cuboid of length 4 cm, width 2 cm and height 3 cm.

Not drawn
accurately

3 cm

2 cm

4 cm
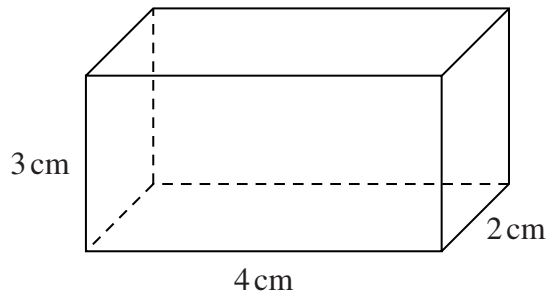
8 (a) (i) How many faces does a cuboid have?

Answer ....   *(1 mark)*

8 (a) (ii) How many edges does a cuboid have?

Answer ....   *(1 mark)*

8 (a) (iii) Calculate the volume of this cuboid.

....

Answer .... cm^3 *(2 marks)*

8 (b) The cuboid is cut along the shaded plane to make triangular prisms.

Not drawn
accurately

3 cm

2 cm

4 cm
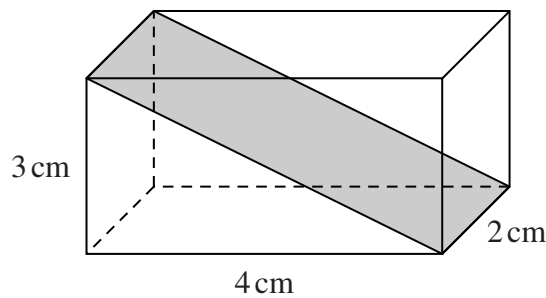
What is the volume of one of the triangular prisms?

....

Answer .... cm^3 *(1 mark)*

8 (c) Five students have tried to draw a net of the triangular prism.

Anna

Ben
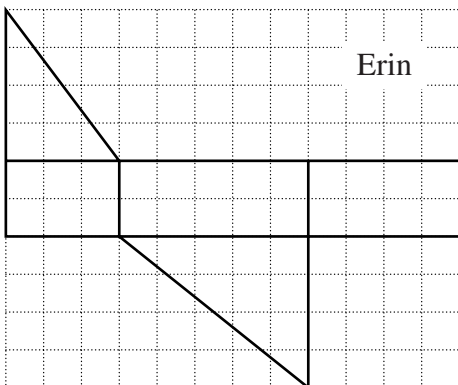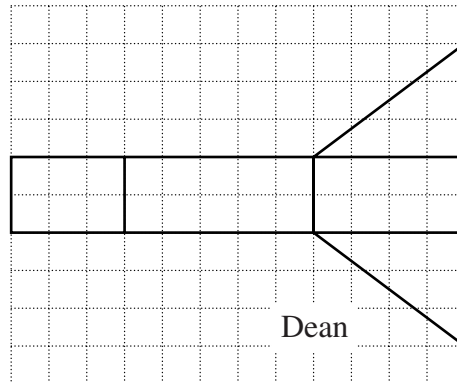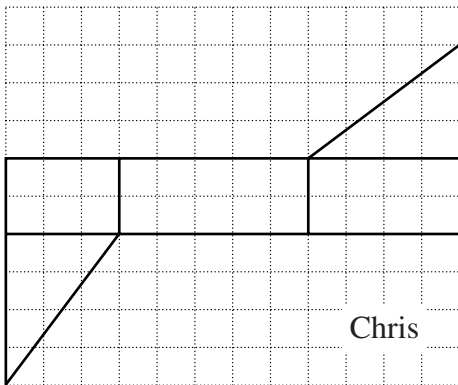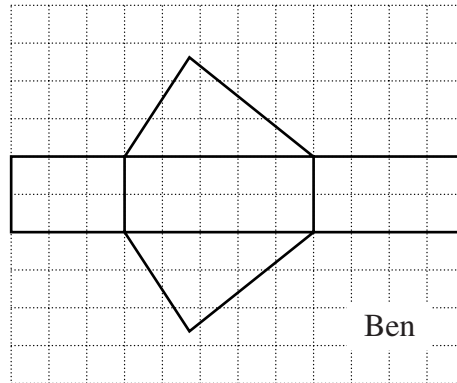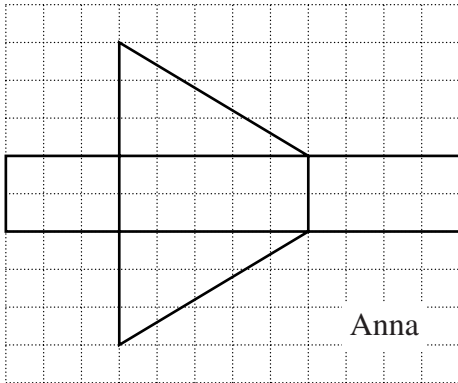
Chris

Erin

Dean

Put a tick in the table against each student whose net is correct.
Put a cross if the net is **not** correct.

Anna	Ben	Chris	Dean	Erin

(3 marks)

8

Turn over ▶

9   Water is leaking from a tank.
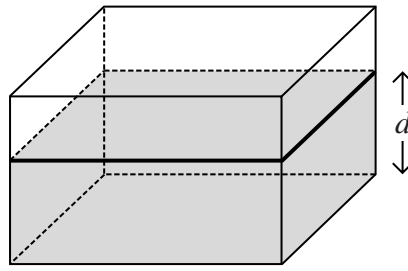
The water level is checked three times during the day.
Here are the results.

Time	1000	1100	1230
Depth of water, d (cm)	35	27	15

9   (a)   Plot these results on the grid and join them with a straight line.

(2 marks)
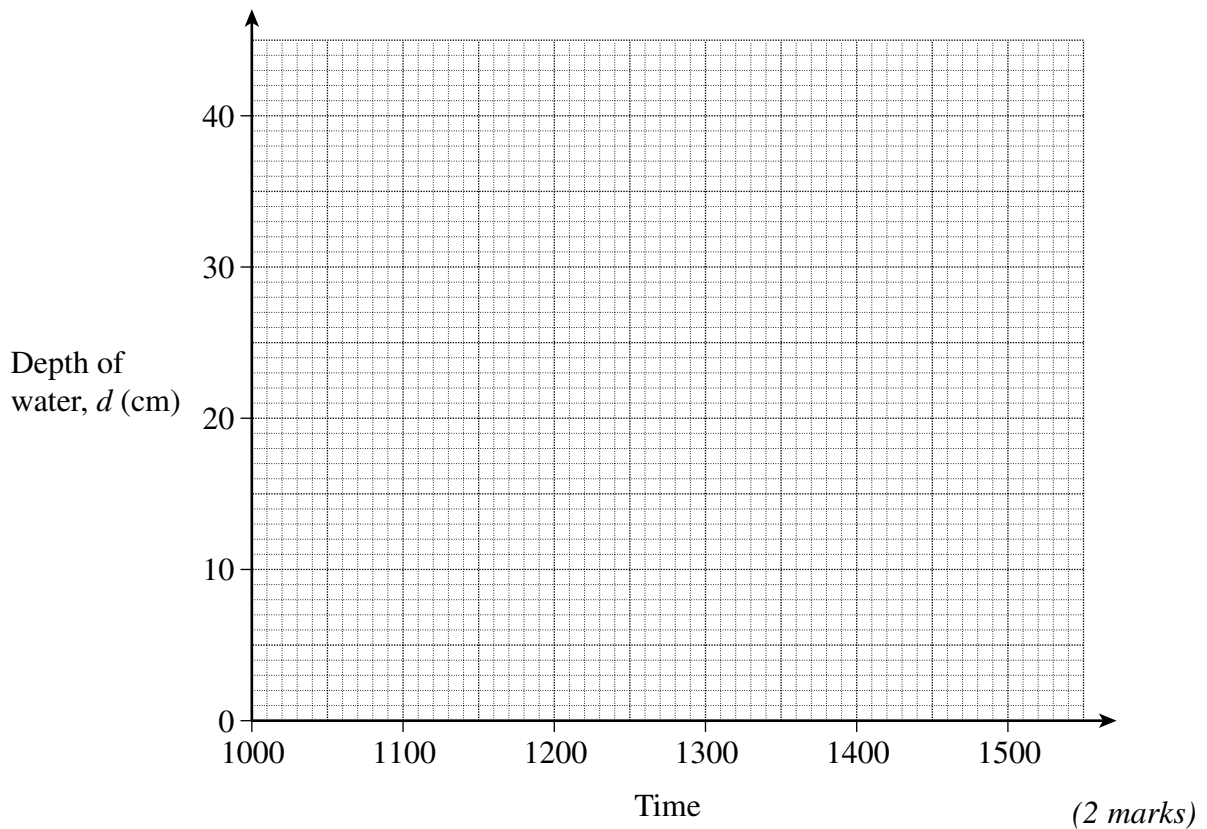
9   (b)   Use your graph to find the depth of the water at 1036.

Answer .... cm   *(1 mark)*

9   (c)   If the water continues to leak at the same rate, when will the tank be empty?

Answer ....   *(1 mark)*

10   The diagram shows the positions of three towns, *A*, *B* and *C*.
   A is 18 kilometres due north of *B*.
   C is 12 kilometres from *B* on a bearing of 070°.

A

Not drawn accurately

18 km

70°

C

B   12 km
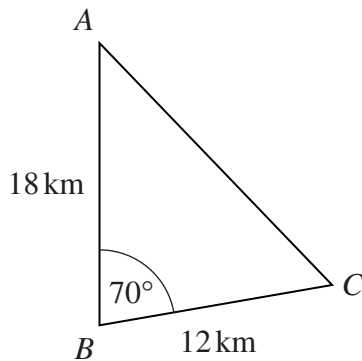
10   (a)   A scale of 1 cm to represent 3 km has been used to show the positions of towns
   A and *B*.

   Complete the diagram to show the position of town *C*.

   Scale: 1 cm represents 3 km

A

N

B
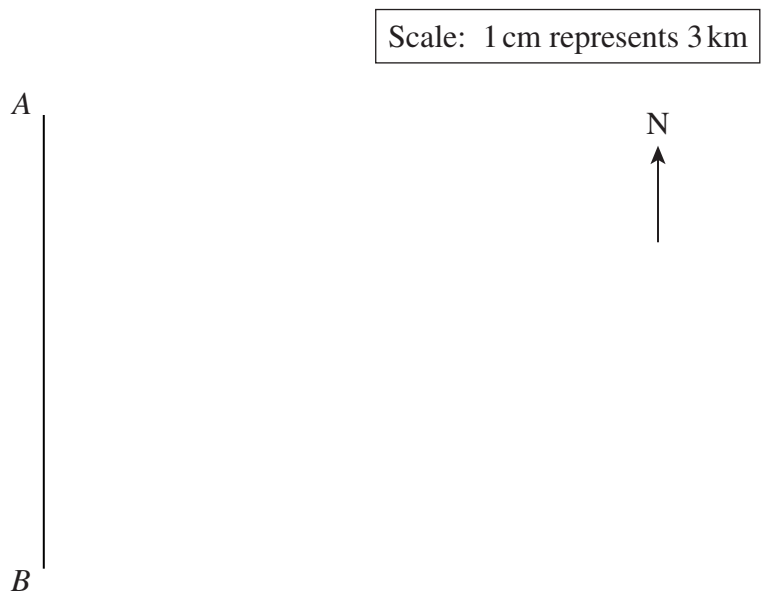
(2 marks)

10   (b)   Use measurements from your drawing to work out the three-figure bearing of
   C from *A*.

   ....

   ....

   Answer .... degrees   *(2 marks)*

   8

Turn over ▶

1 3

11 (a) Work out 1.8^3

Answer .... *(1 mark)*

11 (b) Work out $\dfrac{1}{5.7}$

11 (b) (i) Write down your full calculator display.

Answer .... *(1 mark)*

11 (b) (ii) Write your answer to 2 decimal places.

Answer .... *(1 mark)*

12 (a) Factorise $6x - 10$

....

Answer .... *(1 mark)*

12 (b) Solve the equation $4y + 3 = 8$

....

....

Answer $y = $ .... *(2 marks)*

12 (c) Solve the equation $2(t + 5) = 8$

....

....

....

Answer $t = $ .... *(3 marks)*

12 (d) List all the integer solutions of the inequality $-6 \leqslant 3n < 5$

....

....

....

Answer .... *(3 marks)*

12

Turn over ▶

13 The diagram shows a rectangle *ABCD*.
AD = 8.8 cm and *DC* = 15.4 cm
Triangle *BCE* is cut off the rectangle, where *EB* = 6.3 cm
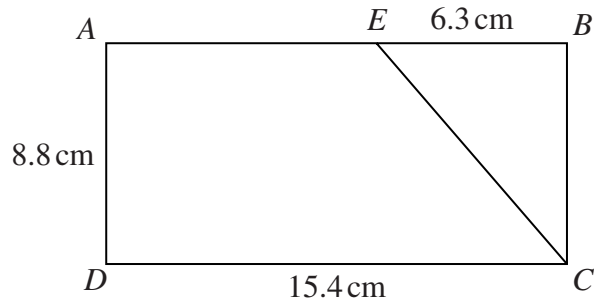
Not drawn accurately

Calculate the area of trapezium *AECD*.

....

....

....

....

....

....

Answer .... cm^2 *(3 marks)*

14 (a) Complete the table of values for $y = x^2 - 4x$

x	−1	0	1	2	3	4	5
y		0	−3	−4		0	5

....

(2 marks)

14 (b) On the grid, draw the graph of $y = x^2 - 4x$ for values x from −1 to 5.
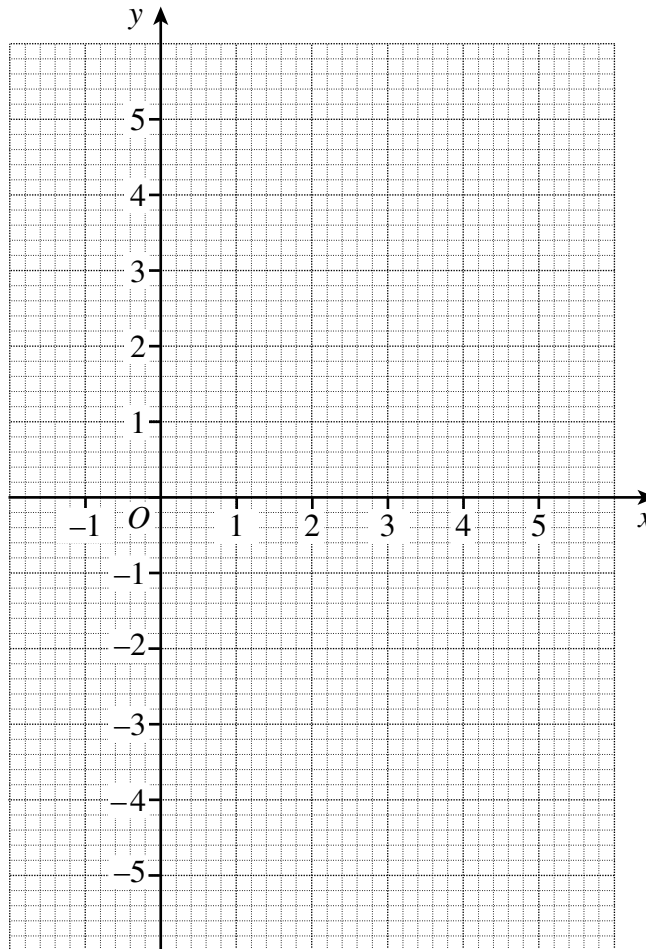
(2 marks)

14 (c) Use your graph to find the solutions of the equation $x^2 - 4x = 2$

Answer .... and .... *(2 marks)*

14 (d) Explain why you cannot find solutions of the equation $x^2 - 4x = -5$

....

....

(1 mark)

10

Turn over ▶

15 The diameter of a cylindrical water-butt is 55 cm.
The height is 82 cm.

Not drawn accurately

82 cm

CAPACITY
200 LITRES

←—— 55 cm ——→
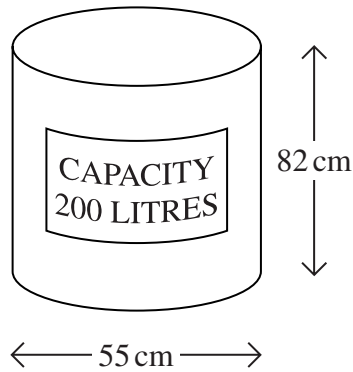
One litre = 1000 cm^3

The label states that the capacity of the water-butt is 200 litres.

Is this accurate?
You **must** show your working.

....

....

....

....

....

....

....

(4 marks)

END OF QUESTIONS

4

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