Centre Number

Candidate Number

cea

Rewarding Learning

General Certificate of Secondary Education
January 2013

Mathematics

Unit T1

(With calculator)

Foundation Tier

[GMT11]

GMT11

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-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.
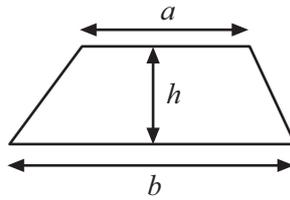Quality of written communication will be assessed in **questions 21 and 24.**
You should have a calculator, ruler, compasses and a protractor.
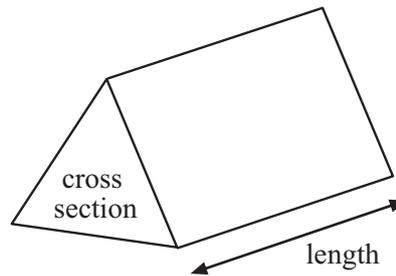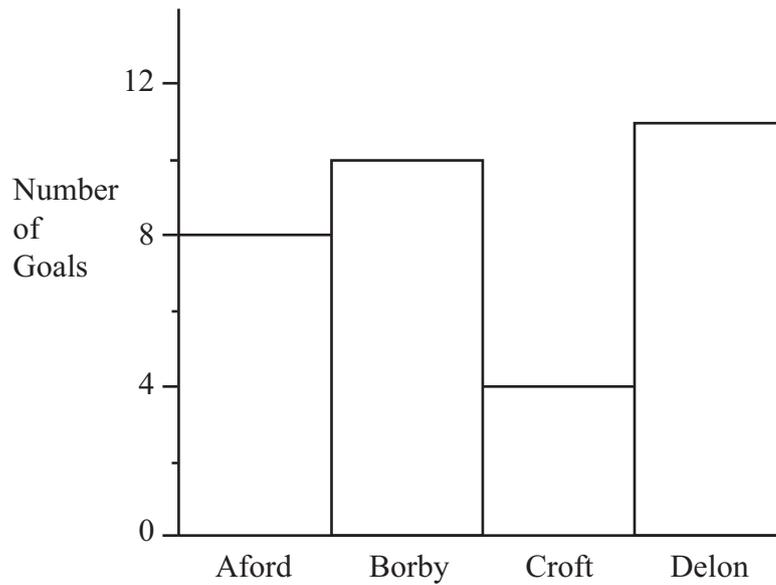The Formula Sheet is overleaf.

8121

28GMT1101

Formula Sheet

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

Volume of prism = area of cross section × length

8121

1   The bar chart shown gives the number of goals scored by four football teams during the month of December.

(a) Which team scored the smallest number of goals?

Answer ＿＿＿＿＿＿＿＿ [1]

(b) How many more goals did Borby score than Aford?

Answer ＿＿＿＿＿＿＿＿ [1]

(c) What was the total number of goals scored by the four teams?

Answer ＿＿＿＿＿＿＿＿ [2]

Total Question 1

[Turn over

8121

2

$$\boxed{17} \quad \boxed{32} \quad \boxed{34} \quad \boxed{28} \quad \boxed{72}$$

$$\boxed{51} \quad \boxed{56} \quad \boxed{27} \quad \boxed{80} \quad \boxed{26}$$
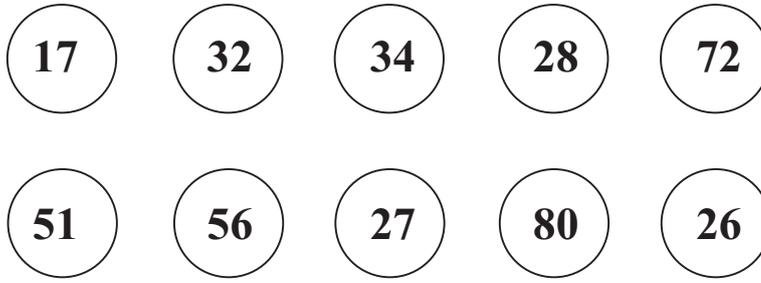
(a) **From the numbers in the circles**, write down

(i) two numbers with a total of 60,

Answer _____ , _____ [1]

(ii) two numbers with a difference of 40,

Answer _____ , _____ [1]

(iii) a multiple of 7,

Answer _____ [1]

(iv) a cube number.

Answer _____ [1]

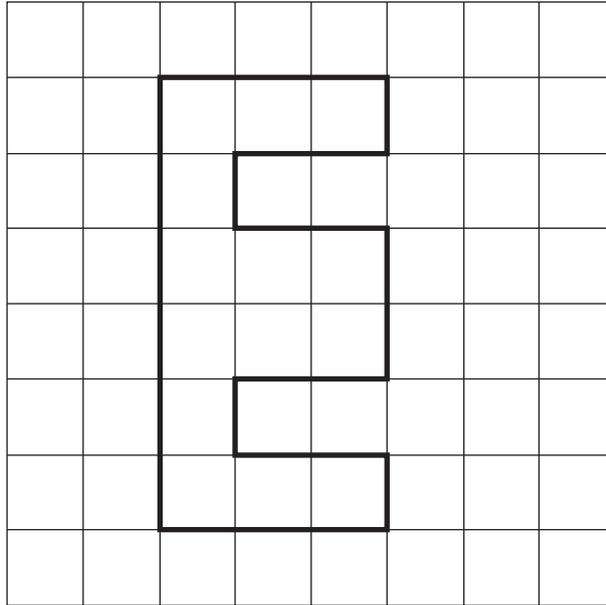**(b)** What is the largest number you can get by multiplying any two numbers in the circles?

Answer _____ [2]

Total Question 2

8121

3 The shape below is drawn on a centimetre square grid.

Calculate:

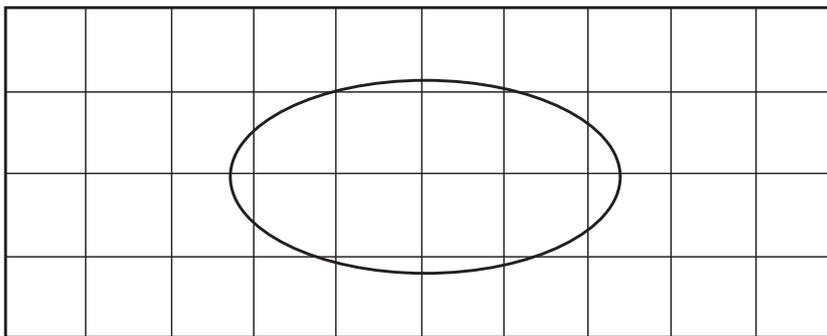**(a)** the area of the shape.

Answer _____ cm^2 [1]

(b) the perimeter of the shape.

Answer _____ cm [1]

(c) An oval shape is drawn on a centimetre square grid below.

Estimate the area of the oval shape.

Total Question 3

Answer _____ cm^2 [2]
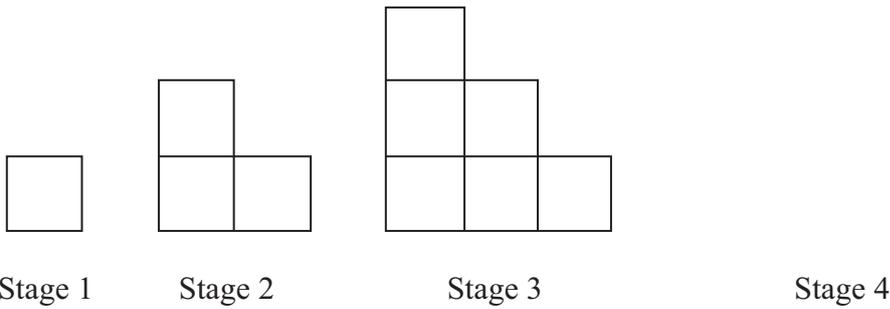
[Turn over

8121

28GMT1105

4 **(a)** Find the **next** term in the sequence

1000, 100, 10, 1, ...

Answer _____ [1]

(b) Boxes are stacked to form the pattern shown.

Stage 1　　　　Stage 2　　　　　Stage 3　　　　　　　　Stage 4

(i) Draw Stage 4 [1]

(ii) Complete the table below. [1]

Pattern	1	2	3	4	5
Boxes	1	3	6		

(iii) What is the special name given to the numbers in the Boxes row?

Answer _____ [1]

Total Question 4

8121

28GMT1106

5 **(a)** What fraction of the circle is shaded?

Give your answer in its **simplest form**.
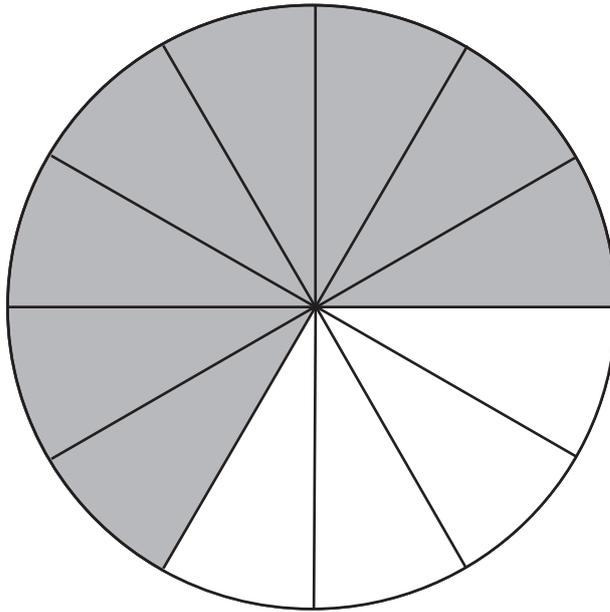
Answer _____ [2]

(b) Write $\frac{3}{5}$ as a percentage.

Answer _____ % [1]

(c) Round 6783 to the nearest 100

Answer _____ [1]

(d) Write down the number fifty-one thousand and seventy-four in figures.

Answer _____ [1]

(e) Write 35% as a decimal.

Answer _____ [1]

[Turn over

8121

28GMT1107

6 The number of letters delivered to the houses in a street were recorded in this frequency table.

Number of Letters	Frequency
1	9
2	4
3	7
4	5
5	1
6	3

(a) Write down the modal number of letters delivered.

Answer ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ [1]

(b) Write down the range of the number of letters delivered.

Answer ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ [1]

(c) How many houses are there in the street?

Answer ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ [1]

Total Question 6

	Examiner Only
	Marks	Remark

7 Caroline bought 3.5 kg of onions at 32p per kilogram and 3 bags of potatoes at £1.74 per bag.

(a) How much did she spend in total?

Answer £ _____ [3]

(b) What change did she get from £10?

Answer £ _____ [1]

Total Question 7

8

S ├────────────────────────────────┤ T

(a) Measure the length of the line ST.

Answer _____ [2]

(b) On the diagram above, mark with × the midpoint of the line ST.
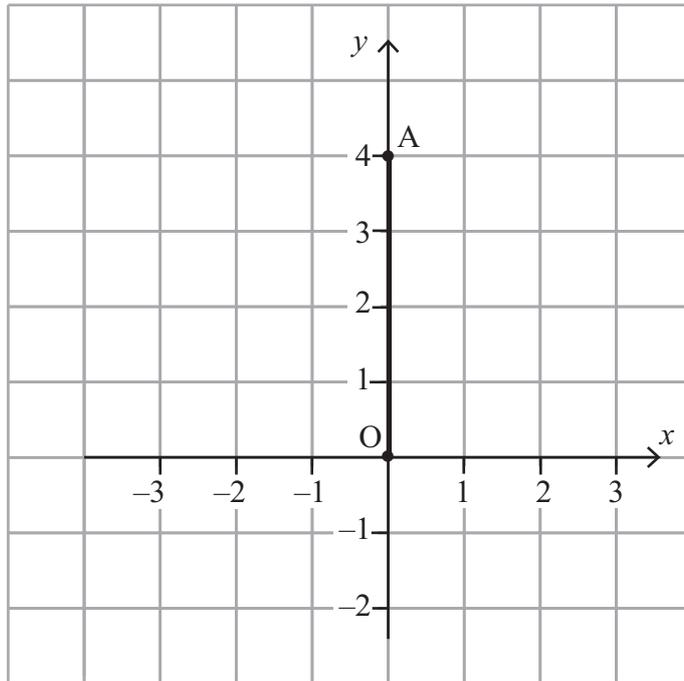
[1]

Total Question 8

[Turn over

8121

9 On the grid two points A and O are plotted and joined by a straight line.

(a) Write down the coordinates of A.

Answer (_____, _____) [1]

(b) C is to be plotted so that angle AOC is obtuse. Write down possible coordinates for C.
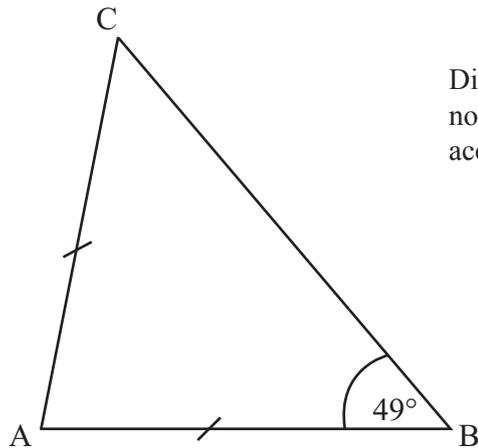
Answer (_____, _____) [1]

Total Question 9

8121

28GMT1110

10 In the diagram of the triangle ABC below, AB = AC.
Angle ABC = 49°.

Diagram
not drawn
accurately

C

49°

A   B

(a) What type of angle is 49°?

Answer _____ [1]

(b) What type of triangle is ABC?

Answer _____ [1]

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

Answer _____ ° [1]

(d) Calculate the size of the angle BAC.

Answer _____ ° [2]

Total Question 10

[Turn over

8121

28GMT1111

11 The distances in kilometres between five towns are shown in the table below.

Billo

24	Collen
35	20	Disford
28	34	27	Entwane
26	20	18	33	Follony

(a) What is the distance between Collen and Entwane?

Answer _____ km [1]

(b) Which town is the furthest away from Billo?

Answer _____ [1]

(c) Which two towns are closest together?

Answer _____ and _____ [1]

(d) Petra travels from Billo to Follony and then travels on to Disford. How many kilometres in total has she travelled when she reaches Disford?

Answer _____ [2]

Total Question 11

8121

12 There are 8000 drawing pins to be packed into boxes. Each box contains 72 drawing pins when full. As many boxes as possible are completely filled.

(a) How many full boxes are there?

Answer _____ [2]

(b) How many drawing pins are left over?

Answer _____ [1]

Total Question 12
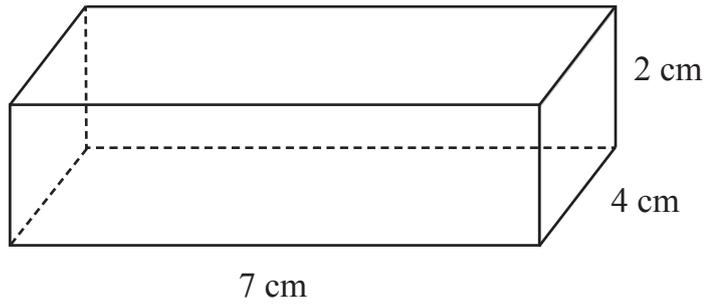
[Turn over

8121

13 The diagram shows a cuboid.

2 cm

4 cm

7 cm

(a) Work out the volume of the cuboid.

Answer _____ cm³ [2]

(b) On the centimetre grid below complete a net of the cuboid.
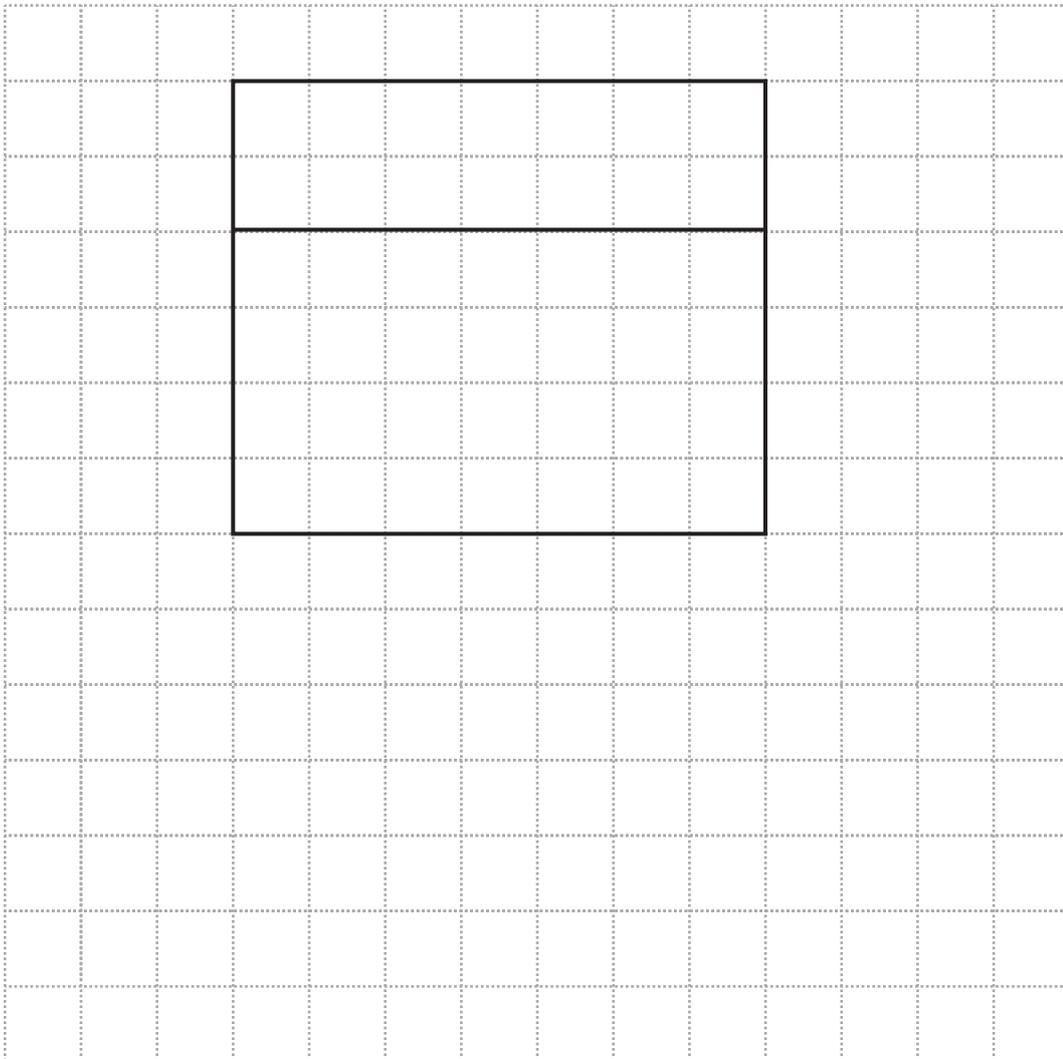
[3]

Examiner Only

Marks	Remark

Total Question 13

28GMT1114

14 The marks in a French test scored by the pupils in a class were

33, 30, 26, 35, 27, 19, 37, 24, 31, 18

(a) Find the median of these marks.

Answer _____ [2]

(b) Find the mean mark of the class.

Answer _____ [3]

Total Question 14

[Turn over

8121

28GMT1115

15 The table below shows the lowest temperatures in four cities on a winter's night.

City	Temperature (°C)
London	–3
Belfast	–8
Oslo	–12
Madrid	7

(a) Write down the difference in temperature between

(i) Madrid and Belfast,

Answer _____ °C [1]

(ii) Oslo and London.

Answer _____ °C [1]

(b) The next day all these temperatures rose by 7 °C.
Write down the temperature for the next day in

(i) London,

Answer _____ °C [1]

(ii) Oslo.

Answer _____ °C [1]

Total Question 15

8121

28GMT1116

16

Diagram not drawn accurately

$44°$ $x°$
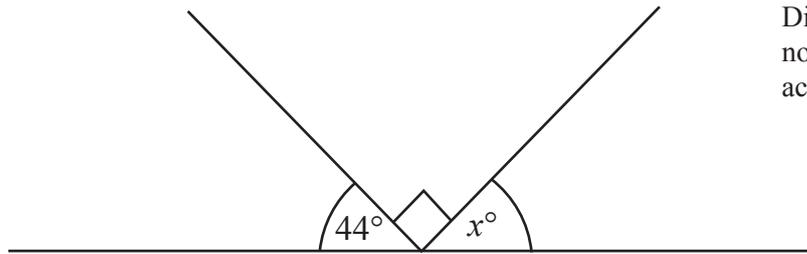
(a) Work out the value of x.

Answer $x =$ _____ [1]

(b) Give a reason for your answer.

_____

_____ [1]

Total Question 16

[Turn over

8121

28GMT1117

17 **(a)** Norman's yearly salary is £18 000. This is increased by 8%.
How much extra is this **per month**?

© *iStockphoto / Thinkstock*

Answer £ _____ [3]

(b) Write down a factor of 85 between 10 and 20

Answer _____ [1]

Total Question 17

8121

28GMT1118

18 Claire buys 3 pens at *k* pence each.
Claire pays with a 50p coin.
Write an expression, in terms of *k*, for the change in pence she should receive.

Answer _____ [2]

Examiner Only	
Marks	Remark

Total Question 18

19 (a) Calculate $\sqrt{7.29}$

Answer _____ [1]

(b) Write these three numbers in order starting with the smallest.

0.698   0.73   0.6899

Answer _____ , _____ , _____ [1]

(c) Write down the next two prime numbers after 43

Answer _____ , _____ [2]

(d) Find the cube root of 125

Answer _____ [1]

Total Question 19
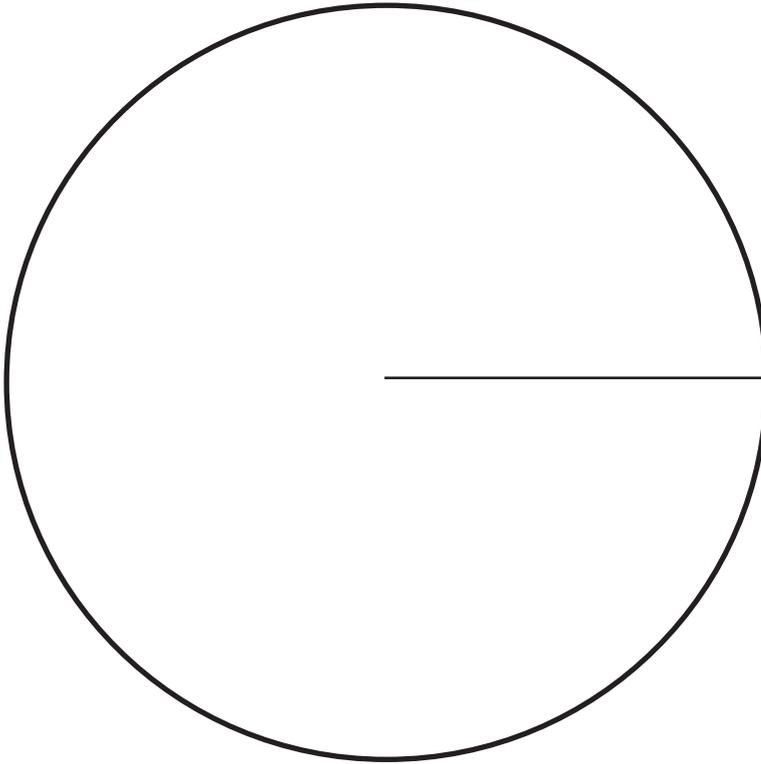
[Turn over

8121

28GMT1119

20 The table below shows the number of different types of birds on a lake.

BIRD	TERNS	WADERS	GEESE	DUCKS	SWANS
NUMBER	50	20	30	10	10
ANGLE					

Draw a clearly labelled pie chart to show the number of different types of birds.

[4]

Total Question 20

8121

28GMT1120

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

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]

Total Question 21
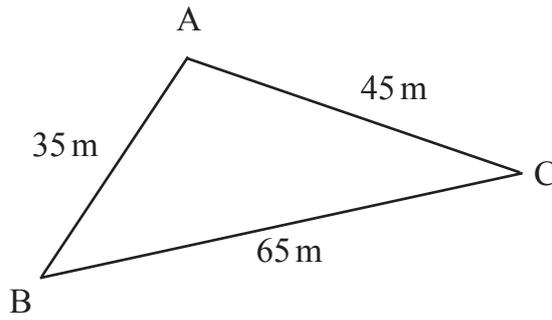
[Turn over

8121

22 (a) The diagram below shows a rough sketch of a triangular plot of land.
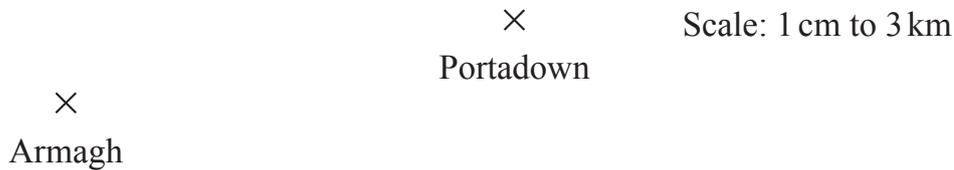
A

45 m

35 m

C

65 m

B

Using ruler and compasses only, make an accurate scale drawing below of the plot of land.
Use a scale of 1 cm to represent 5 metres.

[3]

(b) The diagram below represents the positions of Armagh and Portadown.
Calculate the actual distance between them.

×   Scale: 1 cm to 3 km
Portadown

×
Armagh

Answer _____ km [2]

Total Question 22

8121

28GMT1122

23 (a) Calculate $3^2 \times 8^3$

Answer ———————— [1]

(b) Calculate $3.6^2 + \sqrt{2.89}$

Answer ———————— [2]

Total Question 23

[Turn over

8121

24 **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.

```
        │ WOMEN
    1   │ 2  3  3  5  7  7  8  9
    2   │ 4  6  8  8
    3   │ 5  6  8                    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.

```
    │ WOMEN                        │ MEN
 1  │ 2  3  3  5  7  7  8  9     1  │ 2  4  4  6
 2  │ 4  6  8  8                 2  │ 1  3  3  3  9
 3  │ 5  6  8                    3  │ 7  8
 4  │                           4  │ 3  4  5  6
```

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]

Total Question 24

8121

25 **(a)** Expand $4(3t - 1)$

Answer _____ [2]

(b) Solve $\dfrac{y}{4} = 8$

Answer $y =$ _____ [1]

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

Answer $p =$ _____ [2]

Total Question 25

8121

28GMT1125

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8121

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28GMT1127

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8121

28GMT1128