WJEC CBAC

GCSE

4351/01

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

A.M. FRIDAY, 11 January 2013

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

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

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.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

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 **9**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	6	
2	2	
3	3	
4	4	
5	4	
6	3	
7	5	
8	3	
9	8	
10	3	
11	5	
12	3	
13	5	
14	3	
15	4	
16	4	
TOTAL MARK		

Formula List

Area of trapezium = $\frac{1}{2}(a + b)h$
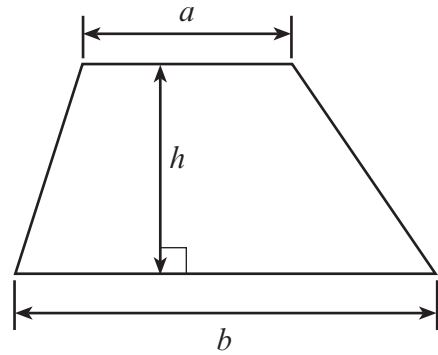
Volume of prism = area of cross-section × length
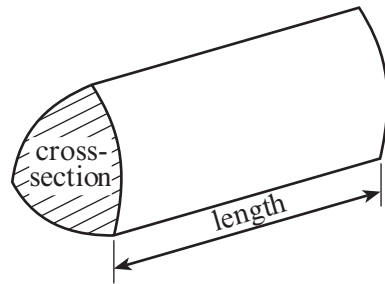
1. *(a)* A stadium announcer is given information on attendance in both words and figures to make sure he reads them correctly.

For example:

'The attendance at last week's match was sixty six thousand, five hundred and seventy

(66 570).'

Fill in the blanks for the following two pieces of information.

(i) 'Today's attendance is seventy two thousand and thirty four

(....).'

[1]

(ii) 'The total attendance for our home matches so far this season has been

....

....

(540 207).'

[1]

(b) 10% of the 66 570 people who attended last week's match bought a programme. Each programme cost £3.

Calculate how much money was collected from the sale of the programmes. Give your answer correct to the nearest £1000.

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[4]

2. *(a)* The diagram below shows an angle measurer that has been placed to measure the size of an angle.
What is the size of the angle that is being measured?
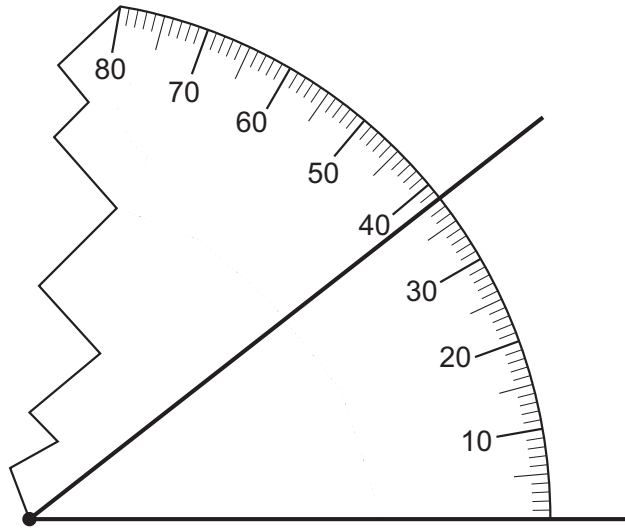
Size of angle = ... º

[1]

(b) A person weighs 84 kg.

Draw a pointer (↓) on the scale shown below to indicate this weight.

| 70 | | | | | 80 | | | | | 90 | | |
| kg | | | | | kg | | | | | kg | | |
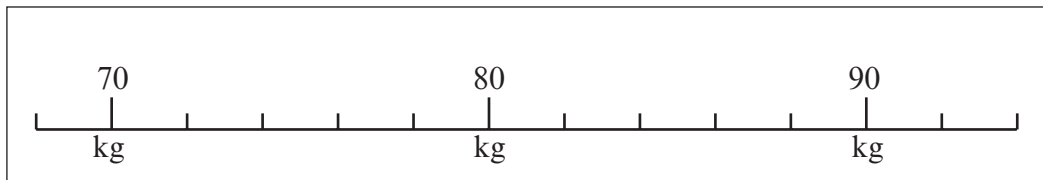
[1]

3. Three companies have three different bonus payment schemes for their sales team.

- Company A offers a bonus payment equal to **25%** of all sales made

- Company B offers a bonus payment equal to $\frac{3}{10}$ of all sales made

- Company C offers a bonus payment equal to **0·2** times all sales made

Which company offers the best bonus payment scheme for their sales team?
You must show all your working.

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[3]

4. As part of a nature study, 30 frogs found near a pond were weighed.
Their weights (to the nearest gram) are recorded below.

| 112 | 140 | 87 | 155 | 117 | 148 | 136 | 103 | 141 | 93 |

| 147 | 172 | 129 | 148 | 96 | 102 | 161 | 145 | 106 | 146 |

| 111 | 122 | 148 | 88 | 119 | 170 | 83 | 133 | 139 | 97 |

Using **equal** class intervals, complete the following table.

Weight (g)	75 to 99	100 to 124	.... to	150 to 174
Tally	𝖧𝖧𝖧 /			
Frequency	6			

[4]

5. The formula for the cost of buying a fridge-freezer on credit is

Cost of buying a fridge-freezer = 24 × Monthly payment + Deposit

(a) Find the **Cost of buying a fridge-freezer** when the **Monthly payment** is £35 and the **Deposit** is £70.

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[2]

(b) Find the **Monthly payment** when the **Cost of buying a fridge-freezer** is £530 and the **Deposit** is £50.

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[2]

6. Alice asked five of her friends how much their pet dogs weighed.
She received the following replies.

Hi Alice,
Buster
weighs 8·72 kg.
Love,
Mary

Hello Alice,
Smot *weighs 9 kg 624 g*
Sunita

Alice,
Rover weighs
8·527 kg.
See you,
David

Alice,
Just weighed **Nell** for you.
She is 10·6 kg.
See you next week,
Tina

Dear Alice,
Finally managed
to weigh **Peg**.
She is 7964 grams.
All the best,
Yousef

In the table below, list the names of the dogs in order of weight, with the name of the heaviest dog at the top, in position 1.

The name of the lightest dog should be in position 5.

To check your answer, you may want to write down the weights they gave in their replies to Alice.

Position	Name of Dog	Weight
1		
2		
3		
4		
5		

[3]

7. Steve is training for a 1500 metre race.

He has timed ten practice runs.
He has recorded each of his times as the number of seconds over or under 4 minutes.
For example,
  • a time of 4 minutes 6 seconds was recorded as +6.
  • a time of 3 minutes 58 seconds was recorded as –2.

His record was as follows.

+2   +7   –3   –5   +8   –3   –13   0   –2   –10

(a) How many of his practice runs were completed in less than four minutes?

....

[1]

(b) What was his slowest time?

.... minutes .... seconds

[1]

(c) What was his fastest time?

.... minutes .... seconds

[1]

(d) What was the difference in time between his fastest and slowest practice runs?

....

....

[2]

Turn over.

8. Two batsmen, Adam and Ben, have both played 20 matches for their team.

A record of how many runs they scored in each match is summarised below.

	Number of runs scored	0 - 19	20 - 39	40 - 59	60 - 79	80 - 99
Number of matches played	Adam	0	0	12	5	3
	Ben	3	8	7	2	0

Explain clearly how it is possible for the range of the number of runs scored by Adam to be greater than the range of the number of runs scored by Ben.

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[3]

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

When Liam has a bath he uses 150 litres of water.
His sister Tina claims that when she has a shower she uses 40% less water than Liam uses when he has a bath.

To test this claim, Tina made the following two observations.

- 1 litre of water comes out of the shower head every 10 seconds

- Tina spends 15 minutes in the shower.

Is Tina's claim correct?
You must show all your working.

[8]

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10. A company registers the number of complaints it receives about its products.
They have done this each year for a period of 3 years.

They received 400 complaints in the first year.

Each year, the number of complaints reduced by $\frac{1}{10}$ of the number received the previous year.

How many complaints did the company receive in the third year?

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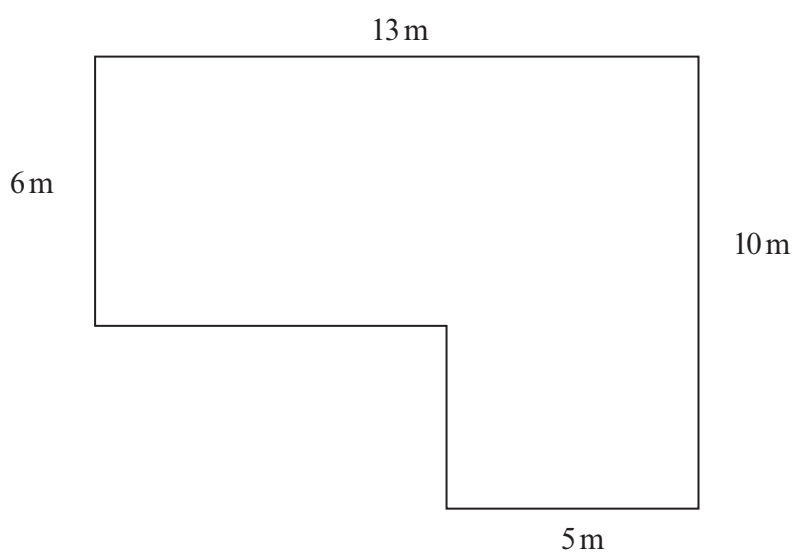
[3]

(4351-01)

13

11. A local council charges businesses and companies a weekly rent to use a room in one of its buildings.
The weekly rent they charge is £5 per square metre of floor area.

What would be the weekly rent for using a room that has the floor plan shown below?

13 m

6 m

10 m

5 m

Diagram not drawn to scale

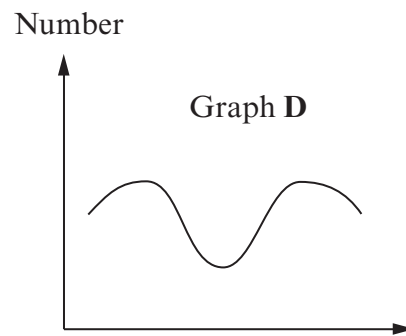...

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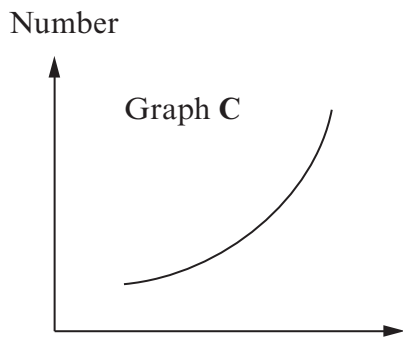
[5]

(4351-01) **Turn over.**

12. The following graphs **A**, **B**, **C** and **D** have been seen in newspapers.
Important information is missing from each of the graphs.

Number

Graph **A**

Number

Graph **B**

Number

Graph **C**

Number
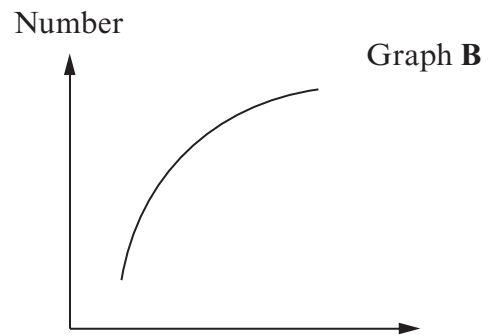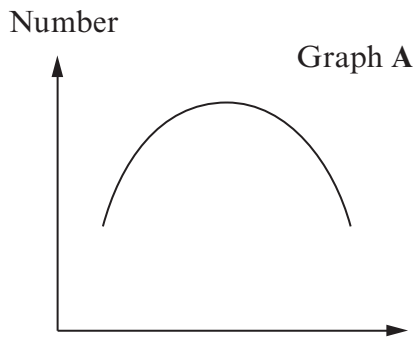
Graph **D**

Which graph, **A**, **B**, **C** or **D**, do you think appeared alongside each of the following stories?

'Eating out is more popular with the middle-aged.'

Graph ....

'Increase in house sales is slowing down.'

Graph ....

'Trends show that it's the young and the old who watch TV the most.'

Graph ....

[3]

13. The map shows a scale diagram of part of the English Channel.

<u>Scale : 1 cm represents 20 km</u>

(a) A ship is on a bearing of 058° from Cherbourg and on a bearing of 135° from Portsmouth. By drawing suitable lines on the diagram above, find and mark the position of the ship.

[3]

(b) How far, in km, is the ship from Dieppe at this point?

....

...

[2]

14. Denise wants to test the following hypothesis.

'New cars use less fuel than old cars.'

She plans to

- send a short questionnaire to every house in her street,

- ask the following questions,

  (i) Do you have a car?

  (ii) How much fuel does it use?

Write down three unfavourable comments about this plan.

1. ....

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2. ....

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3. ....

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[3]

15. Asif drove his car 270 miles, measured correct to the nearest 10 miles.

He used 28 litres of fuel, measured correct to the nearest litre.

Complete the table below to show the least and greatest distance that Asif could have travelled and the least and greatest amount of fuel that he could have used.

	Least Value	Greatest Value
Distance	.... miles	.... miles
Fuel	.... litres	.... litres

[4]

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16. Kelly invests £6000 for 3 years at 2% per annum compound interest.
Calculate the value of her investment, correct to the nearest penny, at the end of the 3 years.

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[4]

END OF PAPER

Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**	Examiner only

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