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Rewarding Learning

General Certificate of Secondary Education
2016

Mathematics

Unit T1
(With calculator)
Foundation Tier

GMT11

[GMT11]
THURSDAY 26 MAY, 9.15am–10.45am

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 boxed area on each page, on blank pages or tracing paper.
Complete in blue or black ink only. **Do not write with a gel pen.**
Answer **all twenty-five** 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 3 and 14**.
You should have a calculator, ruler, compasses and a protractor.
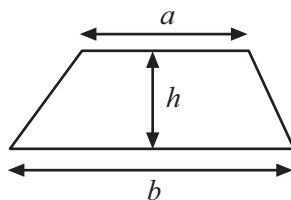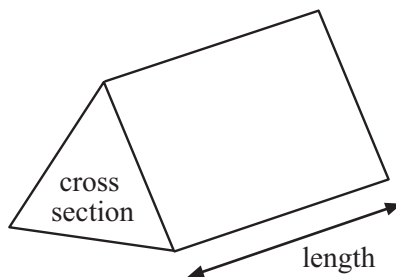The Formula Sheet is on page 2.

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Formula Sheet

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

Volume of prism = area of cross section × length

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(Questions start overleaf)

1 (a) What does the digit 7 in the number 387641 represent?

Answer _____ [1]

(b) Calculate without using a calculator.

Show your working.

(i) 785 – 392

Answer _____ [1]

(ii) 5.36 + 2.95

Answer _____ [1]

(c) Add 3.67 and $\frac{3}{10}$

Answer _____ [1]

(d) Write down the largest number from

$$0.09 \qquad 0.8 \qquad 0.10$$

Answer _____ [1]

(e) Calculate 20% of £45

Answer £ _____ [1]

2 Place a tick in the correct box.

	TRUE	FALSE	
(a) 4 is a factor of 2	□	□	[1]
(b) 6 is the denominator in the fraction $\frac{5}{6}$	□	□	[1]
(c) 16 is the square root of 4	□	□	[1]

[Turn over

Quality of written communication will be assessed in this question.

3 Cans of juice cost 25p each to produce.

There are 6 cans in a pack.

12 packs are sold at £3.60 each.

What is the profit?

Answer £ _____ [3]

4 For each sequence below, write the next number in the box.

(a) 2,   7,   12,   17,   [   ]

[1]

(b) 1,   3,   4,   7,   11,   [   ]

[1]

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28GMT1107

5 Some boys were asked which sport they play. The results are in the table below.

Sport	Frequency
Tennis	3
Basketball	6
Rugby	7
Football	8
Golf	2
Hockey	4

(a) Which is the most popular sport?

Answer _____ [1]

28GMT1108

(b) Draw a clearly labelled bar chart on the grid below.

[3]

(c) Thirty-two boys were asked. When one of the boys saw the table he said that two of the boys must have been absent.

Give a reason why this statement may **not** be true.

_____

_____ [1]

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6 For these numbers

           3   11   9   10   14   2   5   3   3   7   8   10   2

(a) find the mode,

Answer _____ [1]

(b) find the median.

Answer _____ [2]

7 The distance chart below shows distances in km between five towns A, B, C, D, E.

A

18	B			
35	26	C		
29	14	10	D	
50	36	19	11	E

(a) Which town is closest to B?

Answer _____ [1]

(b) Which two towns are the furthest apart?

Answer _____ and _____ [1]

(c) One day Mark left one town and travelled to a second town and then on to a third.

His total journey was 43 km. Which towns did he visit and in which order?
(Give one possible answer)

Answer starting town _____ to _____ and then on to _____ [2]

[Turn over

8 Below is a list of steps for drawing a quadrilateral.

     Step 1.   The base AB is horizontal and is 8 cm long.
     Step 2.   BC is at right angles to AB and is 4.7 cm long.
     Step 3.   Angle BAD is 54°
     Step 4.   DC is parallel to AB.

(a) Follow the steps to draw and label an accurate diagram of the quadrilateral.

The starting point A has been given.

•
A

[6]

(b) What is the mathematical name given to the quadrilateral ABCD?

Answer _____ [1]

9 (a) On the grid below draw a rectangle with an area of 24 cm²
Each small square is 1 cm²

[2]

(b) Lisa drew a rectangle with an area of 24 cm² and a perimeter of 22 cm. What are the dimensions of Lisa's rectangle?

Answer length = _____ cm; breadth = _____ cm [1]

[Turn over

28GMT1113

10 Martha has three different containers of orange juice.

Orange
600 ml

Orange
¾
litre

Orange
1.2 litres

Calculate the **total** amount of orange juice in the three containers.

Answer _____ [3]

11 Complete the table below. The first line has been done for you.

I start facing	I turn	Fraction of turn	Degrees turned	I am now facing
North	clockwise	$\frac{3}{4}$	270°	West
East	anticlockwise		90°	
North West			135°	East
	clockwise	$\frac{7}{8}$		South

[6]

12 Triangles are drawn on a grid to form a pattern. Here are the first three triangles.
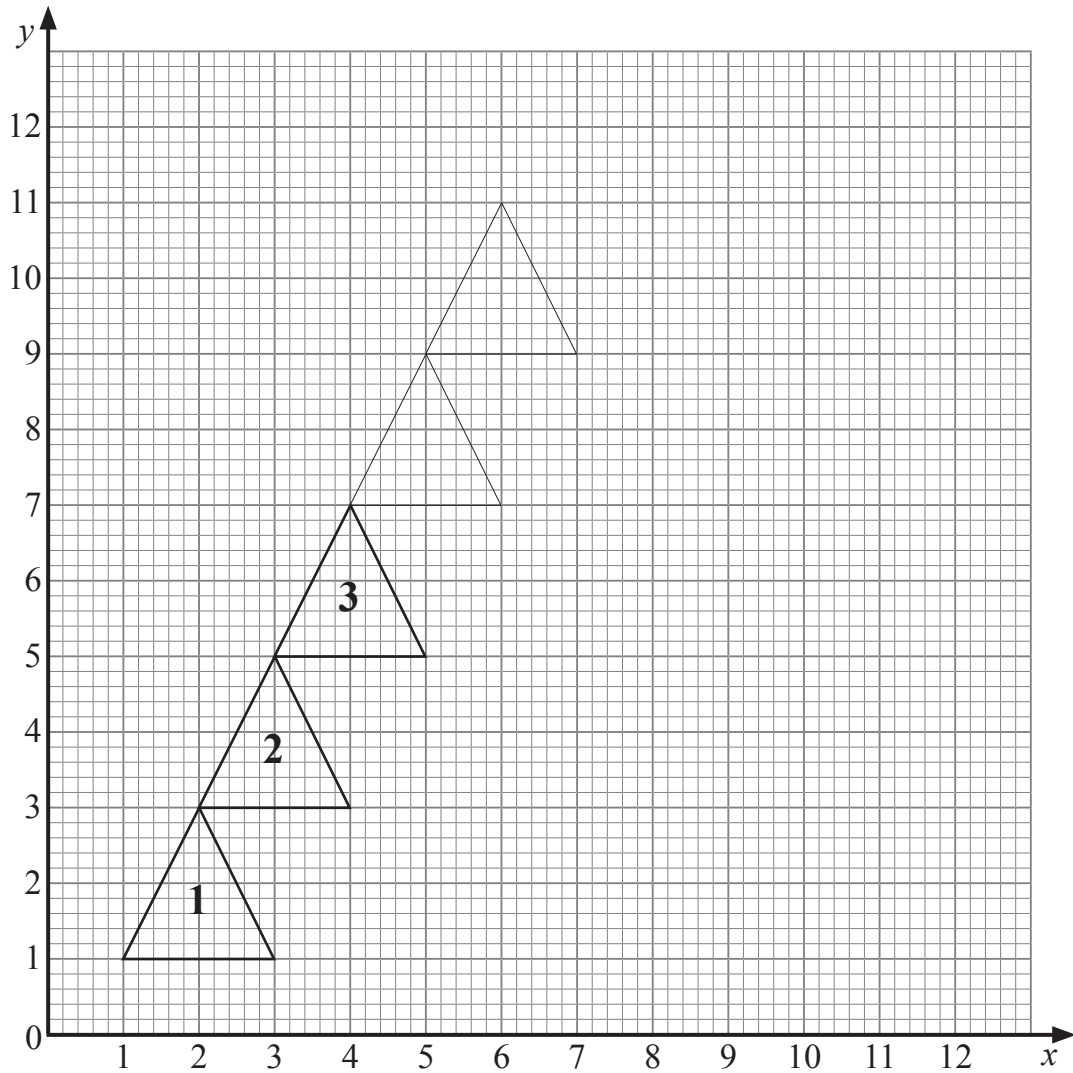
(a) Write down the coordinates of the bottom right corner of triangle 2

Answer (_____ , _____) [1]

The pattern of triangles is continued.

(b) Write down the coordinates of the bottom right corner of triangle 5
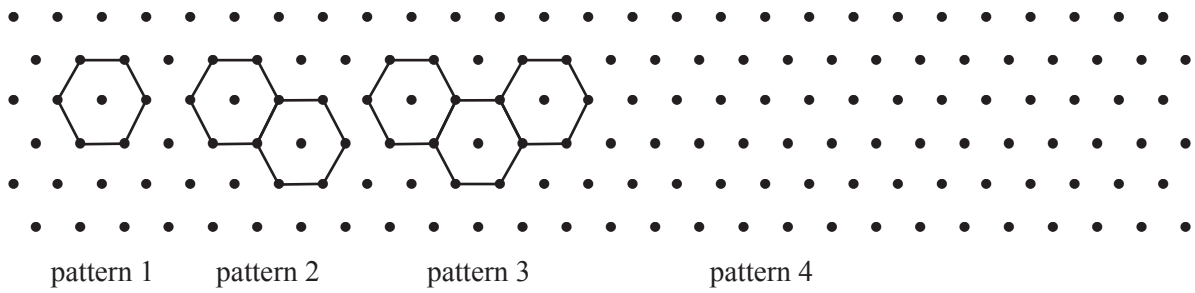
Answer (_____ , _____) [1]

(c) Write down the coordinates of the top corner of triangle 5

Answer (_____ , _____) [1]

[Turn over

28GMT1115

13 Regular hexagons of side length 1 cm are placed to form a pattern.

pattern 1   pattern 2   pattern 3   pattern 4

(a) Draw pattern 4   [1]

(b) Complete the following table.

pattern number	1	2	3	4
perimeter of shape (cm)	6	10		

[2]

(c) Describe how the perimeter of the shape changes as each new hexagon is added.

_____

_____ [1]

(d) What is the perimeter of pattern 9?

Answer _____ cm [2]

Quality of written communication will be assessed in this question.

14 To divide any number by 28 you can first divide by 7 and then by 4

Use this idea to divide 504 by 56

Do not use a calculator.

Show all your working.

Answer _____ [2]

15

GREEN DALE GUEST HOUSE
Adult holiday prices as shown.
Children (under 12) pay only 40% of Adult price.

DATES BETWEEN	7 NIGHTS	14 NIGHTS
1st Jan–31st March	£315	£595
1st April–30th June	£485	£770

(a) Sarah, Tom and their two children, Becky (aged 11) and Sam (aged 7) stay in Green Dale for 14 nights in June.

What is the total cost for their holiday?

Answer £ _____ [4]

(b) Tanya books online and receives a 5% discount.

She goes on holiday for 7 nights in February with her son Ben (aged 14) and daughter Jade (aged 10).

What is the total cost of their holiday?

Answer £ _____ [5]

16 For these numbers

48   53   37   26   39   51   42   43   40   24

(a) calculate the mean,

Answer _____ [3]

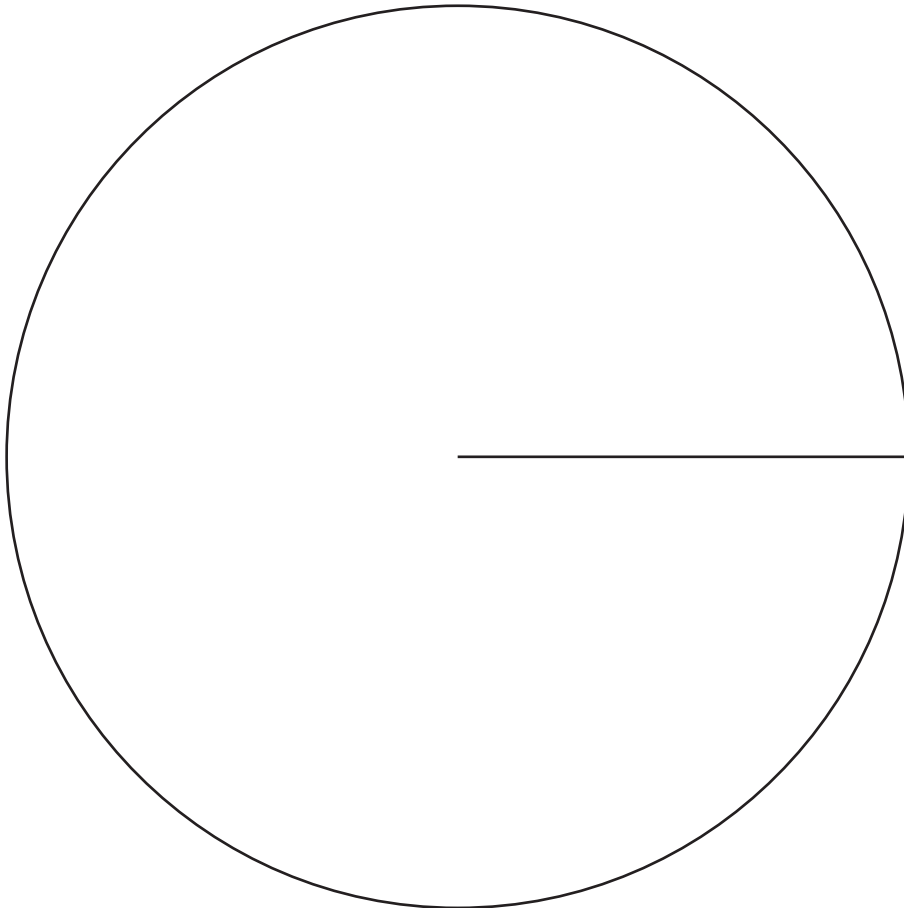**(b)** calculate the range for the **largest** 5 numbers.

Answer _____ [2]

[Turn over

17 The number of dogs in an animal shelter was recorded.

Breed of dog	Frequency	Angle
Terrier	12	
Collie	9	
Labrador	14	
Alsatian	5	

Draw a pie chart to show this information.

[4]

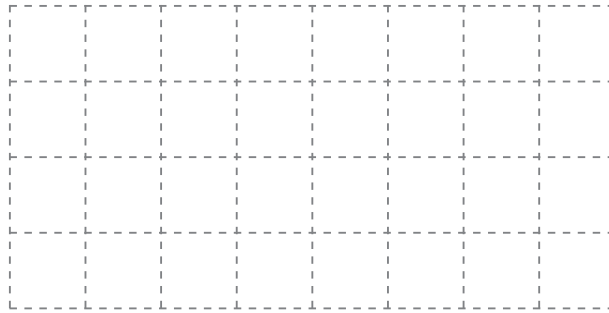**18** Use the decision tree diagram to place all the words in their correct boxes.

| Art | Maths | English | History | French |

Has an **i**   Has no **i** or **a**   Has an **a**

[ ]   [ ]   [ ]

Has a **y**   Has no **y**   Has a **t**   Has no **t**

[ ]   [ ]   [ ]   [ ]

[2]

[Turn over
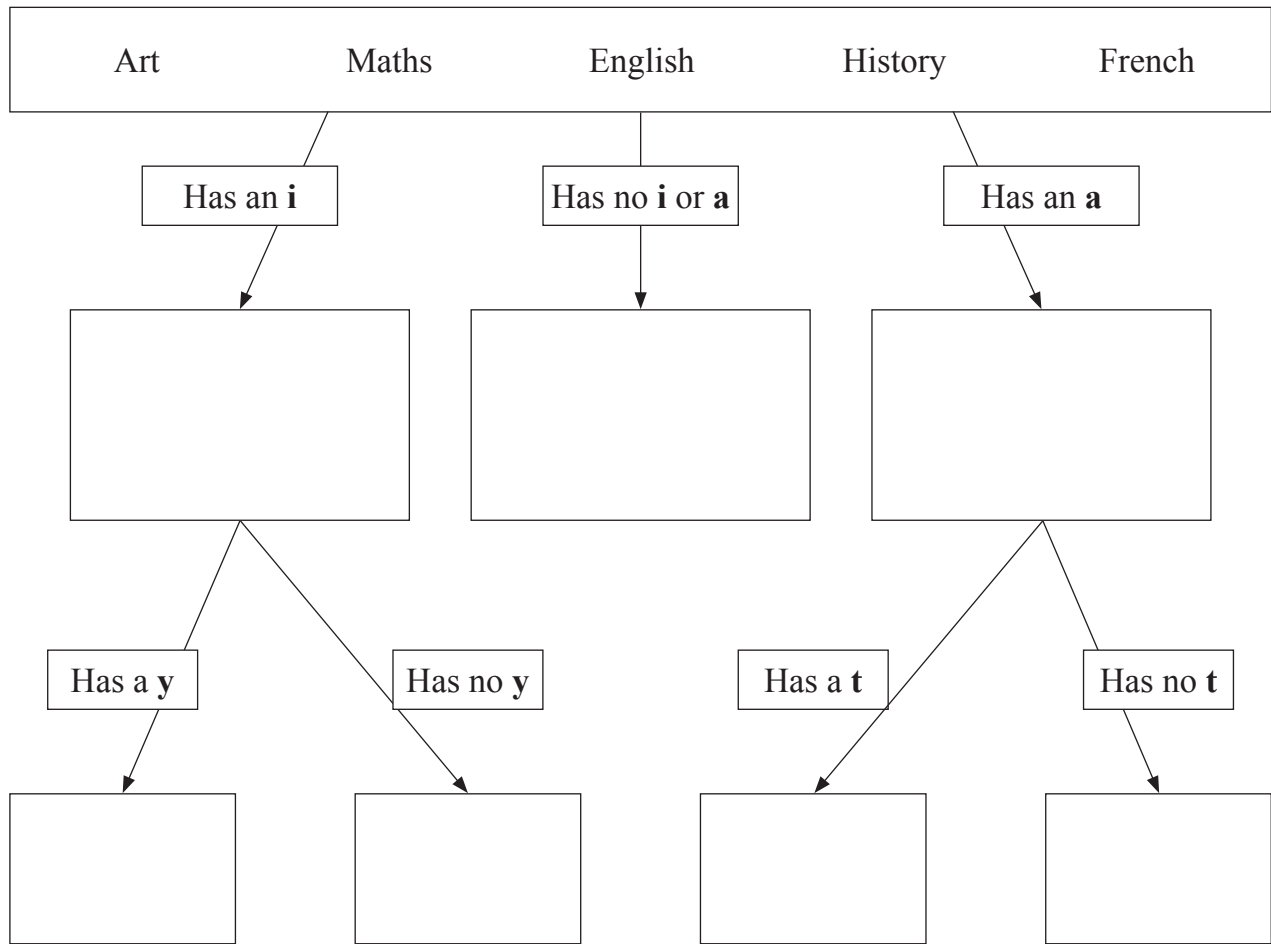
19 The diagram below shows a 3-dimensional shape.
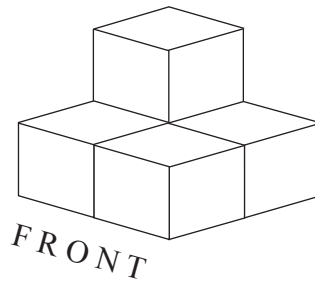
F R O N T

(a) On the square grid, draw the plan for the shape.

[1]

(b) On the square grid below, draw the front elevation of the shape.

[2]
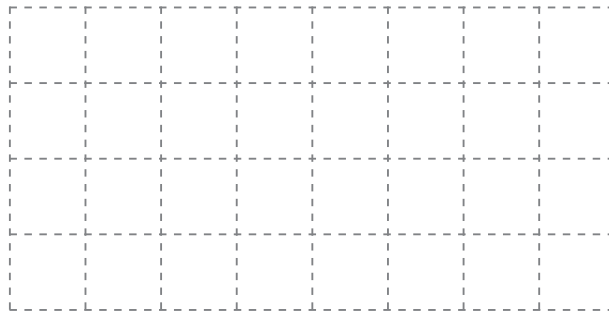
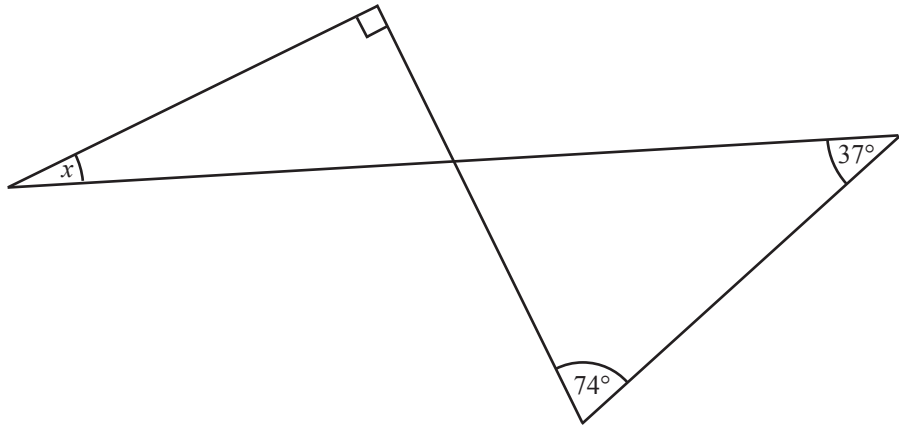*28GMT1122*

20

diagram not drawn accurately

Calculate the size of the angle marked x.

Answer _____ ° [3]

[Turn over

28GMT1123

21 **(a)** Fill in the boxes to complete this sequence.

19,   18,   15,   10,   ☐ ,   ☐   [2]

(b) Solve $7 + 2x = 13$

Answer $x =$ _____ [2]

(c) Expand $3(5 - y)$

Answer _____ [2]

(d) Calculate the cube of 11

Answer _____ [1]

(e) Calculate 10^5

Answer _____ [1]

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22 In High Grade College there are 800 students.

35% of the students have blond hair.

15% of the students with blond hair wear glasses.

How many students with blond hair wear glasses?

Answer _____ [3]

23 Carrots come in bags with either 7 or 8 carrots in them.

83 carrots are packed into bags.

How many bags have 8 carrots in them?

Answer _____ [3]

[Turn over

24 What fraction is halfway between $\frac{1}{4}$ and $\frac{3}{8}$?

Answer _____ [2]

25 1st December 2019 falls on a Sunday. What day of the week will 12th March 2020 be?

Answer _____ [2]

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