GCSE

4351/01

WJEC CBAC

MATHEMATICS (UNITISED SCHEME)
UNIT 1: Mathematics In Everyday Life
FOUNDATION TIER

A.M. TUESDAY, 6 November 2012

$1\frac{1}{4}$ hours

Suitable for Modified Language Candidates

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

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

Take π as 3·14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **5**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	4	
2	4	
3	4	
4	5	
5	7	
6	4	
7	3	
8	4	
9	5	
10	6	
11	6	
12	5	
13	3	
14	5	
TOTAL MARK		

Formula List

Area of trapezium = $\frac{1}{2}(a + b)h$
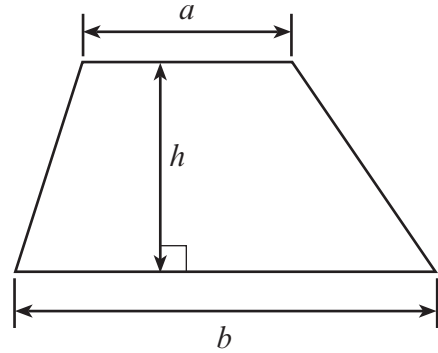
Volume of prism = area of cross-section × length

1. Drinks are sold from a van parked outside an office block.

The following signs are shown alongside the van.

OPEN

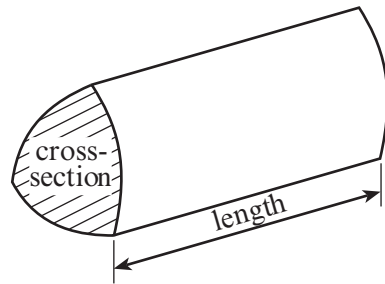| Monday	8:00 a.m. – 2:00 p.m.
Tuesday	8:00 a.m. – 2:00 p.m.
Wednesday	8:00 a.m. – 6:00 p.m.
Thursday	8:00 a.m. – 2:00 p.m.
Friday	8:00 a.m. – 2:00 p.m.
Saturday	9:00 a.m. – 1:30 p.m.
Sunday	Closed

PRICES

	Small	Medium	Large
TEA	80p	£1.00	£1.15
COFFEE	£1.00	£1.20	£1.45
JUICE	£1.10	£1.30	£1.55

(a) On which day is the van open later than usual?

....

[1]

(b) For how long is the van open to sell drinks on a Monday?

.... hours.

[1]

(c) How much would you have to pay altogether for a small tea and a large coffee?

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[2]

2. An advertising display in a shopping centre is made up of a number of cubes. This is shown below.
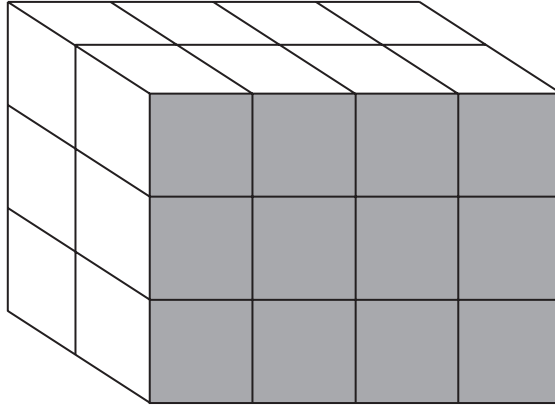
Diagram not drawn to scale

The length of one edge of each cube is 1 metre.
One face of the display is shaded.

(a) What is the total volume of the display?

.... m³

[1]

(b) What is the area of the shaded face of the display?

.... m²

[1]

(c) A silver thread is attached around the perimeter of the shaded face of the display. What is the length of this thread?
You must give the units of your answer.

....

....

[2]

3. The cost of renting a holiday cottage is given by the formula

Cost = Number of days × £60 + Fixed charge.

Four friends decide to rent the cottage for **5 days** when the **fixed charge is £120**.

How much will **each** friend pay if the cost is shared equally?

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[4]

4. A toy maker has an idea for a new toy.
He has made a sketch and written some notes that he will use to make further plans.

Circle
radius 3 cm

Straight handle at 60° to rod

Centre of circle

Mid-point of rod

Straight rod 11 cm long
from centre of circle
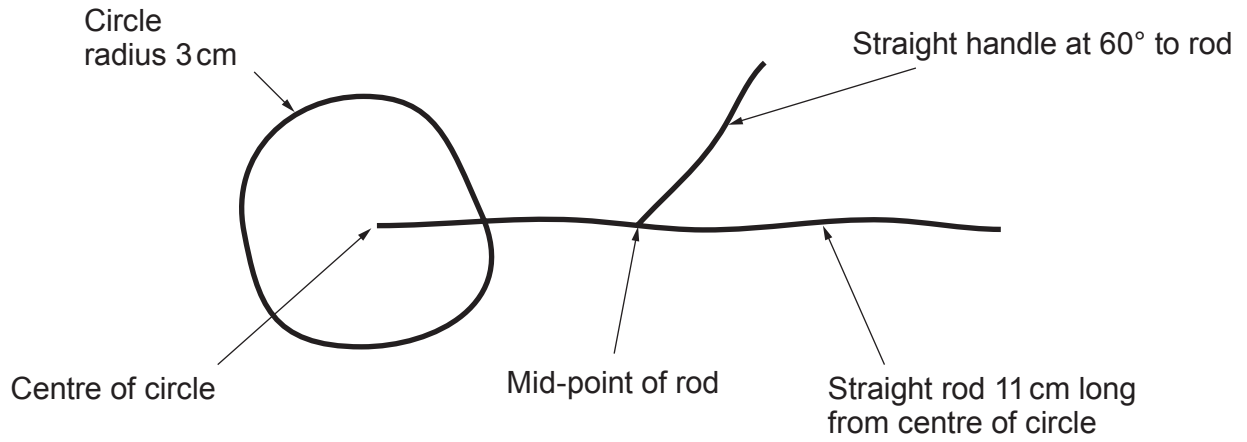
Make an **accurate** drawing of the sketch in the space below.
It does not matter what length you make the handle as long as it is at an angle of 60° to the rod.

You do **not** have to copy the toy maker's written notes.

[5]

5. *You will be assessed on the quality of your written communication in this question.*

A bakery sells cakes.

One week they sold £2500 worth of cakes.
The total cost of making these cakes was £700.

The following week, the bakery increased the number of cakes that they made.

As a result of this
- they sold three times as many cakes,
- the total cost of making the cakes doubled.

Check to see if their weekly profit has doubled, trebled or more than trebled.
Show all your calculations.

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[7]

6. A factory making computer printers expects to produce 800 printers each day.

The daily production is recorded as follows.

- A daily production of 815 printers is recorded as +15

- A daily production of 796 printers is recorded as −4

The production record for a five day period is shown below.
Two of the entries are blank.

Monday	Tuesday	Wednesday	Thursday	Friday
−13	+12			−8

On Wednesday, 793 printers were produced.

On Thursday, 2 fewer printers were produced than on Friday.

(a) Fill in the entries in the table for Wednesday and Thursday.

[2]

(b) How many printers were produced on Monday?

....

....

[1]

(c) How many more printers were produced on the highest production day than on the lowest production day?

....

....

[1]

7. A company offers its workers a choice on how much their salary will increase next year. Each worker can receive **either** a £500 increase **or** a 2% increase on their present salary.

Janet is currently on a salary of £24 000 per year.

Which type of increase should Janet choose? You **must show the calculations** that support your answer.

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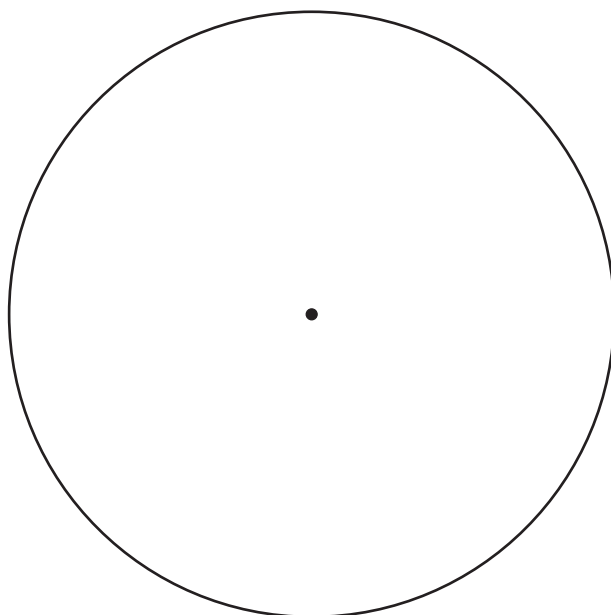
[3]

8. 120 people were treated as outpatients in a hospital on a particular day.
The hospital collected data on the age group of each person.

The results are summarised below.

Age group	Number of people
Pre-school	18
School	24
60 and over	35
Others	43

Draw a pie chart to illustrate these results.
You should show how you calculated the angles of your pie chart.

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[4]

9. Kevin drove from Newcastle to Swindon, a distance of 273 miles.
He started his journey at 9:15 a.m. and arrived in Swindon at 4:15 p.m.

   (a) Calculate his average speed for the journey.

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   [3]

On average, his car uses one gallon of diesel per 40 miles travelled.
A gallon of diesel costs approximately £6.30.

   (b) Find an estimate, to the nearest £, of how much it cost him for the diesel used on the journey.
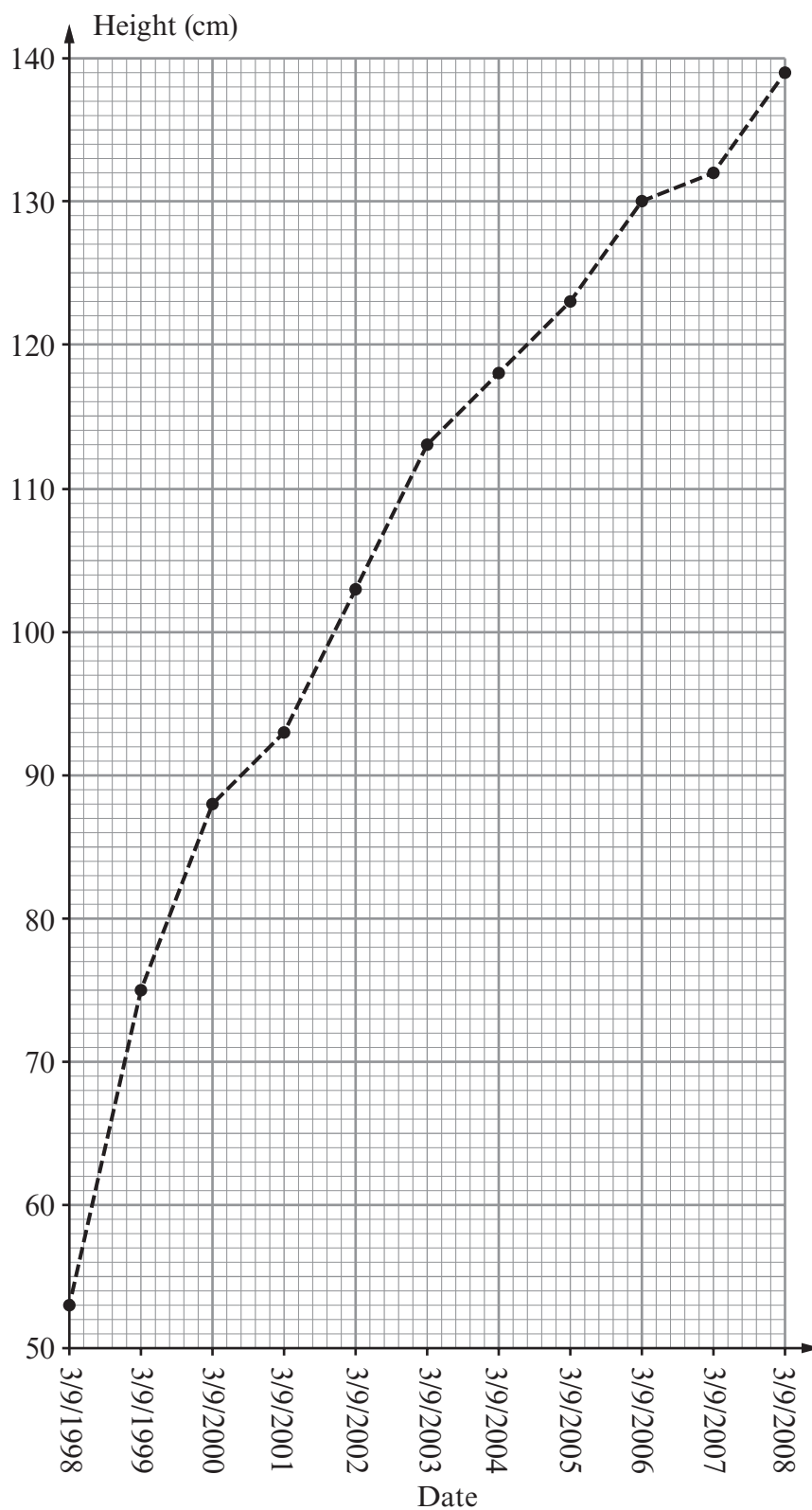
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   [2]

10. *(a)* Kate's parents measured her height on each of her birthdays until she was ten years old. Starting with Kate's recorded height on the day she was born, her parents drew a graph to show this information.

The graph they drew is shown below.

Use the graph to answer the following.

(i)   What was Kate's recorded height when she was born?

.... cm

[1]

(ii)   Between which two birthday dates did Kate grow the least?

Between   3/9/........................   and   3/9/........................

[1]

(iii)   How tall was Kate on the day she was 4 years old?

.... cm

[1]

(iv)   What will Kate's age be, in years, on 1st January 2015?

.... years old

[1]

(b)   The following diagram is intended to show the number of girls and the number of boys who are members of a youth club.
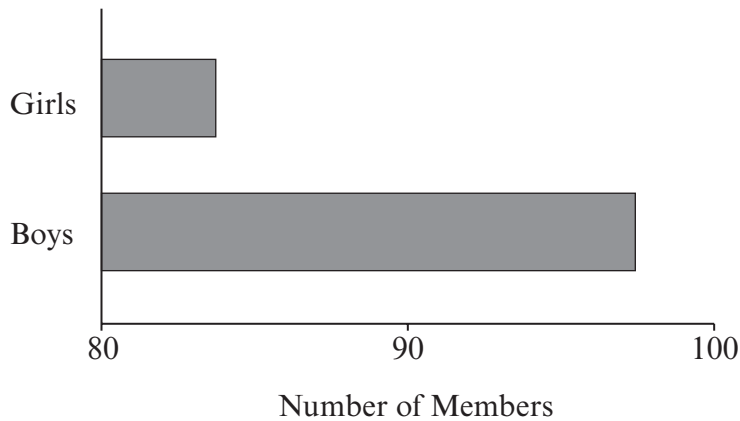
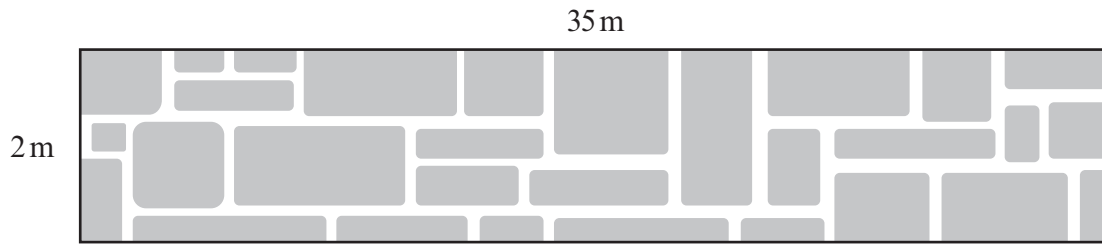In what way could the information shown in the diagram be misunderstood?

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What is the reason for this?

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[2]

11. Olga wants to paint one side of a garden wall.
The wall is 2 metres high and 35 metres long.

35 m

2 m

Diagram not drawn to scale

She has found the following information about the special paint that she needs.

- It is only sold in 5 litre and 2 litre tins
- One litre is enough to cover an area of $6\,m^2$
- The tins are sold at a price of
   - £12 for a 5 litre tin
   - £6 for a 2 litre tin

Find the least amount she has to pay for enough paint to cover the wall.
Show all your calculations.

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[6]

12. The map shows a scale diagram of part of the Spanish Mediterranean coastline.

<u>Scale: 1 cm represents 30 km</u>

(a) What is the straight line distance in kilometres between Barcelona and Valencia?

....

....

[2]

(b) A ship is on a bearing of 070° from Valencia and on a bearing of 200° from Barcelona. By drawing suitable lines on the diagram above, find and mark the position of the ship.

[3]

13. A survey was carried out to find how often teenagers use libraries.

The following two questions were asked in a questionnaire.

Q1.   What is your address?

Q2.   How often do you visit a library?

Never   *1-5 times*   *5-10 times*   *More than 10 times*

☐   ☐   ☐   ☐

(a) For each question give **one** reason why it is not suitable.

Q1 ....

....

Q2 ....

....

[2]

(b) The survey was carried out by leaving a folder containing copies of the questionnaire on the front desk of libraries.
Give **one** criticism of how the survey was carried out.

....

....

[1]

14. Karl wants to buy seven books costing £5.99, £7.50, £7.50, £7.99, £7.99, £10 and £10.
Karl wants to pay as little as possible for the books.

There are two offers. The first is:

BUY 3 AND GET THE CHEAPEST FREE

The second offer would give him 25% off the total cost of the seven books.

Which offer is the best for Karl?
Show your calculations.

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[5]