GCSE

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4351/01

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W16-4351-01

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

A.M. MONDAY, 11 January 2016

1 hour 15 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	5	
2.	7	
3.	4	
4.	6	
5.	3	
6.	8	
7.	4	
8.	4	
9.	6	
10.	5	
11.	2	
12.	4	
13.	3	
14.	4	
Total	65	

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a protractor and a pair of compasses may be required.

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.

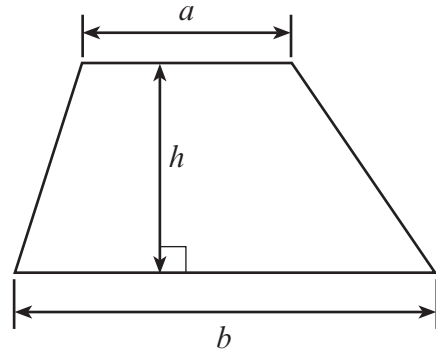The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **6**.

Formula List

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

Volume of prism = area of cross-section × length

1. A builder orders some bricks from *Build Well Supplies*.
To avoid any mistakes, *Build Well Supplies* always notes the number of bricks it delivers both in words and in figures.

(a) Complete the following delivery note. [1]

> ### **Build Well Supplies**
>
> **Delivery note:**
>
> To: House plot 8, Fairwell Estate, Highport.
>
> Delivery of :
>
> Sixty thousand, eight hundred and fifty bricks.
>
> ……………………………………………… bricks

(b) Write down the number of bricks delivered, correct to the **nearest 1000**. [1]

………………………………………………………

(c) The builder uses a tractor and trailer to move the bricks to a nearby field.
The trailer can hold 5000 bricks.
How many journeys must be made with this trailer to move all the bricks? [3]

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5

2. Bottles of water are delivered to a shop each day at 8 a.m.
The pictogram below records how many bottles were delivered each day from Monday to Friday in a particular week.

The symbol [ ] represents 20 bottles.

Monday

Tuesday

Wednesday

Thursday

Friday
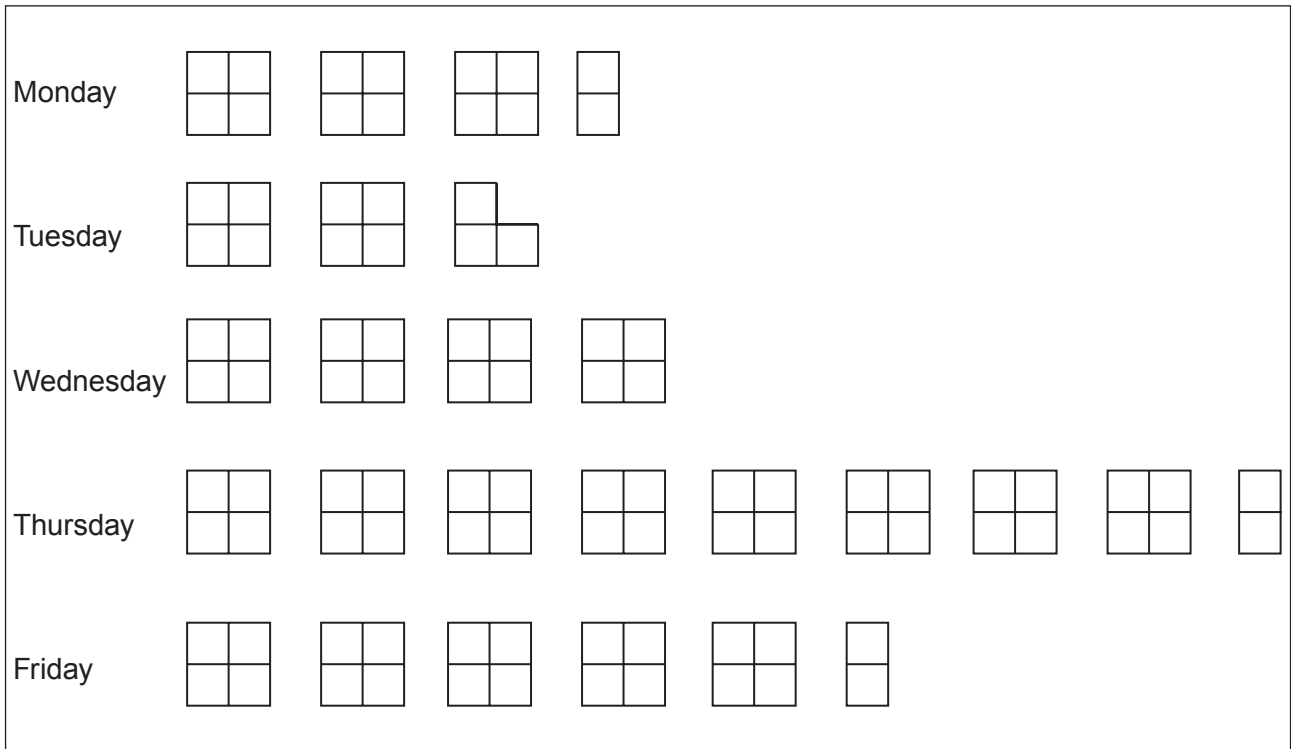
(a) (i) How many bottles were delivered on Wednesday? [1]

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(ii) How many bottles were delivered on Monday? [1]

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(iii) How many more bottles were delivered on Wednesday than on Tuesday? [1]

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
(b) The shop tries to keep the number of bottles it has in stock at about the same amount for each day.
On which day do you think that the shop **sold** most bottles?
(Remember the pictogram shows the day of delivery of new stock.) [1]

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(c) On Saturday, the shop had a delivery of $2\frac{1}{2}$ dozen bottles (1 dozen = 12).

(i) Calculate the number of bottles that were delivered on Saturday. [1]

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(ii) Using the same symbol [⊞] to represent 20 bottles,

show what the pictogram would be for Saturday. [1]

Saturday

(d) Complete the statement below by writing a number in the blank space.
It must be the **smallest** possible number that will make it a correct statement. [1]

'The symbol used is only useful if the number of bottles is a multiple of ………………'

7

3. *(a)* A 1 metre measuring stick is only marked at 20 cm intervals.
Estimate the distance *AB* being measured in the diagram below. [1]

A ———————————————————————————— B

| | | | | | |
0   20   40   60   80

.... cm

(b) Harry throws a javelin in the school sports.

In the diagram below, the ↓ shows where the javelin landed.
Use the scale shown to give the distance Harry threw the javelin. [1]

↓

30 m   40 m

.... metres

(c) Rhian and Aisha competed in the long jump.
Rhian's best jump was measured as 4·3 metres.
Aisha's best jump was measured as 4 metres and 26 centimetres.

What is the difference in length between the two jumps?
You must give the units of your answer. [2]

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Difference in length = ...

4

4. The total cost of hiring a bus is calculated using the following formula.

total cost = total passenger payment + basic charge

The amount that each passenger pays depends on the total number of passengers, as shown in the table below.

Total number of passengers	Cost per passenger
Fewer than 10	£15
10 to 19	£12
20 to 29	£10.50
30 and over	£8

(a) 40 people hired a bus.

(i) Calculate the **total passenger payment** for these 40 people. [2]

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(ii) The **total cost** was £350.
What was the **basic charge**? [1]

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(b) Fewer than 10 people hired another bus.
The **basic charge** was £80.
The **total cost** was £200.
How many people hired this bus? [3]

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6

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

5. Jenny, Marek and Cerys are helping a charity organisation by putting leaflets in envelopes. They were each given the same number of leaflets.

At the end of the day,

Jenny had put 75% of her leaflets into envelopes,

Marek had put $\frac{4}{5}$ of his leaflets into envelopes, and

Cerys had put 0·7 of her leaflets into envelopes.

Who had put the most leaflets into envelopes?
You **must** show all your working to demonstrate how you decided on your answer. [3]

3

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

The rectangular area shown below is to be covered in concrete.

24 m

15 m
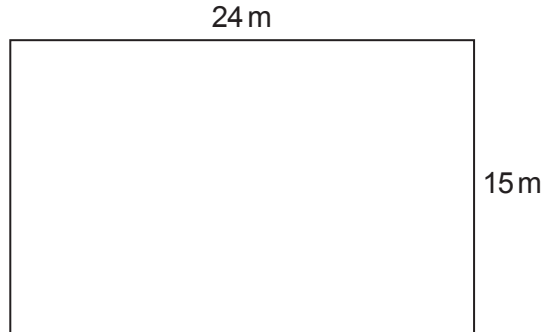
Diagram not drawn to scale.

A fence is to be put up around all four sides.
The fence is to be held in place by 26 posts.

Using the following information, calculate the total cost of the materials needed for this work.

- The cost of concrete is £8 per square metre for the depth needed.
- The cost of the fence is £5 per metre.
- The posts cost £10 each.

You must show all your working. [8]

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Turn over.

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7. A group of 8 children and 27 adults took part in a sponsored bicycle relay.
The total distance cycled was 182 miles.

Each child cycled the same distance.
Each adult cycled 6 miles.

How far did each child cycle? [4]

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8. A cake shop has three types of boxes.

- Box A can hold exactly 15 small cakes.
- Box B can hold exactly 20 small cakes.
- Box C can hold exactly 25 small cakes.

(a) At the moment the shop only has 5 boxes of each type (15 boxes in total).

The owner wants to pack 170 small cakes into boxes.
She does not want empty spaces in any box.

Show how this can be done in **two different** ways. [3]

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(b) If there were lots of boxes of each size, what is the least number of boxes needed to pack the 170 cakes, with no empty spaces? [1]

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9. A scientist is conducting an experiment where an object is placed in a temperature-controlled container.
The following four steps are taken after the object is placed in the container.

- Step 1: Set the temperature at 20°C and start the timer.

- Step 2: Increase the temperature at a constant rate of 2°C per second for 30 seconds.

- Step 3: Keep the temperature constant for 10 seconds.

- Step 4: Reduce the temperature at a constant rate so that it is again 20°C at a time of 60 seconds from the start of the experiment.

(a) Show this information on the graph below. [4]

Temperature (°C)

Time (seconds)
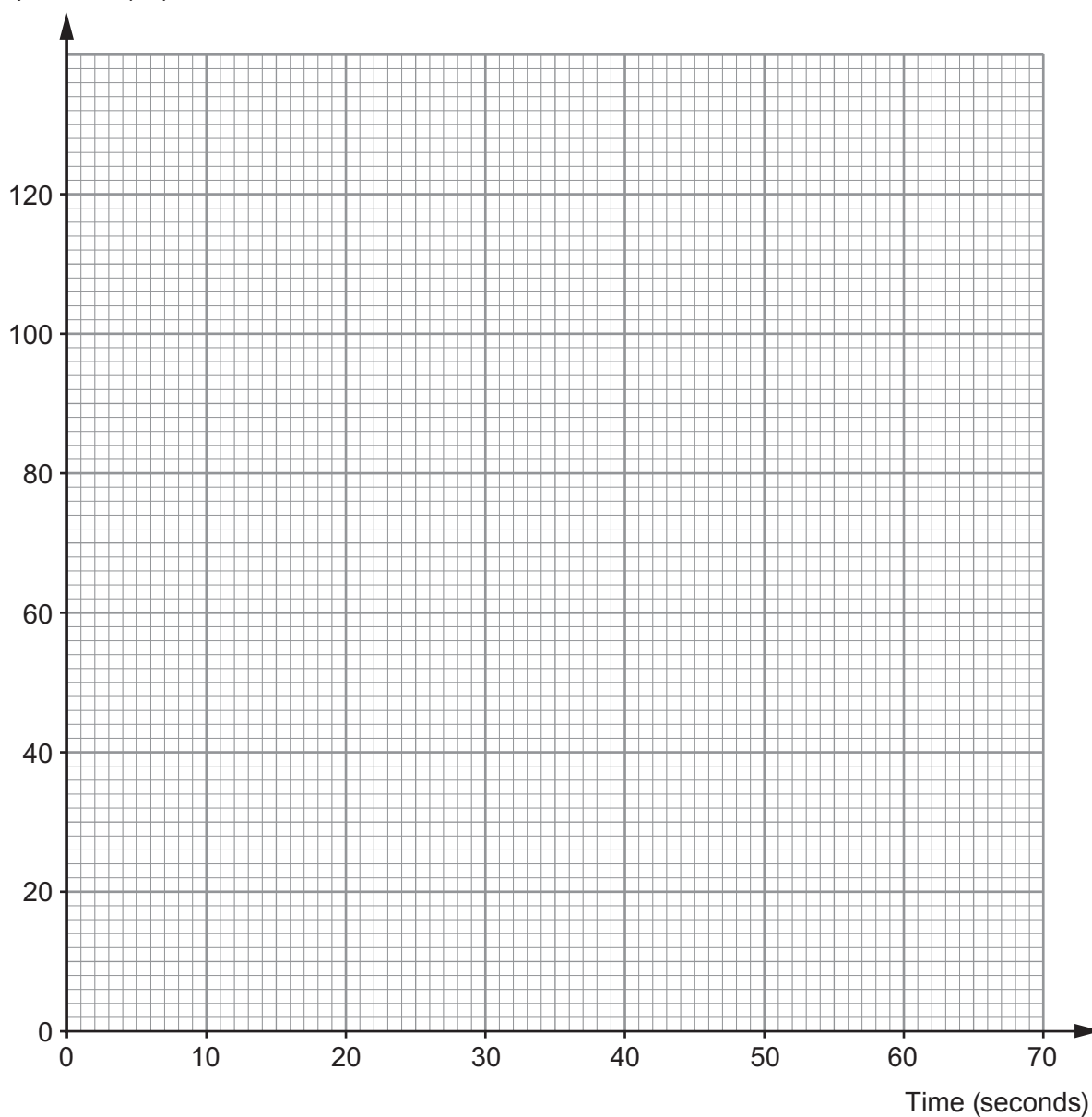
(b) What was the rate at which the temperature decreased?
Give your answer in °C per second. [2]

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Rate of decrease = ... °C per second

6

10. Rashid went on a trip to Norway.

(a) Before departing, he exchanged £520 into Norwegian kroner.
The exchange rate was £1 = 10.25 kroner.
How many kroner did Rashid receive? [2]

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(b) Before departing, he also paid £42.50 for a lake cruise in Norway.
This tour would have cost him 358.75 kroner if he had paid for it in Norway.
Using the same exchange rate, calculate the difference **in pounds** between these two prices. [3]

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11. Calculate $\sqrt[3]{(8{\cdot}5-3{\cdot}6)^2}$, correct to 2 significant figures. [2]

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12. Dewi was driving along a 10 mile stretch of road that had a speed limit of 40 mph.

The time was 14:50 as Dewi's car entered this speed limit zone.
As he left the 10 mile zone, the time was 15:10.

Calculate Dewi's average speed over this 10 mile journey.
Could Dewi have driven faster than the speed limit during this journey? Explain your answer.
[4]

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13. Would a cylindrical can of radius 5 cm and height 14 cm be able to contain 1 litre of liquid? You must show all your working and explain your decision. [3]

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14. Thomas invests £5720 for 2 years at 3% per annum compound interest.
Find the compound interest earned in the 2 years.
Give your answer correct to the nearest penny. [4]

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END OF PAPER

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