



Rewarding Learning

General Certificate of Secondary Education  
January 2013

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Candidate Number

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StudentBounty.com

## Mathematics

Unit T2

(With calculator)



Foundation Tier

[GMT21]



\*GMT21\*

FRIDAY 11 JANUARY 9.15 am–10.45 am

### TIME

1 hour 30 minutes.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page. **You must answer the questions in the spaces provided. Do not write outside the box, around each page, on blank pages or tracing paper.**

Complete in blue or black ink only. **Do not write in pencil or with a gel pen.**

Answer **all twenty-seven** questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Functional Elements will be assessed in this paper.

Quality of written communication will be assessed in **questions 4, 7 and 10.**

You should have a calculator, ruler, compasses and a protractor.

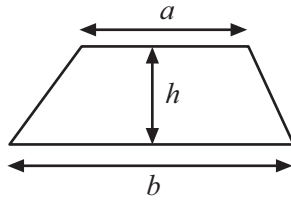
The Formula Sheet is overleaf.

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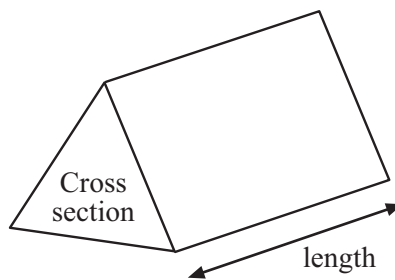


# Formula Sheet

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



$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$



1 (a) Write down the next two prime numbers after 43

Answer \_\_\_\_\_, \_\_\_\_\_ [2]

(b) Find the cube root of 125

Answer \_\_\_\_\_ [1]

Examiner Only

Marks Remark

Total Question 1

2 In the diagram of the triangle ABC below,  $AB = AC$ .

Angle  $ABC = 49^\circ$ .

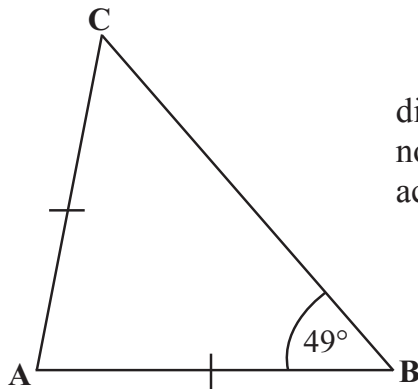


diagram  
not drawn  
accurately

(a) Write down the size of the angle BCA.

Answer \_\_\_\_\_° [1]

(b) Calculate the size of the angle BAC.

Answer \_\_\_\_\_° [2]

Total Question 2

[Turn over





**4 Quality of written communication will be assessed in this question.**  
**Show your working.**



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A TV costs £265  
Sam pays a deposit of £85 for this TV.  
He then pays £15 each month.  
How many complete months will it take before he has paid for the TV?  
Explain your working clearly, using words and numbers.

Answer \_\_\_\_\_ months [3]

Examiner Only

Marks Remark

Total Question 4

[Turn over







**7 Quality of written communication will be assessed in this question. Show your working.**

The times, in minutes, taken by 15 women to complete a crossword are shown in this stem and leaf diagram.



Key 2 | 4 means 24 minutes

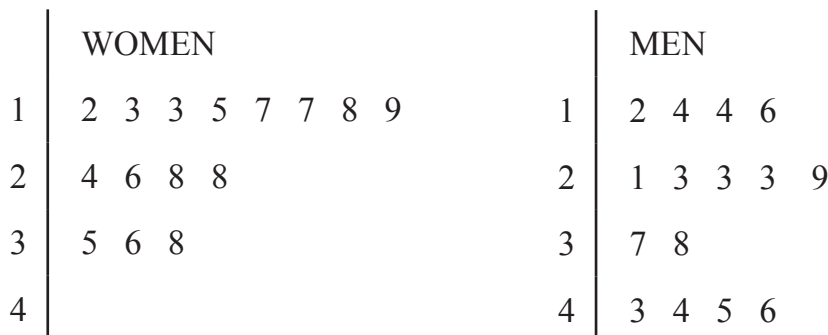
(a) Find the range of the women's times.

Answer \_\_\_\_\_ [1]

(b) Find the median of the women's times.

Answer \_\_\_\_\_ [1]

The women's times were then compared with the times of 15 men in this new stem and leaf diagram.



Key 2 | 4 means 24 minutes

(c) The men say that they were quicker at completing the crossword. Do you agree? Give a reason for your answer.

\_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark
Total Question 7	





8 (a) Simplify  $3x - 2y - x + 6y$

Answer \_\_\_\_\_ [2]

(b) Expand  $4(3t - 1)$

Answer \_\_\_\_\_ [2]

(c) Solve  $\frac{y}{4} = 8$

Answer  $y =$  \_\_\_\_\_ [1]

(d) Solve  $3p - 2 = 16$

Answer  $p =$  \_\_\_\_\_ [2]

Examiner Only

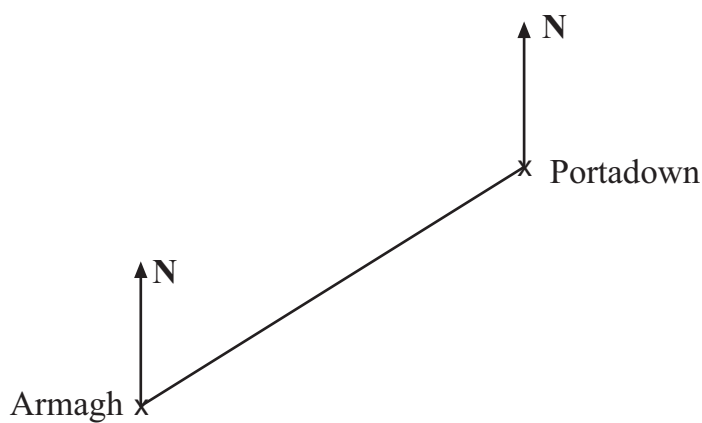
Marks Remark

Total Question 8

[Turn over



9 The diagram below represents the positions of Armagh and Portadown.



Scale 1 cm to 3 km

(a) What is the bearing of Portadown from Armagh?

Answer \_\_\_\_\_ ° [1]

(b) Calculate the actual distance from Armagh to Portadown.

Answer \_\_\_\_\_ km [2]

(c) The city of Newry is 27 km from Armagh on a bearing of  $130^\circ$ .  
Mark clearly the position of Newry on the diagram above. [2]

Examiner Only	
Marks	Remark
Total Question 9	

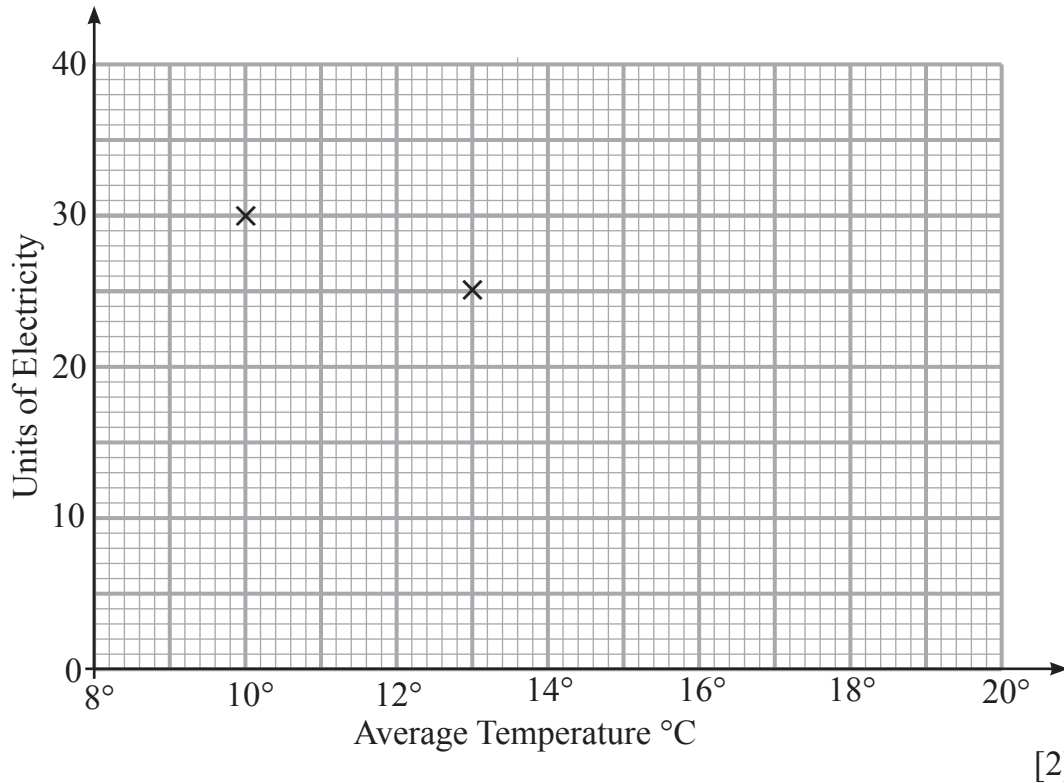




- 11 The table shows the number of units of electricity used in heating a greenhouse on eight different days and the average temperature for each day.

Average Temperature (°C)	10	13	15	12	14	20	17	19
Units of Electricity	30	25	22	26	20	14	17	15

- (a) Complete the scatter diagram shown (the first two points have been plotted for you).



- (b) Describe the correlation between Average Temperature and Units of Electricity.

Answer \_\_\_\_\_ [1]

- (c) Draw a line of best fit on the scatter diagram.

[1]

- (d) Use your line of best fit to estimate how many units of electricity were used when the temperature was 16°C.

Answer \_\_\_\_\_ units [1]

Examiner Only	
Marks	Remark
Total Question 11	







14 A circle has a radius of 11.7 cm.

Work out the circumference of the circle.

Answer \_\_\_\_\_ [3]

Examiner Only

Marks Remark

Total Question 14

15 (a) Which of the following fractions is nearest in value to  $\frac{1}{4}$ ?

$$\frac{3}{10} \quad \frac{7}{20} \quad \frac{4}{15} \quad \frac{17}{60}$$

Show your working.

Answer \_\_\_\_\_ [2]

(b) Write down the meaning of  $0.\dot{5}\dot{7}$

Answer \_\_\_\_\_ [1]

Total Question 15

[Turn over

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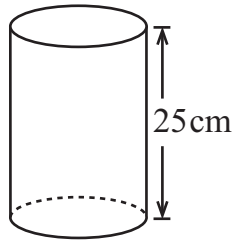


20 Naomi used  $3\frac{3}{4}$  cans of paint for the living room and  $1\frac{2}{3}$  cans for the kitchen. Show how to work out the total amount of paint used without using a calculator.

Answer \_\_\_\_\_ cans [3]

Examiner Only	
Marks	Remark
Total Question 20	

21



The cylinder above has a capacity of 3 litres. It is 25 cm high.

Find the radius of the cylinder.

Answer \_\_\_\_\_ cm [4]

Total Question 21	



22 The two points A(6, -1) and B(-4, 6) are joined by a straight line.

Work out the co-ordinates of the midpoint of the line AB.

Answer (\_\_\_\_\_, \_\_\_\_\_) [2]

Examiner Only

Marks	Remark
Total Question 22	

23 In a class there are 16 girls and 14 boys.  
Thirteen of the girls are right-handed and eleven of the boys are right-handed.  
What percentage of the class are right-handed?

Answer \_\_\_\_\_ % [3]

[Turn over

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**24** A student is designing a questionnaire for her friends to complete. She wants to find the different activities that her friends attend after school.

Design a suitable question with appropriate response boxes which would allow **every** student to make a response.

[2]

Examiner Only	
Marks	Remark
Total Question 24	

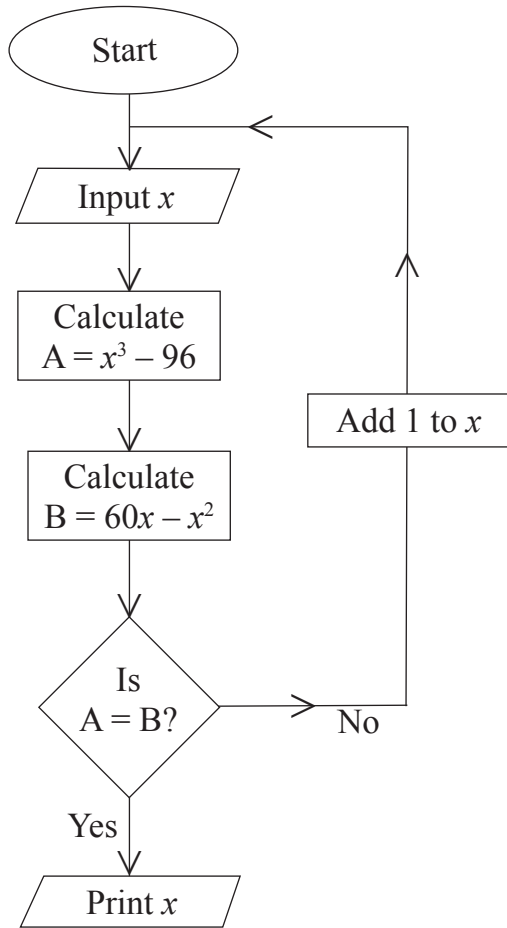
**25** Write 90 as a product of prime factors. Express your answer in index notation.

Answer \_\_\_\_\_ [3]

Total Question 25	







The flow chart above is used to solve an equation.

(a) Starting with  $x = 5$  complete the table:

$x$	A	B
5		

[3]

(b) What is the equation that the flow chart is solving?

Answer \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark
Total Question 27	







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**THIS IS THE END OF THE QUESTION PAPER**

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For Examiner's use only	
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<b>Total Marks</b>	
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Examiner Number

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