CCEA GCSE MATHEMATICS

MATHS



EXAM QUESTION PACK

UNIT T1 FOUNDATION TIER GMT11 PAPERS

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2016

Mathematics

Unit T1
(With calculator)
Foundation Tier



GMT11

[GMT11]

MONDAY 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 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-seven** questions.
All 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

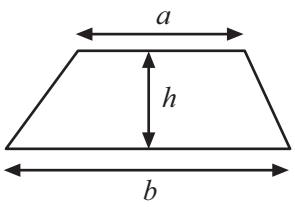
The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in Questions **5** and **14(c)**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

9857

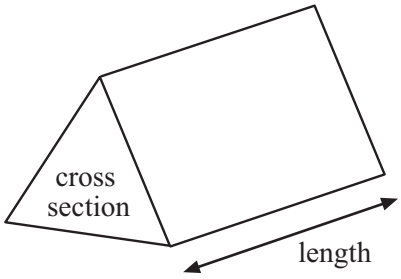
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Formula Sheet

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



Volume of prism = area of cross section × length



9857

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(Questions start overleaf)

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1 **(a)** Write the number twenty-six thousand and forty-one in figures.

Answer _____ [1]

(b) Write in words the number $100\frac{1}{2}$

Answer _____ [1]

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2 **(a)** Write down the two missing numbers in this sequence:

6 14 _____ 30 38 _____ [2]

(b) What rule did you use to find the missing numbers in part **(a)**?

Answer _____ [1]

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3 From the table below

16	8	20
36	1	49
17	23	6

(a) write down two numbers which add to give 50

Answer _____ and _____ [1]

(b) write down two numbers which have a difference of 16

Answer _____ and _____ [1]

(c) write down two prime numbers,

Answer _____ and _____ [1]

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(d) write down two numbers where one is the square of the other,

Answer _____ and _____ [1]

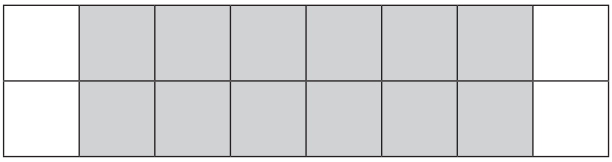
(e) write down two numbers which are factors of 60

Answer _____ and _____ [1]

[Turn over

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4



(a) Write, in its simplest form, the fraction of the rectangle which is shaded.

Answer _____ [2]

(b) What percentage is **not** shaded?

Answer _____ % [1]

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Quality of written communication will be assessed in this question.

5 The two-way table shows some information about boys and girls in a class and whether they are right-handed or left-handed.

	Boys	Girls	TOTAL
Right-handed		10	
Left-handed	6	5	
TOTAL	20		

(a) How many girls are left-handed?

Answer _____ [1]

(b) How many boys are right-handed?

Answer _____ [1]

(c) How many pupils are in the class?

Answer _____ [1]

(d) Megan states "boys are more likely to be left-handed than girls". Do you agree? **Explain your answer clearly**.

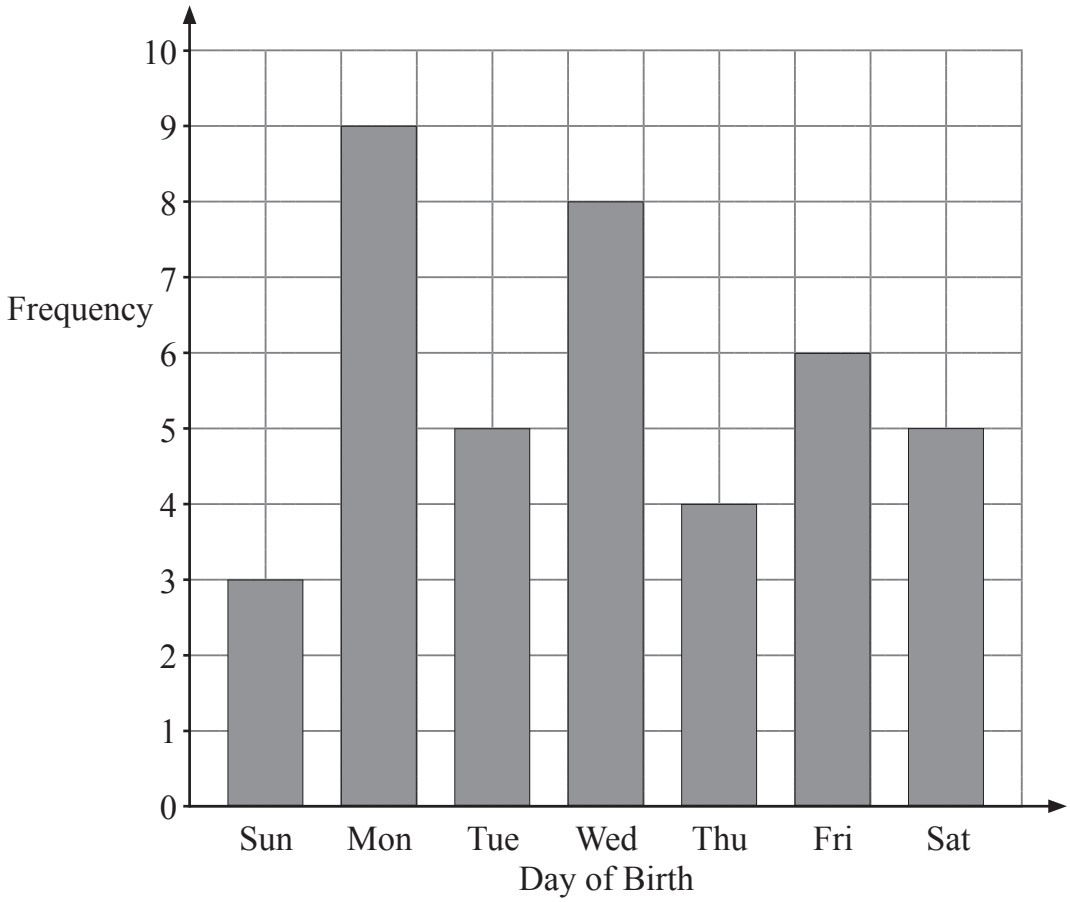
_____ because _____

_____ [2]

[Turn over

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6 The bar chart below shows the day of birth for a group of children.



(a) Complete the statement:

"twice as many children were born on a _____ as on a Sunday".

[1]

(b) Which day of birth is the mode?

Answer _____ [1]

(c) On which day were 10% of the children born?

Answer _____ [2]

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(d) Sarah wishes to draw a different diagram to represent the data.

(i) She plans to draw a pictogram where  represents 4 children. Why would this symbol not be a good choice?

Answer _____

_____ [1]

(ii) She is going to draw a pie chart. What angle will she need to draw to represent the children born on a Friday?

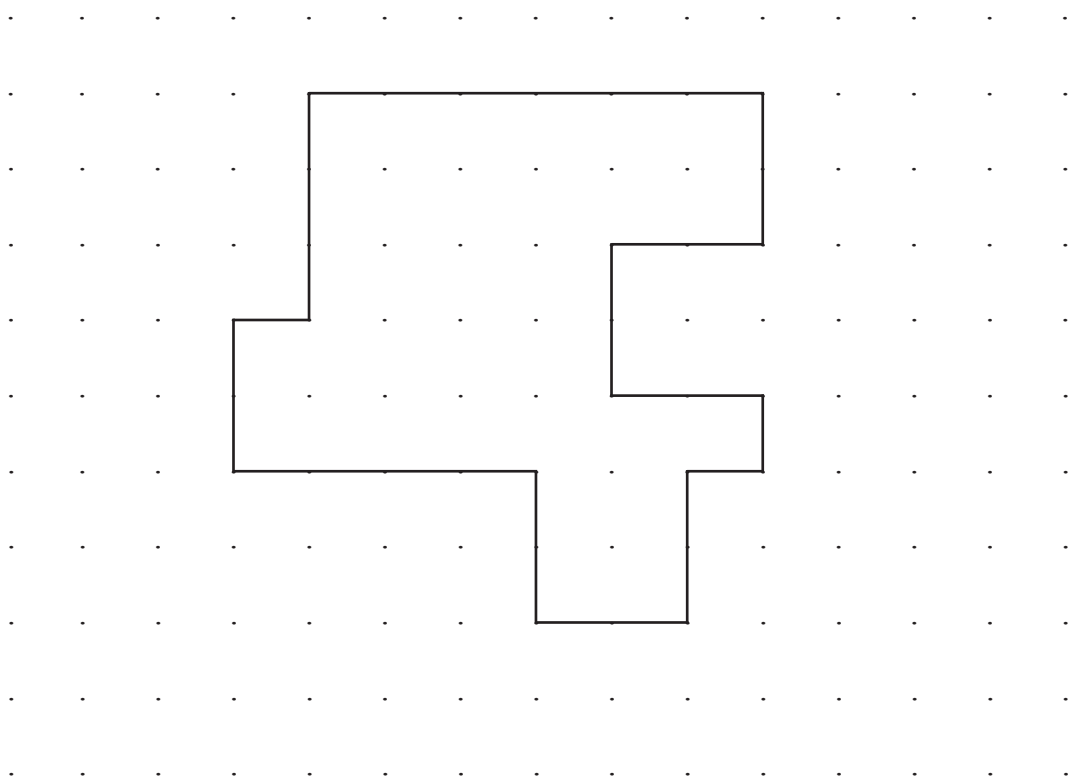
Answer _____° [2]

[Turn over



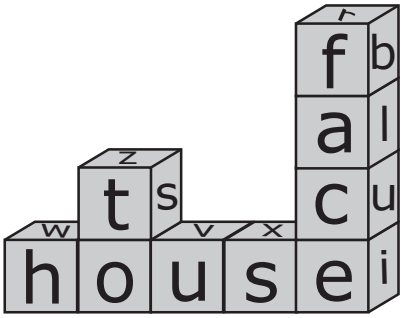
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7 **(a)** A shape is drawn on a 1 cm grid. Calculate the perimeter of this shape.



Answer _____ cm [2]

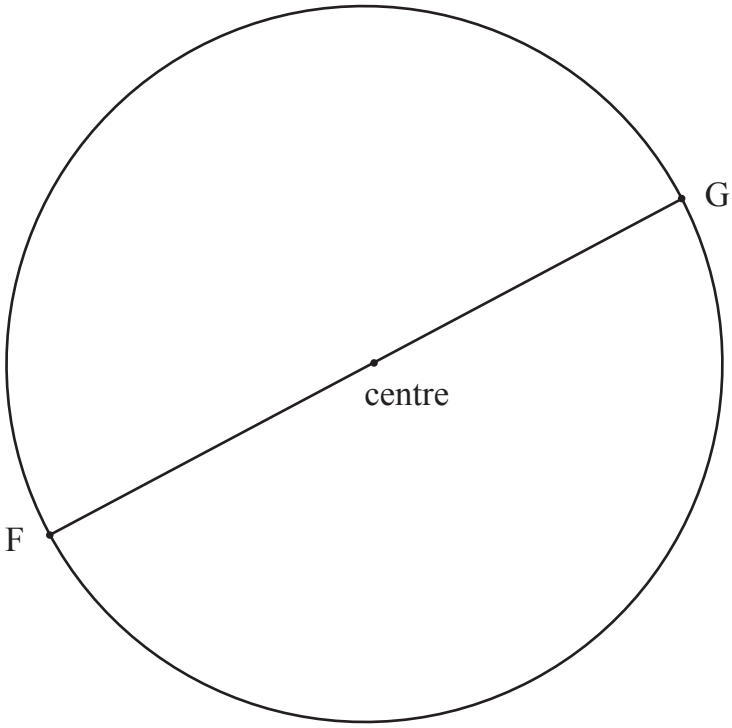
(b) Alphabet cubes of side length 1 cm are placed on top of one another in a game of Block Scrabble. What is the volume of this solid?



Answer _____ [2]

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8 Here is a circle with a diameter FG.



(a) Measure the length of the diameter FG.

Answer _____ cm [1]

(b) Complete the statement:

The diameter divides the circle into 2 halves called _____ [1]

(c) **(i)** Draw a line parallel to FG with each end on the circumference. [1]

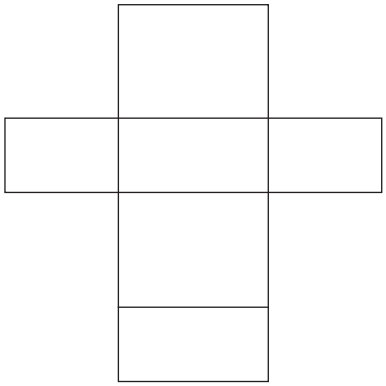
(ii) What is the special name given to this line?

Answer _____ [1]

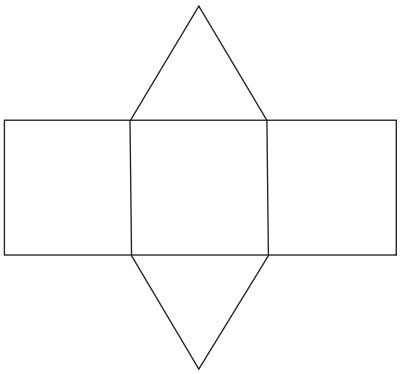
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9 **(a)** Name the 3D shapes which can be made by folding these nets.

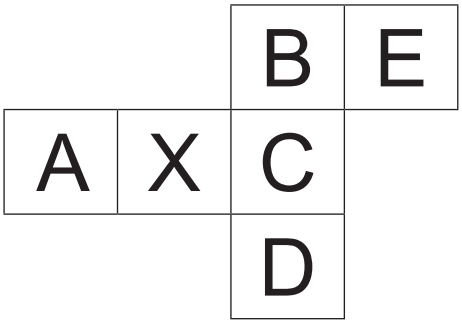


(i) _____ [1]



(ii) _____ [1]

(b) This net is folded to make a cube. Which letter will be opposite X?



Answer _____ [1]

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10 Without using a calculator show how to work out 483 – 167

You must show all your working.

[2]

11 How many cartons of milk costing £1.28 each can be bought for £10?

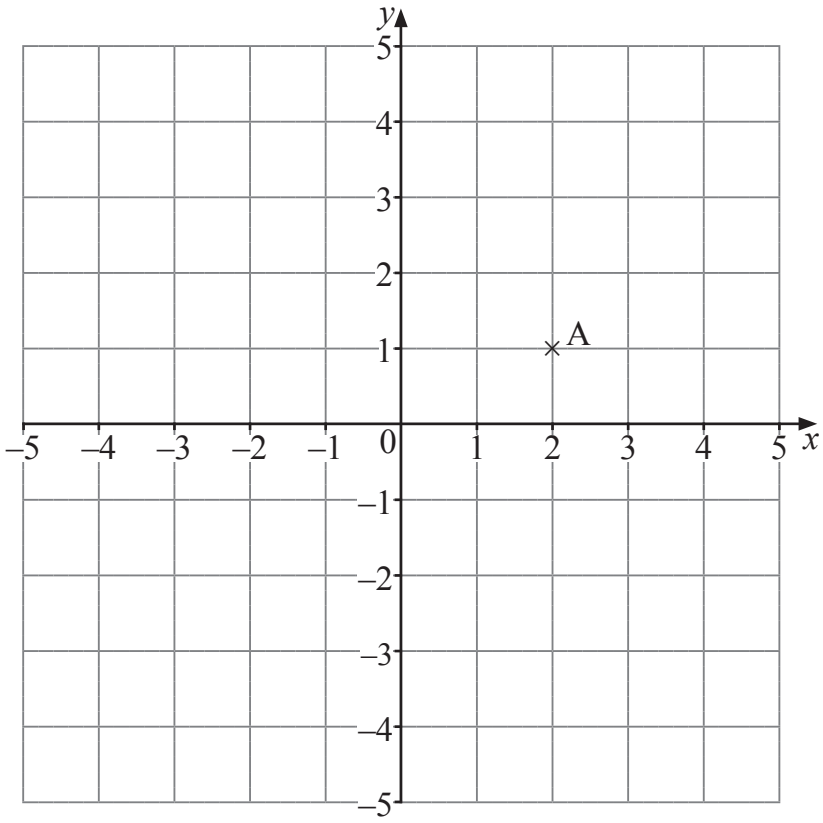
Show all your working.

Answer _____ [2]

[Turn over

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12



(a) Write down the coordinates of the point A.

Answer _____ [1]

(b) Plot and label the points B (–2, 0) and C (4, –3). [2]

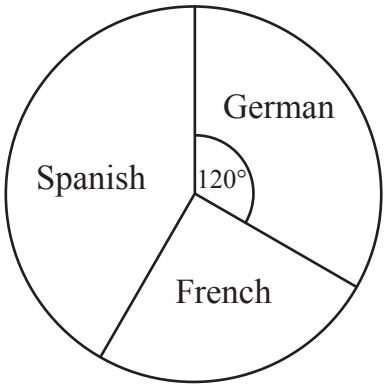
13 Write down any three numbers with a median of 8 and a range of 6

Answer _____ [2]

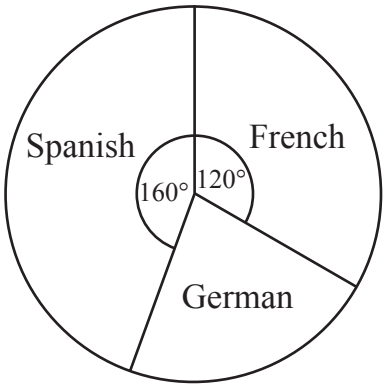
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Quality of written communication will be assessed in part (c) of this question.

14



8A (24 pupils)



8B (27 pupils)

The pie charts show the languages studied by pupils in 8A and 8B.

There are 24 pupils in 8A and 27 pupils in 8B.

(a) Measure the angle for Spanish in 8A.

Answer _____° [1]

(b) What fraction of the students in 8B study German?

Answer _____ [1]

(c) Jacob says "the same number of pupils in 8A study German as those who study French in 8B". Is he correct? Explain your answer.

_____ because _____

_____ [2]

[Turn over

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15 Solve the equations

(a) $4x = 20$

Answer $x =$ _____ [1]

(b) $x - 5 = 8$

Answer $x =$ _____ [1]

16 Calculate the following:

(a) 9^2

Answer _____ [1]

(b) $\sqrt{2.56}$

Answer _____ [1]

(c) 1.8^3

Answer _____ [1]

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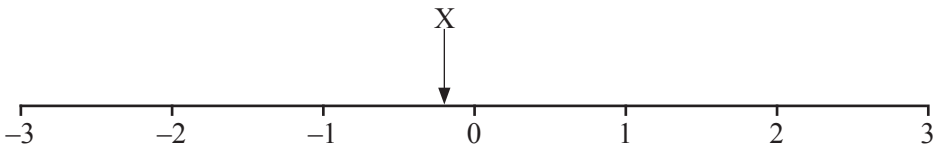
17 Write in descending order of size

$\frac{3}{5}$ 0.65 62%

Show all your working.

Answer _____ [3]

18



(a) Using arrows to show your answers

(i) mark the position of $-1\frac{1}{2}$ [1]

(ii) mark the position of 2.95 [1]

(b) What number is indicated by the letter X?

Answer X = _____ [1]

[Turn over

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19 In a school there are 165 students in Year 9

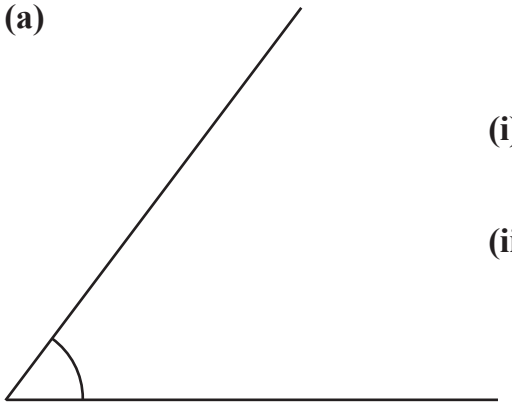
Two-fifths of the students are boys. How many girls are there?

Show all your working.

Answer _____ [3]

20 For each of the following, measure the size of the angle marked and state what type of angle it is.

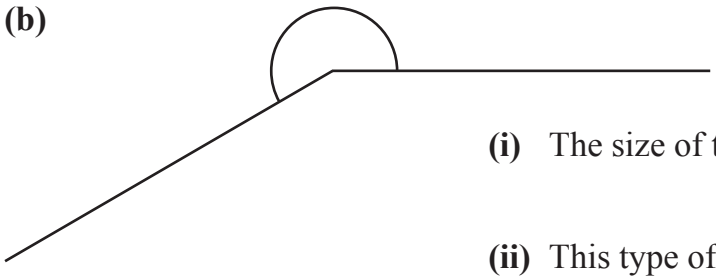
(a)



(i) The size of the angle is _____ ° [1]

(ii) This type of angle is _____ [1]

(b)

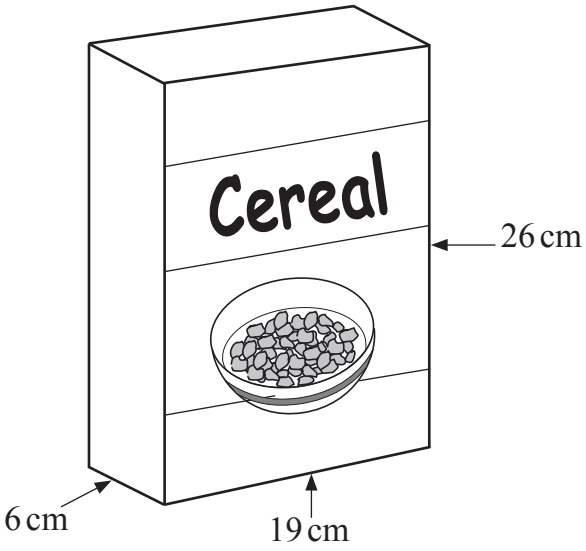


(i) The size of the angle is _____ ° [1]

(ii) This type of angle is _____ [1]

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21 Calculate the volume of this cereal box.



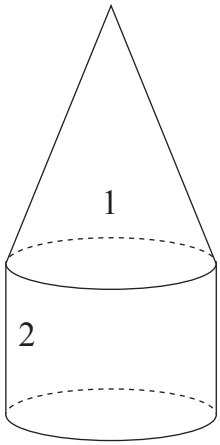
Answer _____ cm^3 [2]

[Turn over

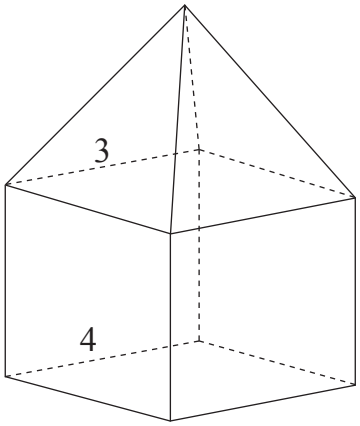
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22 Each of the shapes below is made by joining two different solids together.

(a) Fill in the names of the solids under each shape.



Shape A



Shape B

Solid 1 _____ Solid 3 _____

Solid 2 _____ Solid 4 _____

[4]

(b) Complete the following table for **Shape B**.

Number of Faces	Number of Edges	Number of Vertices

[3]

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23 The stem and leaf diagram illustrates the marks in a test for a group of students.

5	4 6 7 7 7 9
6	2 3 4
7	0 2 3 4 6
8	2 3 4 5 7

Key: 5 | 4 = 54%

(a) The mark for the top student has been left out of the diagram.

The range for the whole class of twenty students was 35.

Calculate the mark for the top student and insert it correctly in the stem and leaf diagram.

[2]

(b) What was the mean of the lowest four marks?

Answer _____ [2]

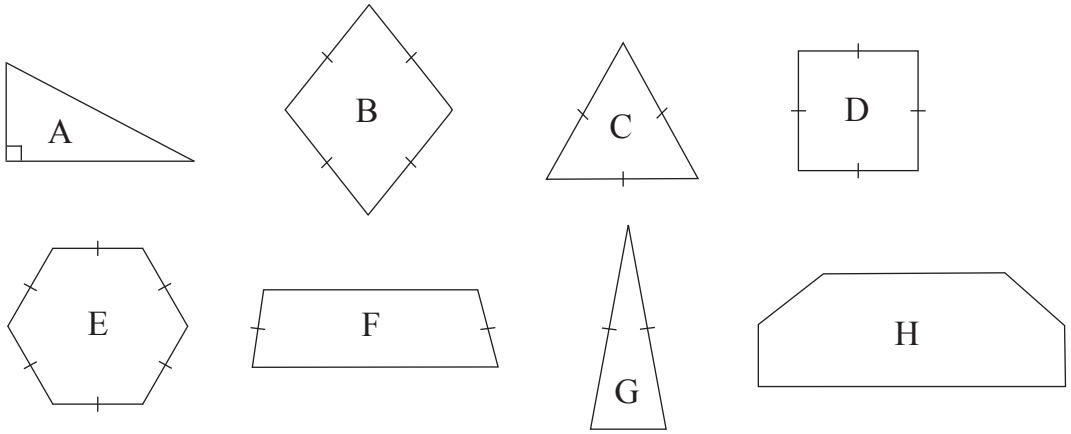
(c) The top 15% of all the students in the class were awarded an A* grade. What was the lowest mark needed to obtain the A* grade?

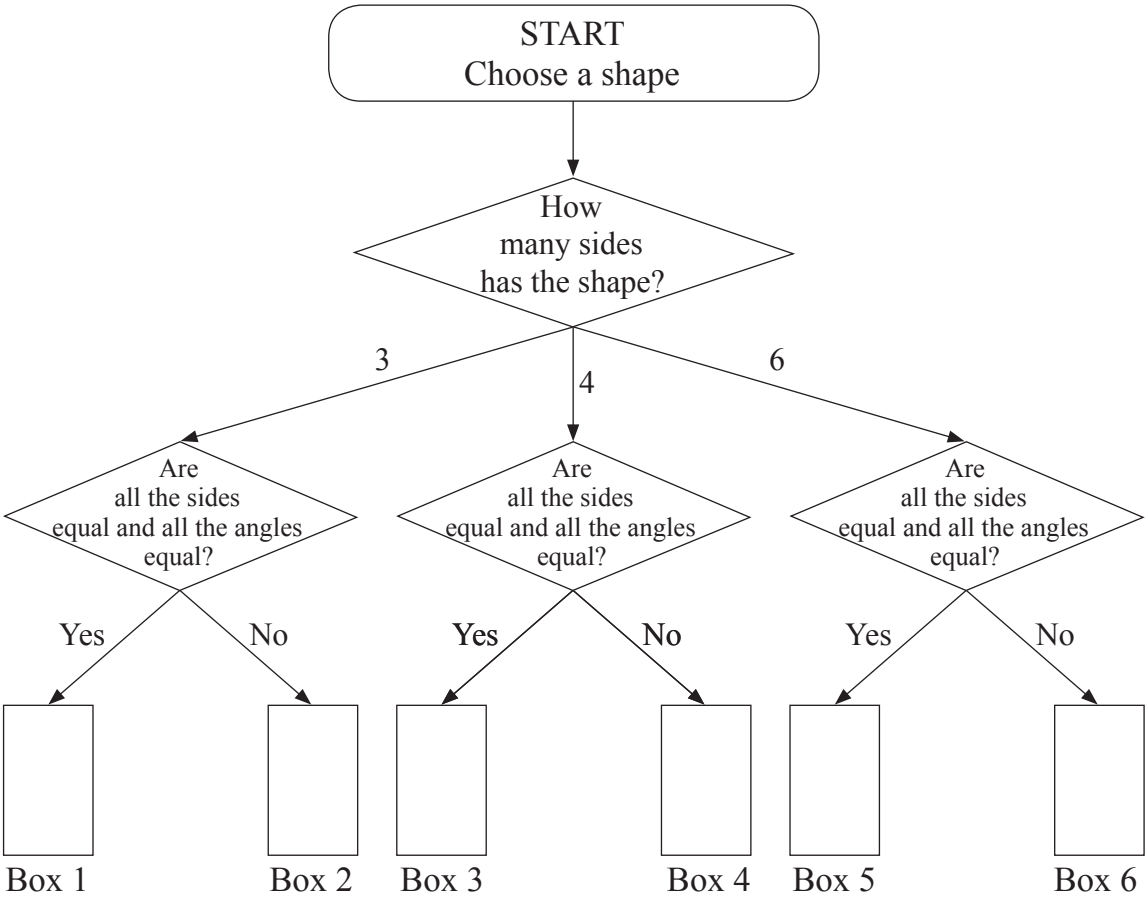
Answer _____ % [2]

[Turn over

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24 **(a)** Use the decision tree to sort the shapes A, B, C, D, E, F, G and H.





[2]

(b) Complete the sentence:

the shapes in Boxes 1, 3 and 5 are all _____ polygons. [1]

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25 **(a)** Simplify

$3p - 4r + 7p - 2r$

Answer _____ [2]

(b) Solve

$\frac{x}{20} = 100$

Answer $x =$ _____ [1]

(c) Expand

$4(y - 6)$

Answer _____ [2]

(d) Solve

$6 - 2x = 12$

Answer $x =$ _____ [2]

[Turn over

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26 3.2 metres of electrical cable and 0.6 metres of copper wire cost a total of £4.07

The electrical cable costs 85p per metre.

How much does the copper wire cost per metre?

Show clearly all your working.

Answer £ _____ per metre [4]

27 **(a)** Write down the next two numbers in the sequence

25 24 20 13 _____ _____ [2]

(b) Explain the rule for this sequence.

Answer _____ [2]

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For Examiner's use only	
Question Number	**Marks**
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2	
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16	
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24	
25	
26	
27	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
January 2016

Mathematics

Unit T1

(With calculator)
Foundation Tier

[GMT11]

MONDAY 11 JANUARY

9.15 am–10.45 am

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

C indicates marks for quality of written communication.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

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				AVAILABLE MARKS
1	**(a)**	26041	A1	
	(b)	one hundred and a half	A1	2
2	**(a)**	22 and 46	A1 A1	
	(b)	Add 8 each time, + 8, etc	A1	3
3	**(a)**	1, 49	A1	
	(b)	20, 36 or 1, 17	A1	
	(c)	17, 23	A1	
	(d)	6, 36	A1	
	(e)	1, 6, 20	A1	5
4	**(a)**	$\frac{12}{16}$ or $\frac{6}{8}$	MA1	
		$= \frac{3}{4}$	A1	
	(b)	25%	A1	3
5	**(a)**	5	A1	
	(b)	14	A1	
	(c)	35	A1	
	(d)	Boys $\frac{6}{20} = 30\%$		
		Girls $\frac{5}{15} = 33.33..\%$		
		Disproves – greater proportion of girls are left-handed than boys	C2	5
6	**(a)**	Friday	A1	
	(b)	Monday	A1	
	(c)	Thursday allow A1 for total = 40	A2	
	(d)	**(i)** Hard to <u>draw</u> one child (representing 3, 5 or 9)	A1	
		(ii) $\frac{6}{40}(\times 360)$	MA1	
		$= 54°$	A1	7

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				AVAILABLE MARKS
7	**(a)**	$6 + 2 + 2 + 2 + 2 + 1 + 1 + 2 + 2 + 2 + 4 + 2 + 1 + 3$	M1	
		$= 32$	A1	
	(b)	$9\,cm^3$	A1 A1 (units)	4
8	**(a)**	$9.5\ (\pm 0.2)$	A1	
	(b)	Semicircles	A1	
	(c)	**(i)** A line drawn parallel to FG to touch the circumference	MA1	
		(ii) Chord	A1	4
9	**(a)**	**(i)** Cuboid	A1	
		(ii) Triangular Prism	A1	
	(b)	E	A1	3
10	$\begin{array}{r} 7 \\ 48^{1}3 \\ -167 \\ \hline 316 \end{array}$ or $\begin{array}{r} 48^{1}3 \\ -16_{1}7 \\ \hline 316 \end{array}$		M1 A1	2
11	$10 \div 1.28 = 7.8125$ and chooses 7		MA1 A1	
	or alternative method $7 \times 1.28 = 8.96$ $8 \times 1.28 = 10.24$		MA1	
	Chooses 7		A1	2
12	**(a)**	A (2, 1)	A1	
	(b)	Correct plotting of B and C	A1 A1	3
13	8 as middle number		A1	
	difference of 6 between largest and smallest [numbers **DO NOT** need to be listed in numerical order]		A1	2

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			AVAILABLE MARKS
14	**(a)** 150° (±2°)	A1	
	(b) $\frac{80}{360}$ (or $\frac{2}{9}$ or equivalent)	A1	
	(c) No because the fraction of $\frac{120}{360}$ is of different totals	C2	
	or [No because in 8A $120° = \frac{1}{3}$ of 24 pupils = 8 and in 8B $120° = \frac{1}{3}$ of 27 pupils = 9]		4
15	**(a)** $x = \frac{20}{4} = 5$	A1	
	(b) $x = 8 + 5 = 13$	A1	2
16	**(a)** 81	A1	
	(b) 1.6	A1	
	(c) 5.832	A1	3
17	Converting all to fractions/decimals/percentages	MA2	
	0.65, 62%, $\frac{3}{5}$	A1	3
18	**(a)** **(i)** Correct arrow for $-1\frac{1}{2}$	A1	
	(ii) Correct arrow for 2.95	A1	
	(b) X = –0.2	A1	3
19	$\frac{2}{5}$ of $165 = 2 \times 33 = 66$	MA1	
	No of girls = 165 – 66	MA1	
	= 99	A1	3
	alternative method or $\frac{3}{5}$ seen	MA1	
	$\frac{3}{5} \times 165 = 3 \times 33$	MA1	
	= 99	A1	

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				AVAILABLE MARKS
20	**(a)** **(i)**	53° (±2°)	A1	
	(ii)	Acute	MA1	
	(b) **(i)**	210°	A1	
	(ii)	Reflex	MA1	4
21	Volume = $6 \times 19 \times 26$		MA1	
		$= 2964\,\text{cm}^3$	A1	2
22	**(a)**	Shape A Cone and Cylinder	A1 A1	
		Shape B Pyramid and Cube or Cuboid	A1 A1	
	(b)	9 16 9	A1 A1 A1	7
23	**(a)**	$54 + 35 = 89$	MA1	
		89 inserted in diagram	MA1	
	(b)	$54 + 56 + 57 + 57 = 224$	MA1	
		$224 \div 4 = 56$	MA1	
	(c)	15% of 20 = 3 pupils	MA1	
		Score of at least 85%	A1	6
24	**(a)**	1 = C 2 = A and G 3 = D 4 = B and F 5 = E 6 = H A2 – all correct [A1 any four correct]		
	(b)	regular	A1	3
25	**(a)**	$10p - 6r$	A1 A1	
	(b)	2000	A1	
	(c)	$4y - 24$	A1 A1	
	(d)	$-2x = 6$	MA1	
		$x = -3$	MA1	7

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			AVAILABLE MARKS
26	$3.2 \times 0.85 = £2.72$	MA1	
	£4.07 – 2.72 = £1.35	MA1	
	1.35 ÷ 0.6	MA1	
	= £2.25 per metre	A1	4
27	**(a)** 3 – 10	A1 A1	
	(b) Each time you subtract 3 more than the time before	A2	4
		Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2015

Mathematics

Unit T1 **(With calculator)**
Foundation Tier



[GMT11]

GMT11

THURSDAY 21 MAY, 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 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-eight** 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

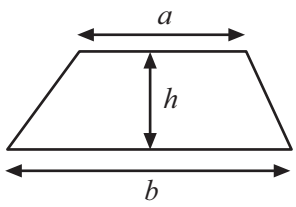
The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in Questions **19** and **26**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

9464

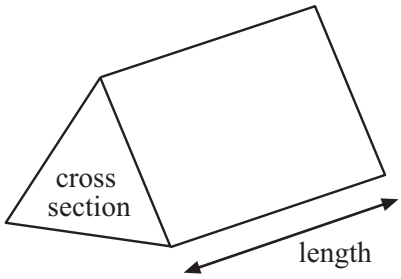
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Formula Sheet

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



Volume of prism = area of cross section × length



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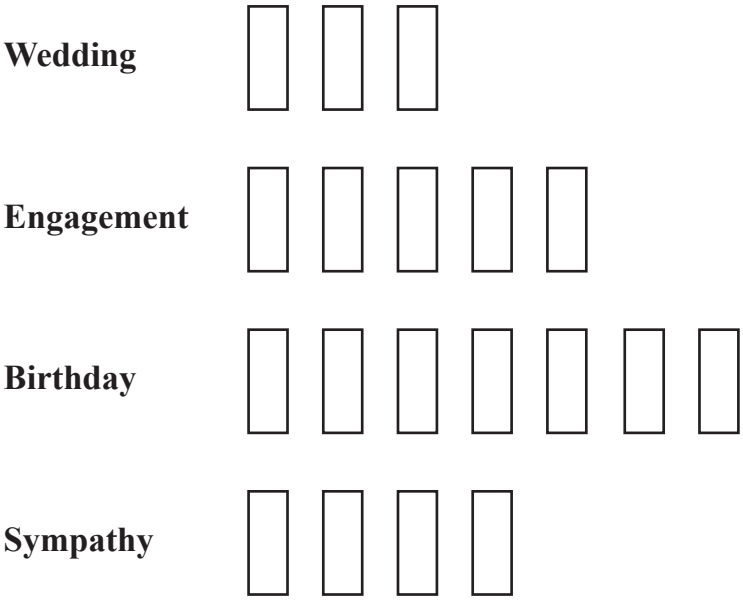
DO NOT WRITE ON THIS PAGE

(Questions start overleaf)

[Turn over

1 One day 75 cards were sold in a shop.
The first four rows of the pictogram are shown below.

Card Sales



(a) 15 engagement cards were sold.

Complete the key: ☐ = _____ cards [1]

(b) How many sympathy cards were sold?

Answer _____ [1]

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(c) How many more birthday cards than wedding cards were sold?

Answer _____ [1]

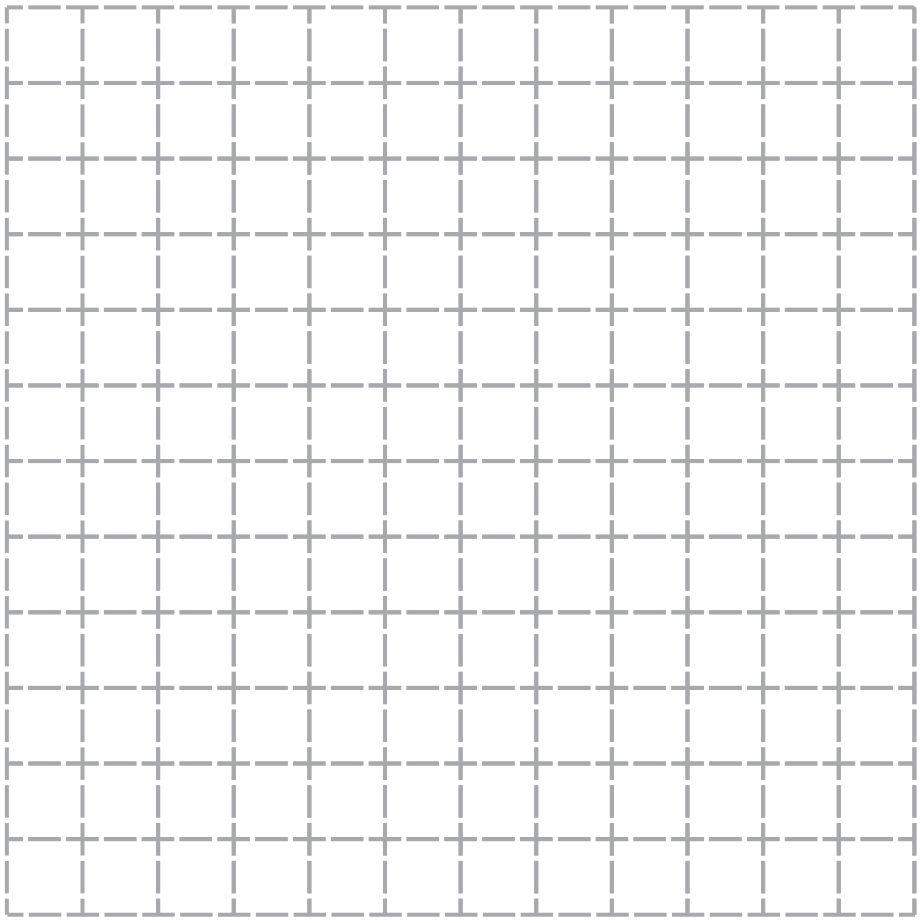
(d) Complete the row of the pictogram for baby cards. [2]

[Turn over

2 Gary recorded the footwear sold in a shop one day.

Type of Footwear	Frequency
Shoes	8
Trainers	11
Sandals	7
Slippers	5
Boots	4

(a) On the graph paper, draw a bar chart to show this information.



[3]

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(b) Which was the most popular type of footwear?

Answer _____ [1]

(c) What was the total footwear sold on that day?

Answer _____ [1]

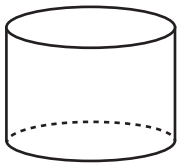
[Turn over

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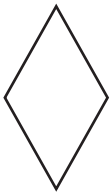
3

TRAPEZIUM	CUBE	RHOMBUS
HEXAGON	CUBOID	CYLINDER

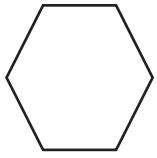
Write down the name of the following from the list above.

(a) 

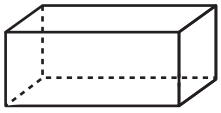
_____

(b) 

_____

(c) 

_____

(d) 

_____

[4]

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4 Below is a copy of the till receipt from Teresa's grocery shopping.
Fill in the missing amounts in all the blank spaces.

2 cartons of milk at £1.66 each	£ _____
3 grapefruit at 57p each	£ _____
1 box of muesli	£3.95
4 baguettes at 85p each	£ _____
1 frozen pizza	£4.59
Total	£ _____
Amount paid	£20.00
Change	£ _____

[4]

[Turn over

5 The details of Jim's gas bill from April to July are as follows.

His meter reading at the start was 2368 units.

His meter reading at the end was 9745 units.

The cost of one unit of gas is 3.82 pence.

Calculate Jim's gas bill from April to July.

You must show all your working.

Answer £ _____ [4]

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6

CAR PARK

Rate: 85p per hour

Please pay at machine before returning to your car

Machine takes these coins

£2 £1 50p 20p 10p 5p

(a) Marie paid £4.25 to park.
How many hours did she pay for?

Answer _____ hours [2]

(b) Marie paid exactly £4.25
She used seven coins.
Show three **different** ways she could have paid with seven coins.

Answer 1. ____ ____ ____ ____ ____ ____ ____

2. ____ ____ ____ ____ ____ ____ ____

3. ____ ____ ____ ____ ____ ____ ____ [3]

[Turn over

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7

18	21	27	35	41	47	49	56	65

From the above list of numbers, select

(a) a multiple of 8 Answer _____

(b) a factor of 36 Answer _____

(c) a square number Answer _____

(d) two numbers that add to give 82

Answer _____ and _____

(e) two numbers that have a difference of 28

Answer _____ and _____ [5]

8 Which metric unit would be used for

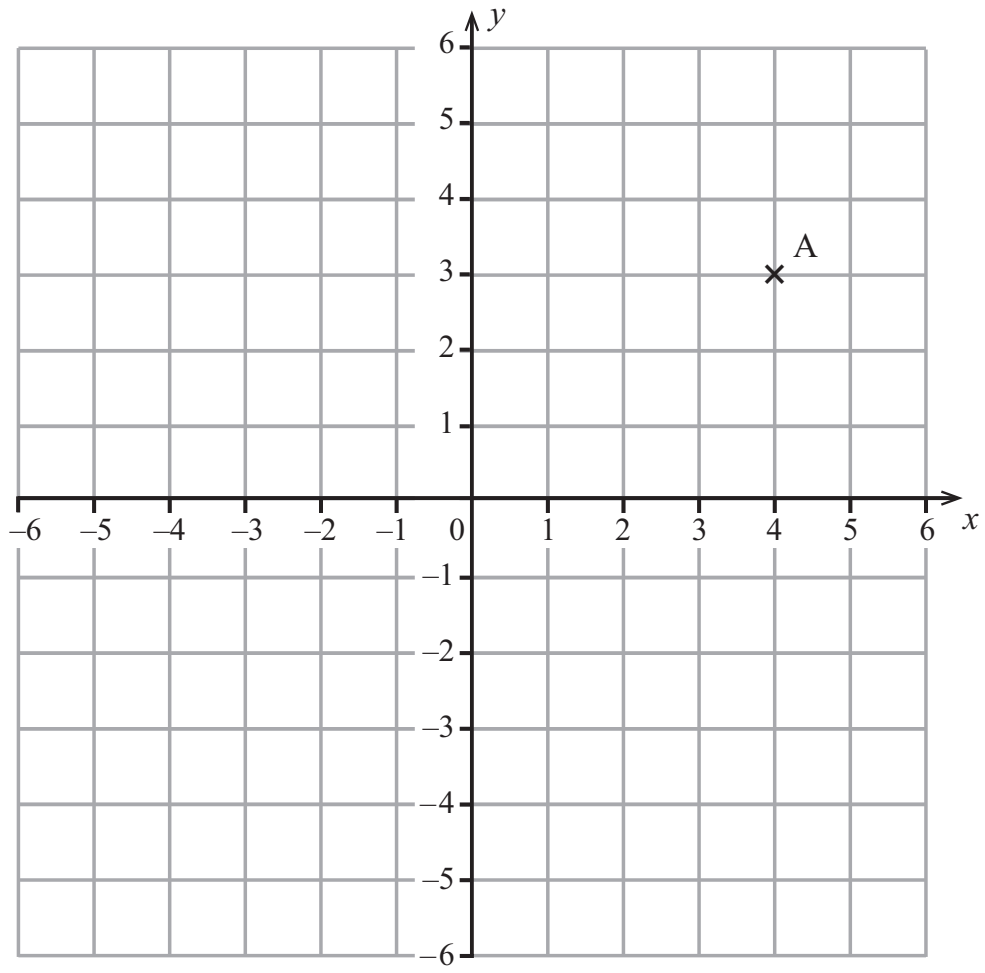
(a) the weight of an apple, Answer _____ [1]

(b) the length of a football pitch, Answer _____ [1]

(c) the amount of water in a bath? Answer _____ [1]

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9



(a) Write down the coordinates of the point **A**.

Answer **A** (_____, _____) [1]

(b) On the grid plot and label the points **B** (–4, 0) and **C** (3, –5). [2]

[Turn over

10 In the triangle ABC the length of side AB is 6 cm.

The angle at A is 54° and the angle at B is 80°

(a) Draw this triangle accurately.



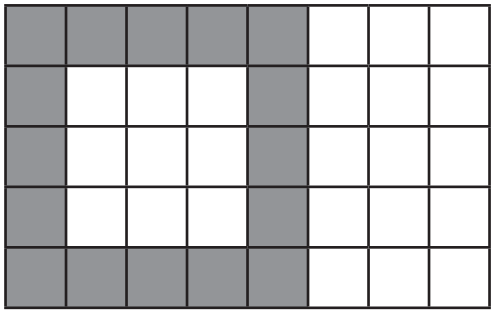
[3]

(b) From your completed triangle measure the length of side BC.

Answer BC = _____ cm [1]

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11



The shape above is made up of squares of equal size.
Some are shaded and some are not shaded.

(a) What fraction of the shape is shaded?
Give your answer in its simplest form.

Answer _____ [2]

(b) What percentage is **not** shaded?

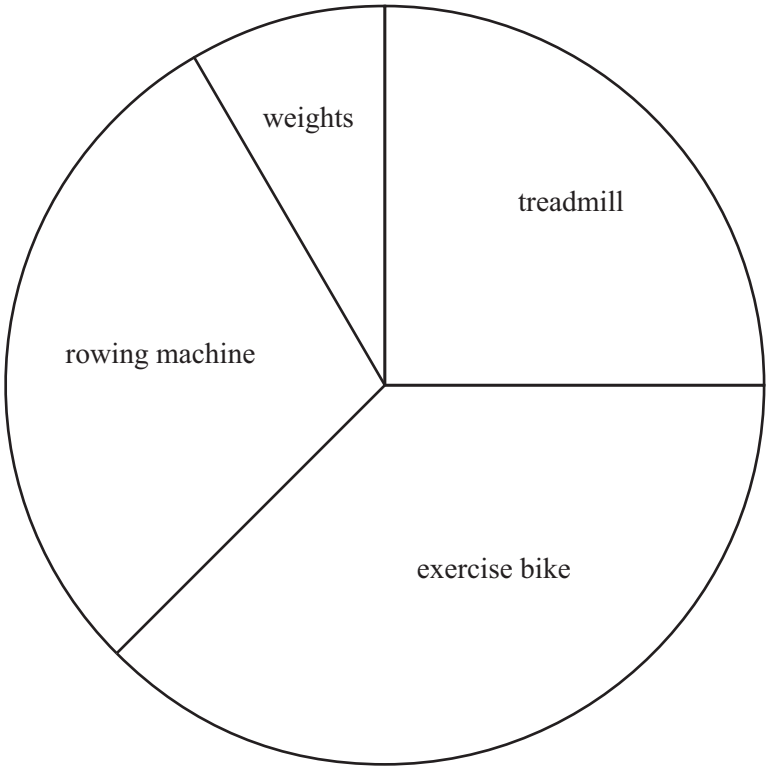
Answer _____% [2]

[Turn over

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12 George spent two hours at the gym one evening.

The pie chart shows how the time was spent on four activities.



(a) How much time did George spend on the treadmill?

Answer _____ [1]

(b) Roughly what amount of time was spent on the exercise bike?

Answer _____ [1]

(c) Measure the angle for rowing machine.

Answer _____° [1]

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13 The number of phone calls each hour in a health centre is shown below.

38 21 25 19 24 18 22 27 26 20

(a) What was the mean number of phone calls?

Answer _____ [3]

(b) What was the median number of phone calls?

Answer _____ [2]

[Turn over

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14

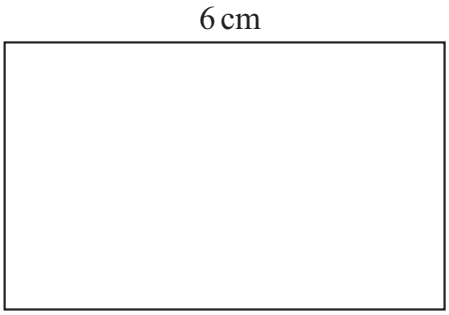


Diagram not drawn accurately

Work out

(a) the perimeter of this rectangle,

Answer _____ cm [1]

(b) the area of this rectangle.

Answer _____ cm^2 [2]

15 The cost of 43 litres of petrol is £59.77
Work out the cost of one litre of petrol.

Answer £ _____ [2]

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16 At midday the temperature in Minsk was –12° C.
By midnight the temperature had fallen by 9° C.
What was the temperature in Minsk at midnight?

Answer _____ ° C [1]

17 **(a)** Simplify $h + h + h - h - h + h$

Answer _____ [1]

(b) Solve $x - 5 = 13$

Answer $x =$ _____ [1]

(c) Ryan says that $8x + 2x - 10$ is an equation.
Is he correct? Explain your answer.

Answer _____ because _____

_____ [1]

18 Write down the value of

(a) 4^3 Answer _____ [1]

(b) $\sqrt{2.25}$ Answer _____ [1]

[Turn over

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Quality of written communication will be assessed in this question.

19 Amy, Bronagh and Ciara did a Maths test in school.
The total for the test was 80 marks.

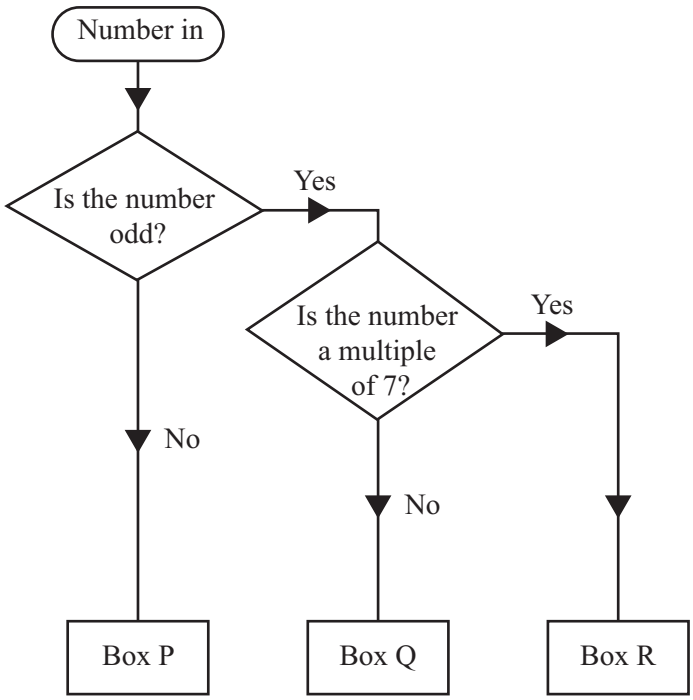
Amy got 50 marks out of 80
Bronagh got 65%
Ciara got $\frac{3}{5}$ of the 80 marks.

Who got the highest mark?
You must show all your working.

Answer _____ [4]

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20



Using the decision tree diagram, name the box for

(a) 25 Answer Box _____

(b) 22 Answer Box _____

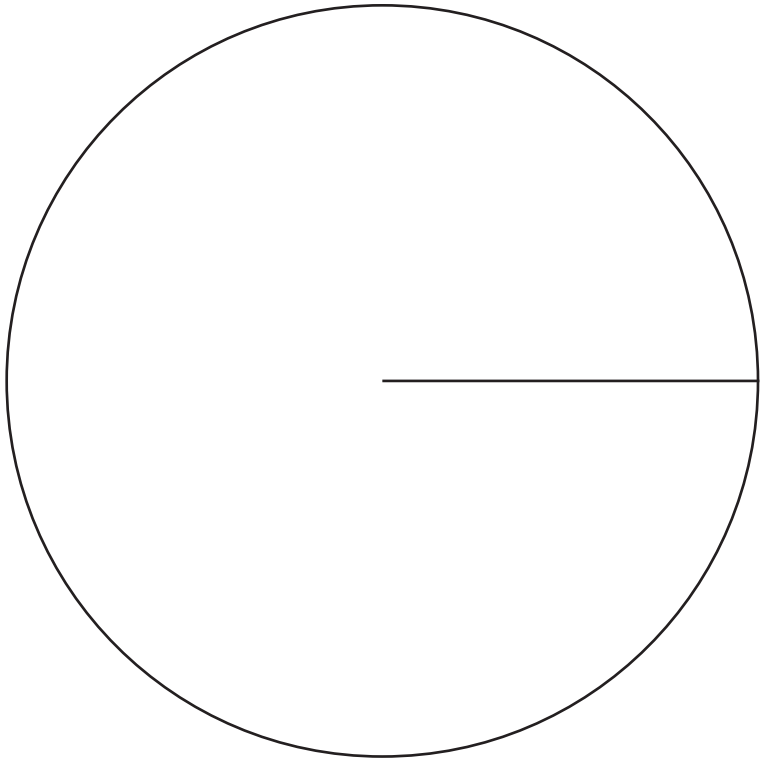
(c) 21 Answer Box _____ [2]

[Turn over

21 The amount of fruit sold in a canteen was recorded as follows.

Fruit	Frequency	Angle
Oranges	30	
Apples	42	
Pears	23	
Bananas	25	

Draw a pie chart to illustrate this information.



[4]

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22 Write down the next two terms in the following sequence

18, 17, 14, 9, _____ , _____ [2]

23 Simplify $4a + 3b - a - 5b$

Answer _____ [2]

24

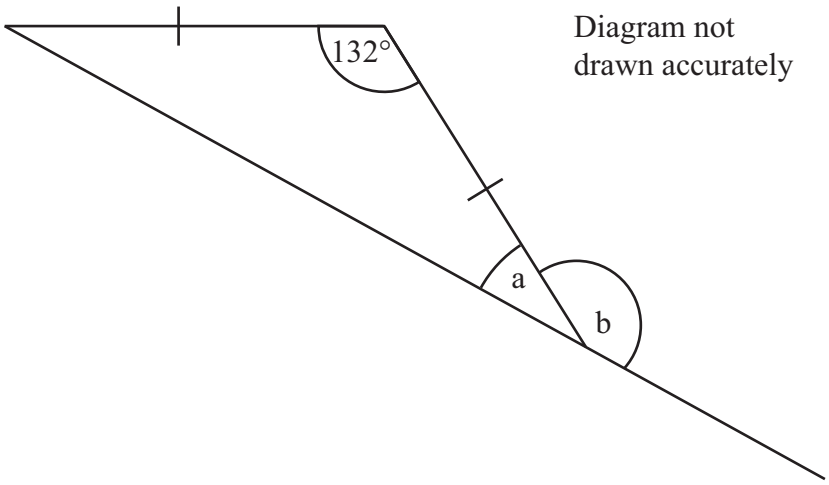


Diagram not drawn accurately

Find the size of

(a) angle a

Answer a = _____° [2]

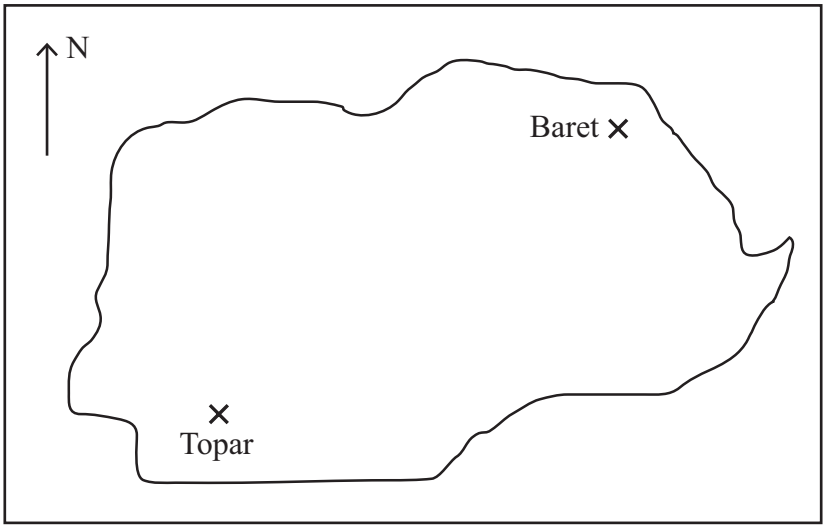
(b) angle b

Answer b = _____° [1]

[Turn over

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25



In the map above the scale is 1 cm = 60 km.

Find the actual distance between Baret and Topar.

Answer _____ km [3]

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Quality of written communication will be assessed in this question.

26 Tom works 30 hours each week.
He earns £9.50 per hour.
He saves one-fifth of his earnings each week.
He wants to buy a guitar costing £840
How many weeks does it take Tom to save enough to buy the guitar?
You must show all your working.

Answer _____ weeks [5]

[Turn over

27 The total cost of 4 kg of pears and 3 kg of bananas is £14.55
Pears cost £2.55 per kg.
Work out the cost of 1 kg of bananas.

Answer £ _____ [4]

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28 A company makes 500 rag dolls.
It costs £3.14 to make each rag doll.
25% of the rag dolls are given to a local charity.
Of the rest, four-fifths are sold for the full price of £5
The remainder are then sold at half-price.
How much profit does the company make?

Answer £ _____ [6]

THIS IS THE END OF THE QUESTION PAPER

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DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
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14	
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24	
25	
26	
27	
28	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2015

Mathematics

Unit T1
(With calculator)
Foundation Tier
[GMT11]

THURSDAY 21 MAY
9.15 am–10.45 am

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

C indicates marks for quality of written communication

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

				AVAILABLE MARKS
1	**(a)** 3		A1	
	(b) 12		A1	
	(c) 12		A1	
	(d) 6 cards drawn		M1, A1	5
2	**(a)** scales		A1	
	correct heights (allow A1 for 3 correct)		A2	
	(b) Trainers		A1	
	(c) 35		A1	5
3	**(a)** Cylinder		A1	
	(b) Rhombus		A1	
	(c) Hexagon		A1	
	(d) Cuboid		A1	4
4	3.32, 1.71 and 3.40		MA2	
	(MA1 for two correct values)			
	16.97		MA1	
	3.03		MA1	4
5	9745 – 2368 = 7377		MA1	
	7377 × 3.82		M1	
	28180.14p		A1	
	£281.80		A1	4
6	**(a)** 425 ÷ 85		M1	
	5		A1	
	(b) £2 50p 50p 50p 50p 20p 5p			
	£2 £1 50p 50p 10p 10p 5p			
	£1 £1 £1 £1 10p 10p 5p			
	£1 £1 £1 50p 50p 20p 5p			
	£2 £1 £1 10p 5p 5p 5p			
	£2 £2 5p 5p 5p 5p 5p	(any 3)	A1, A1, A1	5

				AVAILABLE MARKS
7	**(a)**	56	A1	
	(b)	18	A1	
	(c)	49	A1	
	(d)	35 and 47	A1	
	(e)	49 and 21	A1	5
8	**(a)**	grammes	A1	
	(b)	metres	A1	
	(c)	litres	A1	3
9	**(a)**	(4, 3)	A1	
	(b)	B and C plotted correctly and labelled	A1, A1	3
10	**(a)**	Line AB = 6 cm (±2 mm) Angle A = 54 (±2) Angle B = 80 (±2)	A1 A1 A1	
	(b)	BC = 6.7 (± 0.2) follow their line	A1	4
11	**(a)**	$\frac{16}{40}$	A1	
		$\frac{2}{5}$	A1	
	(b)	$\frac{24}{40}$ or $\frac{3}{5}$	A1	
		60	A1	4
12	**(a)**	30 minutes or $\frac{1}{2}$ hour	A1	
	(b)	40–50 minutes	A1	
	(c)	105 ± 2	A1	3
13	**(a)**	240 ÷ 10 24	M1, A1 A1	
	(b)	at least 6 numbers listed in order 18 19 20 21 22 24 25 26 27 38 23	MA1 MA1	5

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			AVAILABLE MARKS
14	**(a)** Perimeter = 11 + 11 = 22	MA1	
	(b) Area = 6 × 5	MA1	
	= 30	A1	3
15	59.77 ÷ 43	M1	
	1.39	A1	2
16	–21	A1	1
17	**(a)** $2h$	A1	
	(b) 18	A1	
	(c) No. There is no equals sign.	A1	3
18	**(a)** 64	A1	
	(b) 1.5	A1	2

19

			Alternative		
Bronagh	$\frac{65}{100} \times 80$	C1	Amy	$\frac{50}{80} \times 100\%$	C1
Ciara	80 ÷ 5 × 3	C1	Ciara	$\frac{3}{5} \times 100\%$	C1
52 and 48 marks both correct		C1	62.5% and 60% both correct		C1
Bronagh		C1	Bronagh		C1

4

20	**(a)** Q		
	(b) P		
	(c) R		
	(Allow A1 for 2 correct)	A2	2

21	Oranges	Apples	Pears	Bananas		
	90°	126°	69°	75°	MA2	
	(award one mark for evidence of 3)					
	sectors correct and labelled				MA2	4
22	2	–7			A1, A1	2
23	$3a - 2b$				A1, A1	2

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			AVAILABLE MARKS
24	**(a)** 180 – 132 = 48	M1	
	48 ÷ 2		
	24	A1	
	(b) 180 – (a) = 156	MA1	3
25	Distance = 6.5 cm(±2 mm)	A1	
	6.5 × 60	M1	
	390	A1	3
26	£9.50 × 30 = 285	C1	
	285 ÷ 5 = 57	C1	
	840 ÷ 57 = 14.737	C1, C1	
	15	C1	5
27	2.55 × 4 = £10.20	MA1	
	(14.55 – 10.20) = 4.35	MA1	
	4.35 ÷ 3 = £1.45	M1, A1	4
28	£3.14 × 500 = £1570	MA1	
	500 ÷ 4 = 125		
	500 – 125 = 375	MA1	
	375 ÷ 5 × 4 = 300		
	£5 × 300 = £1500	MA1	
	£2.50 × 75 = £187.50	MA1	
	1500 + 187.50 – 1570	MA1	
	£117.50	A1	6
		Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2015

Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

GMT11

FRIDAY 9 JANUARY, 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 box, around 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-eight** 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 12(b) and 26**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

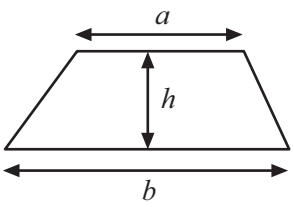
9310

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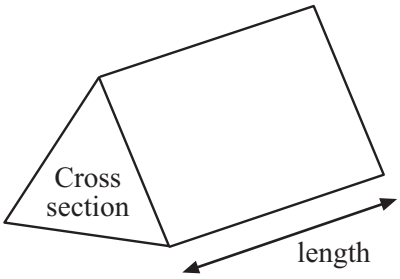
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Formula Sheet

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



Volume of prism = area of cross section × length



9310

1

13	47	16	80	77
78	8	63	37	49

(a) From the numbers in the squares above, write down

(i) two numbers with a total of 50,

Answer _____ , _____ [1]

(ii) two numbers with a difference of 30,

Answer _____ , _____ [1]

(iii) a multiple of 9,

Answer _____ [1]

(iv) a cube number.

Answer _____ [1]

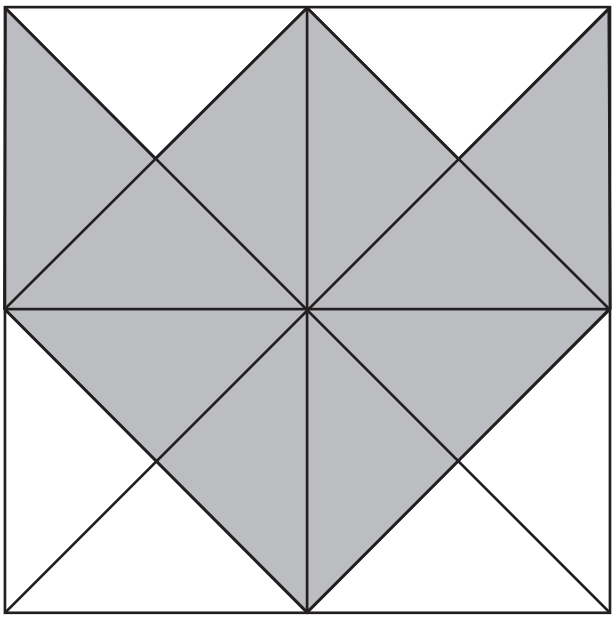
(b) What is the largest number you can get by multiplying any two numbers in the squares?

Answer _____ [2]

[Turn over

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2 **(a)**



What fraction of the diagram is shaded?

Give your answer in its **simplest form**.

Answer _____ [2]

(b) Write 5672 to the nearest 100

Answer _____ [1]

(c) Write down in figures the number forty-nine thousand and twenty-five.

Answer _____ [1]

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3 **(a)** One cake costs £7.99
How many cakes can Sandra buy with £60?

Answer _____ [2]

(b) Betty buys 9 of these cakes.
How much change does she get from £80?

Answer £ _____ [2]

[Turn over

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4 **(a)** **(i)** Draw a quadrilateral in which two sides are parallel and are not the same length.

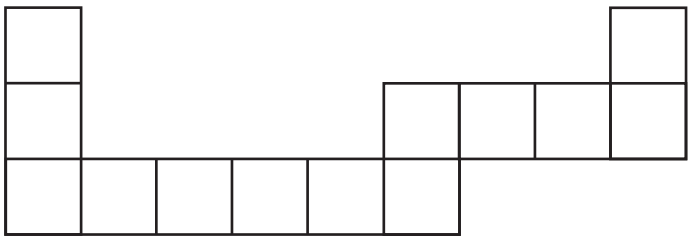
[1]

(ii) What is the special name for this quadrilateral?

Answer _____ [1]

(b) The shape below is made up of squares of side 1cm.

Work out the perimeter of the shape.



Answer _____ cm [1]

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5 Complete the four statements below by writing in the **metric** units.

(a) A can of cola contains 330 _____

(b) A jar of coffee beans weighs 300 _____

(c) The width of a TV screen is 120 _____

(d) The distance from Belfast to Sligo is 200 _____

[4]

[Turn over

6 **(a)** Using the point O as centre, draw a circle with a diameter of 9 cm.

• O

[1]

(b) Mark clearly a point X anywhere on the circumference of your circle.

Draw a straight line from O to X. [1]

(c) By what name is the line OX known?

Answer _____ [1]

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7 The marks in a vocabulary test are shown below.

4	9	3	6	5
2	7	7	4	3
9	1	6	5	7

(a) Find the median of the marks.

Answer _____ [2]

(b) Find the range of the marks.

Answer _____ [1]

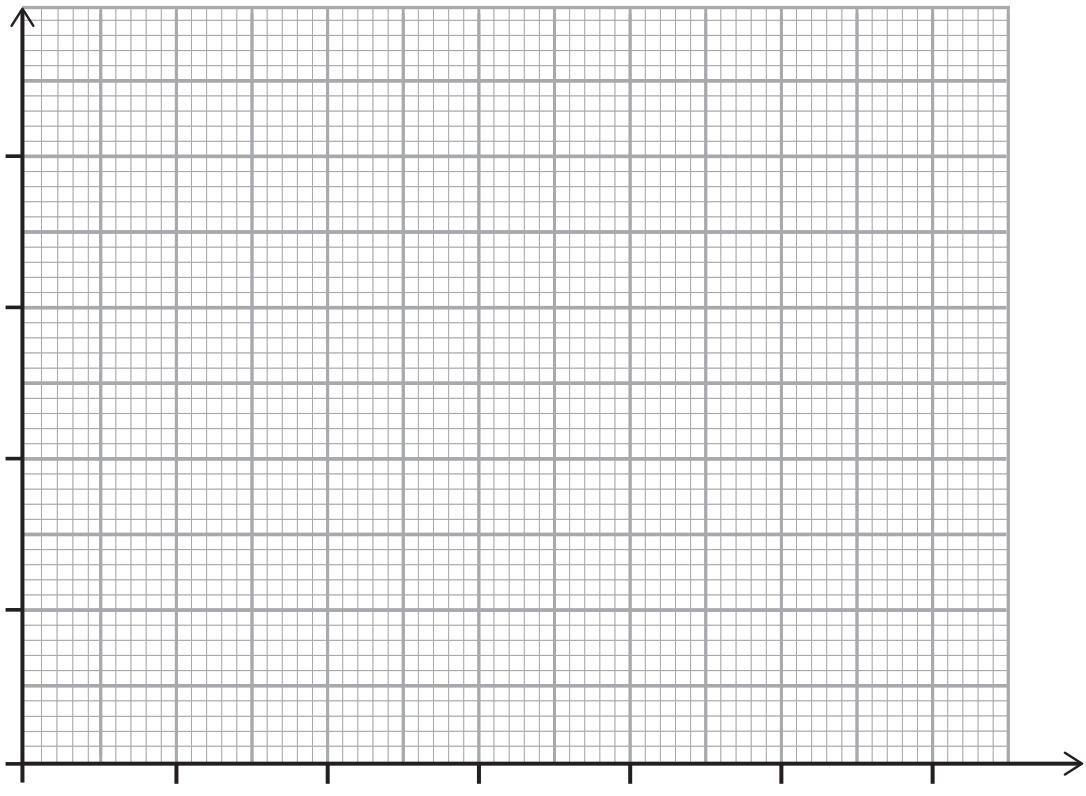
[Turn over

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8 The number of letters delivered to houses in a street one morning are shown.

Number of letters	Number of houses
0	4
1	6
2	7
3	5
4	3
5	5

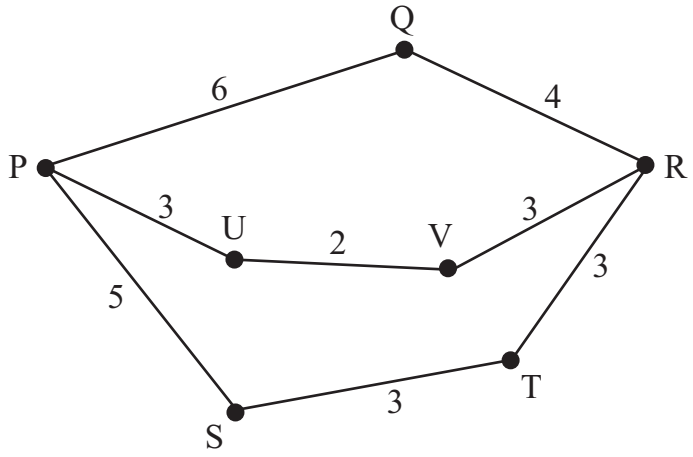
On the grid below draw a frequency diagram for this information.



[3]

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9 Seven towns are connected by road as shown. All distances are in miles.



The mileage table shows the **shortest** distance between towns.

P						
6	Q					
8	4	R				
5	10	6	S			
8		3	3	T		
3	9	5	8		U	
5	7	3	9	6	2	V

(a) Complete the mileage table. [2]

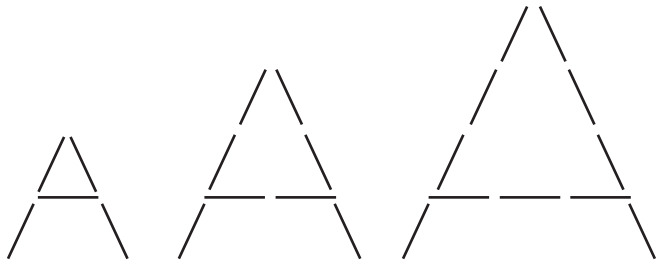
(b) Find the length of the **shortest** journey from V to P which **does not** pass through U.

Answer _____ miles [2]

[Turn over

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10 The 'A' shapes drawn below are made with matches.



Shape 1 Shape 2 Shape 3 Shape 4

(a) Draw Shape 4. [1]

(b) Complete the table for Shapes 4 and 5. [1]

Shape Number	1	2	3	4	5
Number of Matches	5	8	11		

(c) What pattern do you notice in the 'Number of Matches' row?

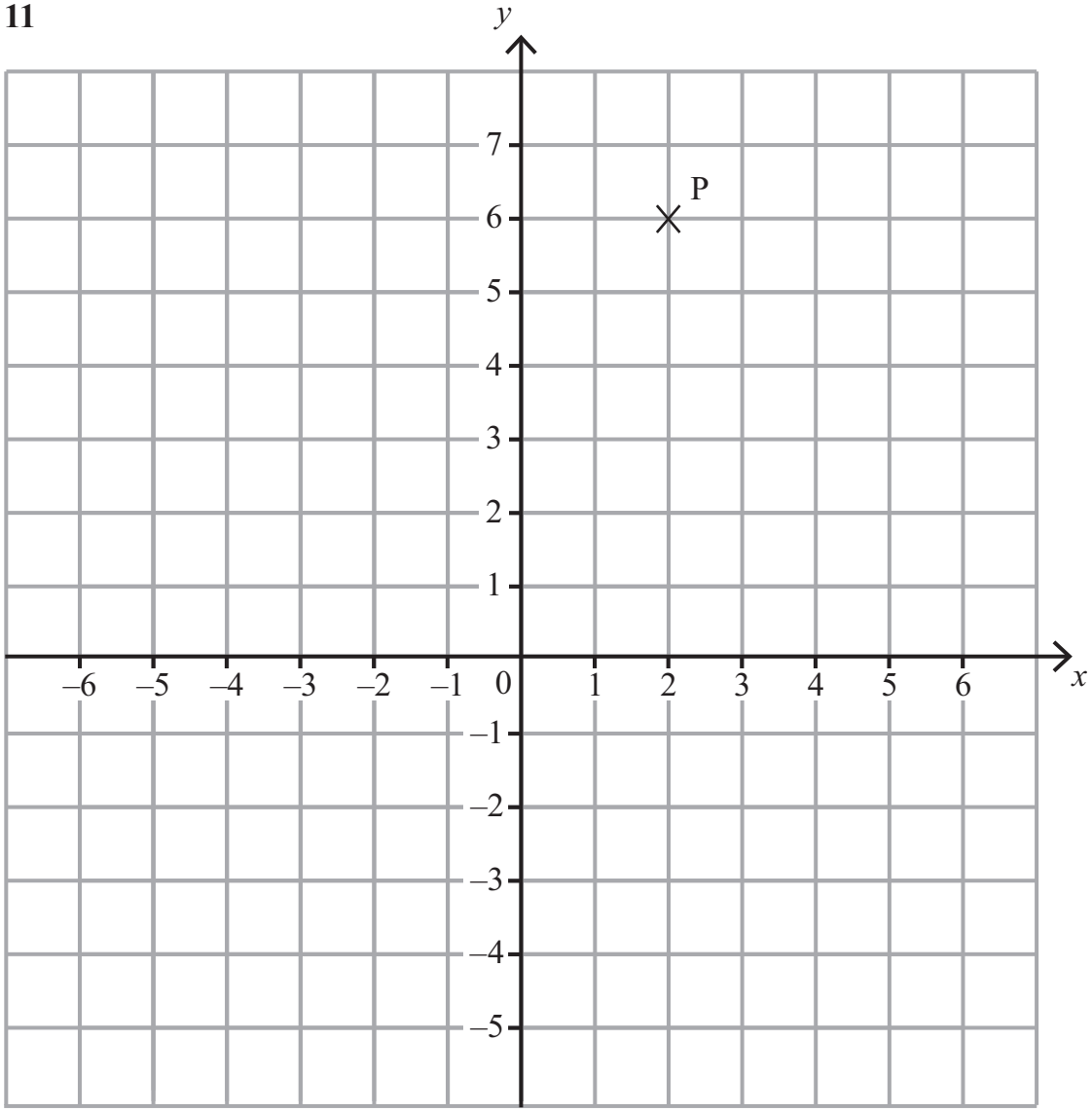
Answer _____ [1]

(d) Find the number of matches in Shape 9.

Answer _____ [2]

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11



(a) Write down the coordinates of the point P.

Answer (_____ , _____) [1]

(b) Plot and label the points Q (–1, –3) and R (2, –3). [2]

(c) Join up P, Q and R to form a triangle.

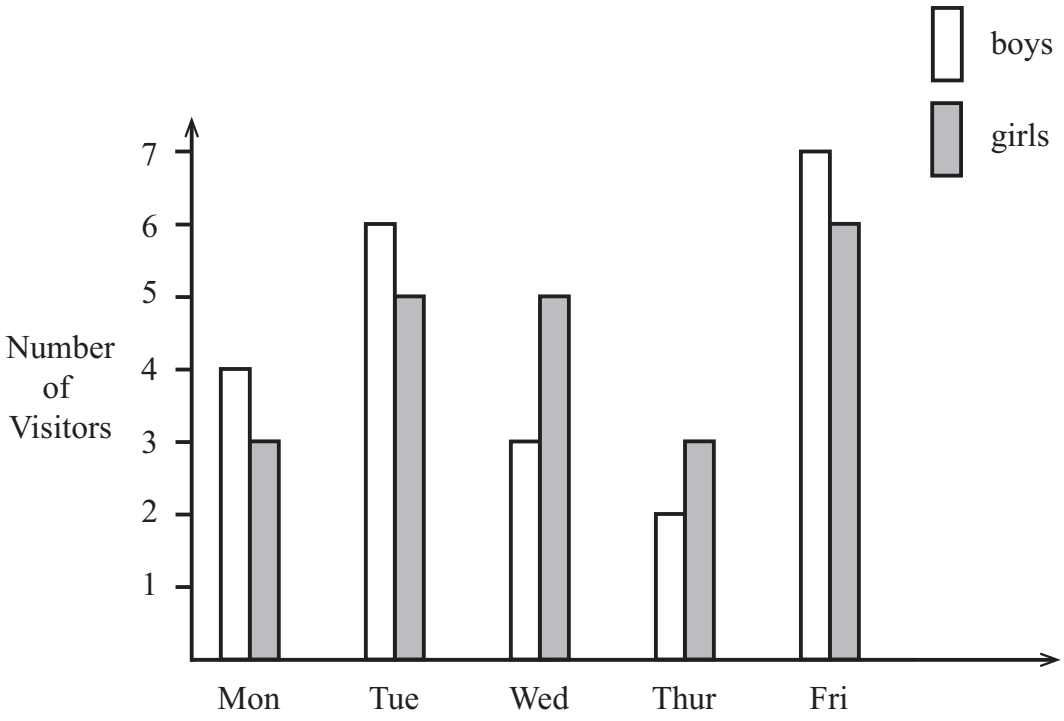
What type of triangle is PQR?

Answer _____ [1]

[Turn over

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12 The chart below shows the numbers of boys and girls who visited a library during one school week.



(a) Which day did most boys and girls visit the library?

Answer _____ [1]

Quality of written communication will be assessed in this question.

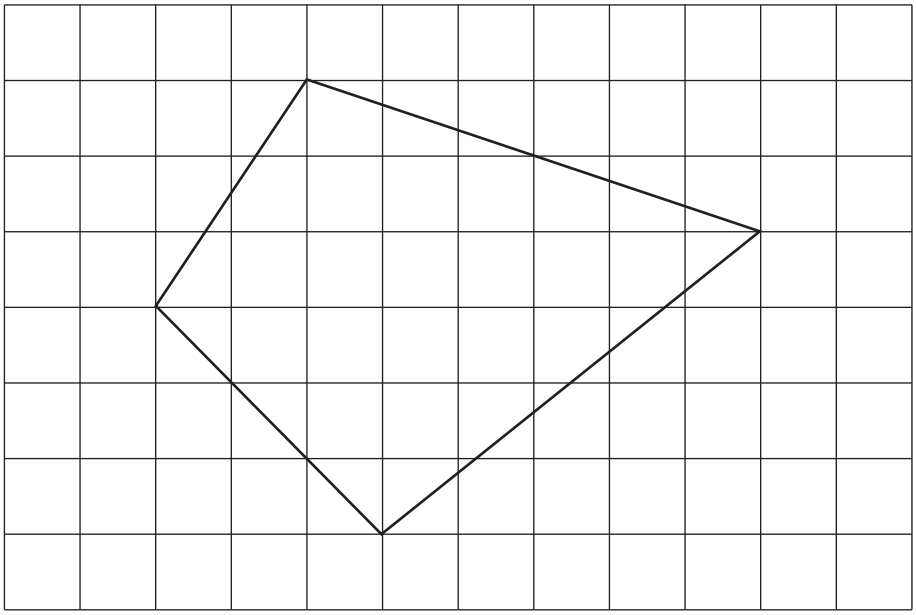
(b) The librarian stated that 'more boys than girls visited the library during the week'. Was she correct? Give a reason for your answer.

Answer _____ because _____

_____ [3]

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13 The quadrilateral below is drawn on centimetre square paper.



Estimate the area of the quadrilateral.

Answer _____ [2]

14 Work out the size of the angle marked m in the diagram below.

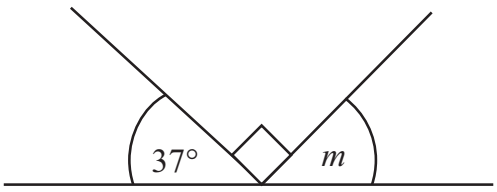


diagram not drawn accurately

Answer m = _____ ° [1]

[Turn over

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15 Find the area of this triangle.

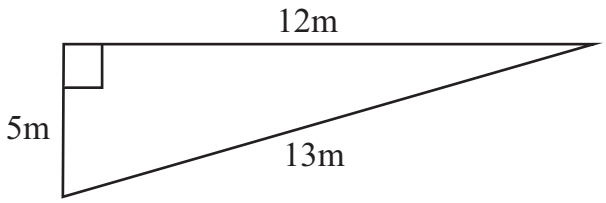


diagram not drawn accurately

Answer _____ m^2 [3]

16 **(a)** Find $\sqrt{7.84}$

Answer _____ [1]

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

0.597 0.64 0.5892

Answer _____ , _____ , _____ [1]

(c) Write down the next two prime numbers after 53

Answer _____ , _____ [2]

(d) Find the cube root of 27

Answer _____ [1]

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17 There are 7000 paper clips to be packed into boxes.
Each box contains 93 paper clips when full.
As many boxes as possible are completely filled.

(a) How many boxes are completely filled?

Answer _____ [2]

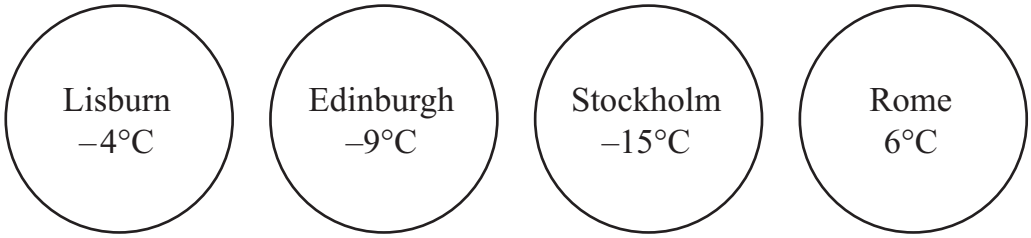
(b) How many paper clips are left over?

Answer _____ [1]

[Turn over

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18 The circles below show the lowest temperatures in four cities on a winter's night.



(a) Write down the difference in temperature between

(i) Rome and Edinburgh,

Answer _____ °C [1]

(ii) Lisburn and Stockholm.

Answer _____ °C [1]

(b) The next day all these temperatures rose by 8°C.

Write down the temperature for the next day in

(i) Lisburn,

Answer _____ °C [1]

(ii) Stockholm.

Answer _____ °C [1]

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19 Ben's annual salary is £22 000. He spends 15% of this on rent.

How much is his rent **per month**?

Answer £ _____ [3]

20 Calculate the mean of these numbers.

46 35 22 44 19 38 47 26 19 30

Answer _____ [3]

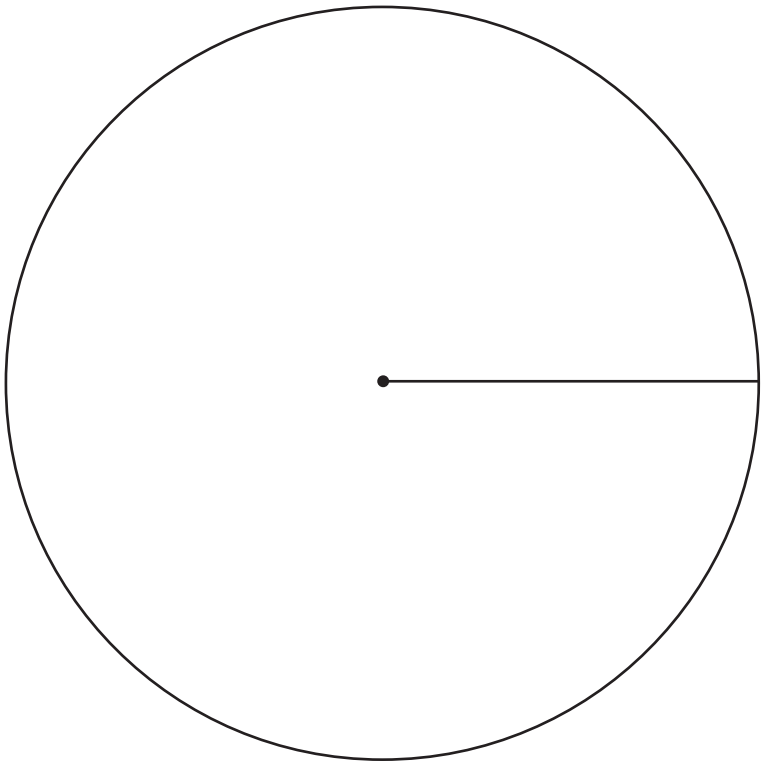
[Turn over

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21 The table below gives information on the sports played by boys after school.

Sport	Football	Rugby	Hockey	Tennis
Number of boys	26	8	12	14
Angle				

Draw a clearly labelled pie chart for this information.



[4]

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22 27 girls did a test.
The stem and leaf diagram shows their marks.

0	1	3	4			
1	4	4	5	6		
2	0	1	3	5	7	7
3	2	4	4	6	6	6
4	4	5	8	9		
5	0	0	3	5		

key 1|4 means 14 marks

Find

(a) the mode of the marks,

Answer _____ [1]

(b) the median of the marks,

Answer _____ [1]

(c) the range of the marks.

Answer _____ [1]

[Turn over

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23 A fish tank is a cuboid.
The tank has a length of 9 metres, a width of 4 metres and a height of 3 metres.

(a) What is the maximum volume of water which the fish tank can hold?

Answer _____ m^3 [2]

(b) The fish tank is filled with 99 m^3 of water.
What is the depth of water in the tank?

Answer _____ metres [2]

24 The Eurostar train leaves London at 11 24 (London time) and arrives in Paris at 14 47 (Paris time).

The time in Paris is 1 hour ahead of the time in London.
How long does the journey take?

Answer _____ [3]

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25 Work out the size of the angle w.

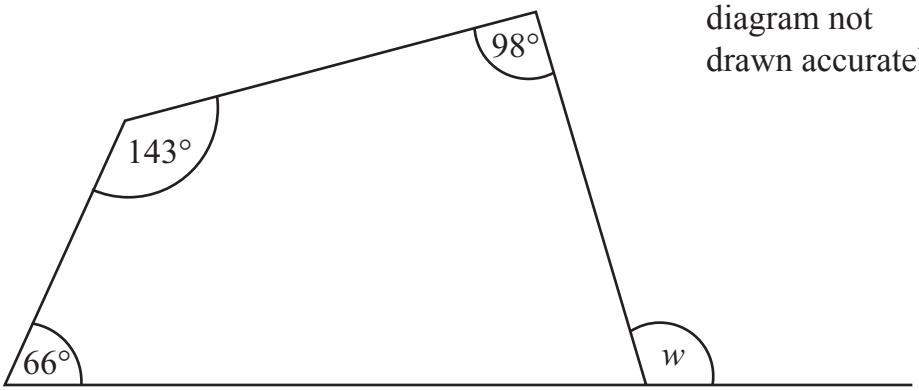


diagram not
drawn accurately

Answer $w =$ _____ ° [3]

[Turn over

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Quality of written communication will be assessed in this question.

26 A smartphone costs £375

Jill pays a deposit of £95 for this smartphone.

She then pays £35 each month.

How many months will it take before she has paid for the smartphone?

Show your working clearly.

Answer _____ months [3]

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27 **(a)** Sam says '17 is a bigger number than 12 so it will have more factors'.
Is he right? Give a reason for your answer.

Answer _____ because _____

_____ [3]

(b) Calculate $4.2^2 + \sqrt{3.61}$

Answer _____ [2]

28 **(a)** Simplify $4x - 7y + 2y + 4x$

Answer _____ [2]

(b) Solve $7x - 9 = 47$

Answer $x =$ _____ [2]

THIS IS THE END OF THE QUESTION PAPER

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DO NOT WRITE ON THIS PAGE

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For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
January 2015

Mathematics

Unit T1
(With calculator)
Foundation Tier
[GMT11]

FRIDAY 9 JANUARY
9.15 am–10.45 am

MARK SCHEME

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GCSE MATHEMATICS

Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

C indicates marks for quality of written communication

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

				AVAILABLE MARKS
1	**(a)**	**(i)** 13, 37	A1	
		(ii) 77, 47	A1	
		(iii) 63	A1	
		(iv) 8	A1	
	(b)	80×78	MA1	
		6240	A1	6
2	**(a)**	$\frac{10}{16}$	MA1	
		$\frac{5}{8}$	A1	
	(b)	5700	A1	
	(c)	49025	A1	4
3	**(a)**	$60 \div 7.99$ or $60 \div 8$	MA1	
		7	MA1	
	(b)	$7.99 \times 9 = 71.91$	MA1	
		8.09	MA1	4
4	**(a)**	**(i)** Valid sketch drawn of a trapezium	A1	
		(ii) Trapezium	A1	
	(b)	28	A1	3
5	**(a)**	millilitres (ml)	A1	
	(b)	grams (g)	A1	
	(c)	centimetres (cm)	A1	
	(d)	kilometres (km)	A1	4
6	**(a)**	Circle with radius 4.5 cm drawn	A1	
	(b)	Radius of the circle drawn	A1	
	(c)	Radius	A1	3

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				AVAILABLE MARKS
7	**(a)**	Numbers reordered correctly Median = 5	M1 A1	
	(b)	Range = 8	A1	3
8		Correct scales and labels 6 bars correct	A1 A2	3
9	**(a)**	7 8	 A2	
	(b)	VRQP = 13 VRTSP = 14 13	A1 A1	4
10	**(a)**	Correct shape	A1	
	(b)	14, 17	A1	
	(c)	Add 3	A1	
	(d)	29	A2	5
11	**(a)**	(2, 6)	A1	
	(b)	Correct points	A2	
	(c)	Right-angled	A1	4
12	**(a)**	Friday	A1	
	(b)	Boys' total = 22 = Girls' total No, totals are equal	C2 C1	4
13		Answer in range 22–27 cm^2	A1, A1 (units)	2
14		53	A1	1
15		$\frac{1}{2} \times 5 \times 12$ 30	M1 A1 A1	3

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				AVAILABLE MARKS
16	**(a)**	2.8	A1	
	(b)	0.5892, 0.597, 0.64	A1	
	(c)	59, 61	A1, A1	
	(d)	3	A1	5
17	**(a)**	7000 ÷ 93 or 75.2688172 ...	MA1	
		75	A1	
	(b)	25	MA1	3
18	**(a)**	**(i)** 15	A1	
		(ii) 11	A1	
	(b)	**(i)** 4	A1	
		(ii) –7	A1	4
19	$\frac{15}{100} \times 22\,000 = 3300$		M1, A1	
	275		MA1	3
20	Total = 326		MA1	
	Mean = $\frac{326}{10} = 32.6$		M1, A1	3
21	Correct angles 156, 48, 72, 84		MA2	
	Labels, Sectors		A1, A1	4
22	**(a)**	Mode = 36	A1	
	(b)	Median = 32	A1	
	(c)	Range = 54	A1	3
23	**(a)**	$9 \times 4 \times 3$	MA1	
		108	A1	
	(b)	$36 \times d = 99$ or $99 \div 36$	MA1	
		2.75	A1	4

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			AVAILABLE MARKS
24	Valid attempt to find the difference in the times	M1	
	Taking the time difference into account	MA1	
	2 hours 23 minutes or 143 minutes	A1	3
25	360 – (66 + 143 + 98) or 360 – 307	MA1	
	53	A1	
	127	MA1	3
26	375 – 95 = 280 still to pay	C1	
	£280 at £35 per month		
	So 280 ÷ 35 = 8 months	C1, A1	3
27	**(a)** No, because 17 has 2 factors and 12 has more (e.g. 2, 3, 4)	A3	
	(b) 19.54 (allow A1 for either 17.64 or 1.9 seen)	A2	5
28	**(a)** $8x - 5y$	A1, A1	
	(b) $7x = 56$	MA1	
	$x = 8$	MA1	4
		Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2014

Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

GMT11

FRIDAY 10 JANUARY, 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 box, around 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-nine** 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

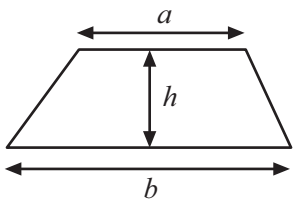
The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in **questions 7 and 21**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

8690

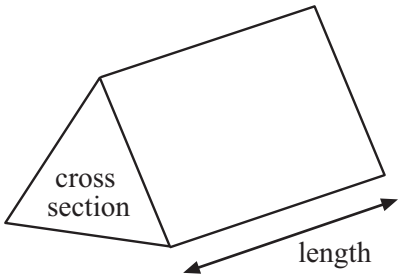
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Formula Sheet

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



Volume of prism = area of cross section × length



8690

1 **(a)** Write 100 million in figures.

Answer _____ [1]

(b) Write down the number forty three thousand and twenty six in figures.

Answer _____ [1]

(c) Write down the value of the 4 in the number 34 568

Answer _____ [1]

(d) Write 60% as a decimal.

Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 1	

[Turn over

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28GMT1103

2 **(a)** From the list of numbers below

Examiner Only	
Marks	Remark

56 23 80 40 21 70 25 99 67

(i) select two numbers with a sum of 90

Answer _____ and _____ [1]

(ii) select two numbers with a difference of 55

Answer _____ and _____ [1]

(iii) what is the largest number that can be made by multiplying any two of the numbers in the list?

Answer _____ [1]

(b) Show how to work out 450 – 168 **without using a calculator**.

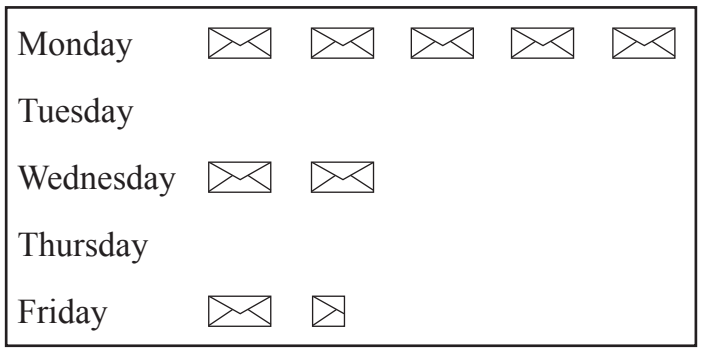
[2]

Total Question 2

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3 The frequency table and the pictogram illustrate some information about the number of letters received in an office during one week.

Monday	
Tuesday	25
Wednesday	20
Thursday	
Friday	15



(a) Complete the frequency table for Monday. [2]

(b) Complete the pictogram for Tuesday. [1]

(c) In total 145 letters are received in the week.
Complete both the frequency table and the pictogram for Thursday. [2]

(d) Which day represents the mode? Why do you think the mode is on this day?

_____ because _____

_____ [2]

Examiner Only	
Marks	Remark
Total Question 3	

[Turn over

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4 **(a)** Draw a circle with radius 5 cm.

•

[1]

(b) Draw a radius in your circle and label it PQ. [1]

(c) Mark a point X on the circumference of your circle. [1]

Examiner Only	
Marks	Remark
Total Question 4	

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Examiner Only	
Marks	Remark

5 Which **metric** unit is the most suitable to measure

(a) the distance from Coleraine to Dungannon,

Answer _____ [1]

(b) the weight of a potato,

Answer _____ [1]

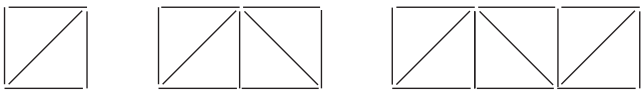
(c) the capacity of a large can of engine oil?

Answer _____ [1]

Total Question 5

6 Here is a sequence of shapes made using sticks.

Shape 1 Shape 2 Shape 3 Shape 4



(a) Draw Shape 4 of the sequence.

[1]

(b) Complete the table below for the sequence of shapes.

Shape Number	1	2	3	4	5
Number of sticks	5	9	13		

[1]

(c) Look at the numbers in the 'Number of sticks' row. Write down the pattern.

Answer _____ [1]

(d) Explain why you could not have a shape in the sequence using 100 sticks.

Answer _____ [1]

Total Question 6

[Turn over

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28GMT1107

Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

7 Boxes of Tasty Tea come in three sizes

size A 60 bags for £1.80

size B 80 bags for £2.24

size C 150 bags for £4.80

Find out which size is the best bargain.
Show clearly your method and all your working.

Answer size _____ [4]

Total Question 7

8 Tiles cost £7.48 each. How many can be bought for £100?

Answer _____ [2]

Total Question 8

9 Nine students each completed an experiment.
The time taken (in minutes) by each student is recorded.

32 17 30 18 21 22 30 24 29

(a) What is the median time?

Answer _____ minutes [2]

(b) Calculate the range of the times.

Answer _____ minutes [1]

Examiner Only	
Marks	Remark
Total Question 9	

10 The distance chart below shows some distances in miles between various places.

	Hull	Leeds	Lincoln	Manchester	Sheffield	York
Hull		60	47	97	66	
Leeds			72	44		24
Lincoln					47	
Manchester					39	71
Sheffield						57
York						

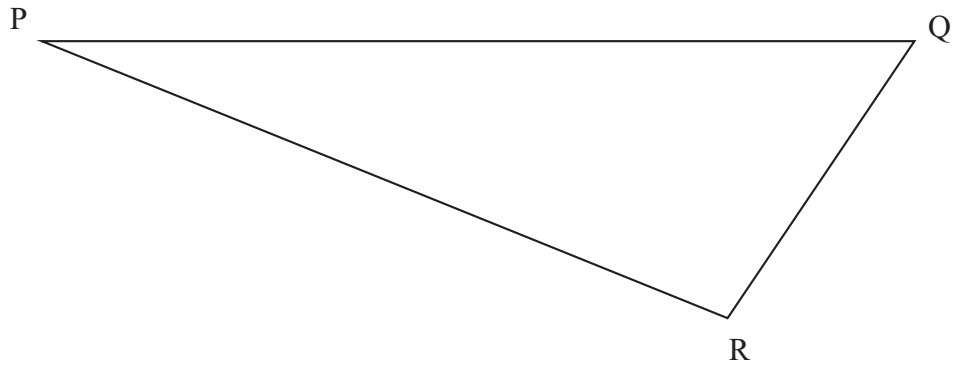
Jane travels from Hull to Lincoln, then from Lincoln to Manchester and finally from Manchester to York.
The total distance she covers is 203 miles.
Insert the distance from Lincoln to Manchester in the chart. [2]

Total Question 10	

[Turn over

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11 (a)



Examiner Only	
Marks	Remark

In the triangle PQR measure

(i) the length of PQ,

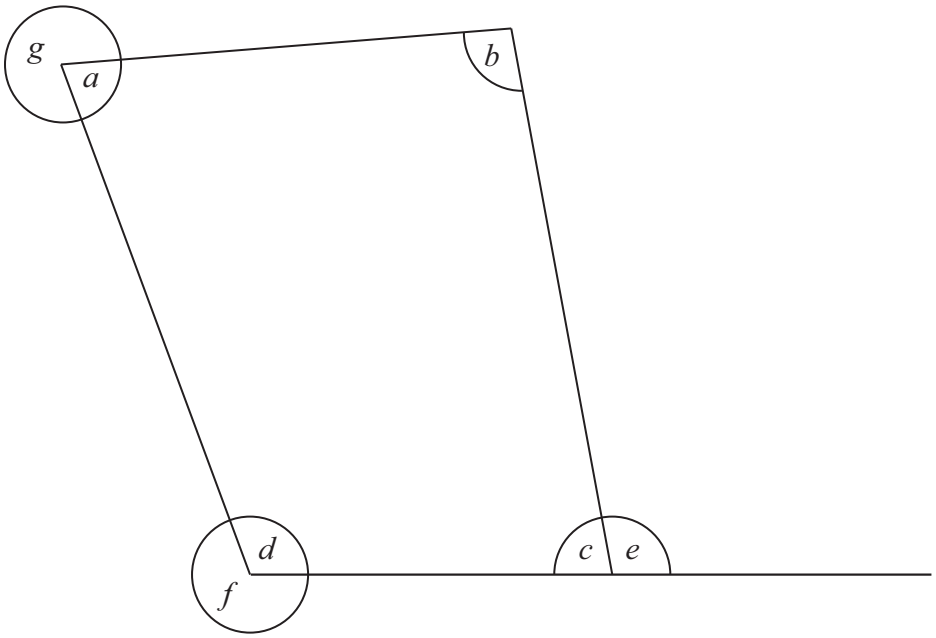
Answer _____ cm [1]

(ii) the size of angle PRQ.

Answer _____ ° [1]

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(b)



From the diagram above write down the letter of an angle which is

(i) acute,

Answer _____ [1]

(ii) obtuse,

Answer _____ [1]

(iii) reflex.

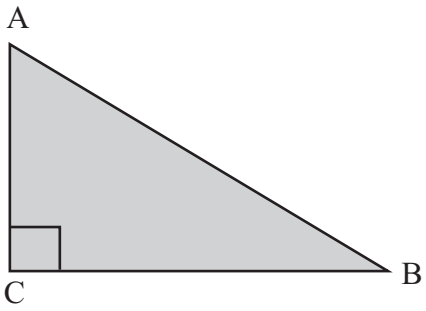
Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 11	

[Turn over

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12



The sketch above shows a large garden ABC which is in the shape of a right-angled triangle. The side CB = 160 m and the side AC = 110 m. Using a scale of 1 cm = 20 m, construct a scale drawing to represent the garden.

[2]

Examiner Only	
Marks	Remark
Total Question 12	

13 **(a)** Write down the value of 9^2

Answer _____ [1]

(b) Calculate the value of $\sqrt{2.56}$

Answer _____ [1]

(c) Calculate the value of 3.2^2

Answer _____ [1]

Examiner Only	
Marks	Remark

Total Question 13

14 **(a)** Put these decimals in order of size starting with the smallest

0.7 0.52 0.413

Answer _____, _____, _____ [1]

(b) On the number line shown



(i) estimate the decimal marked by the letter X

Answer _____ [1]

(ii) draw an arrow to show the position of the decimal 3.14 [1]

Total Question 14

[Turn over

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15 John travelled to Edinburgh and hired a car at the airport.

The charge was £39.50 for each day. He also had to pay the cost of refilling the tank with petrol when left back at the airport.

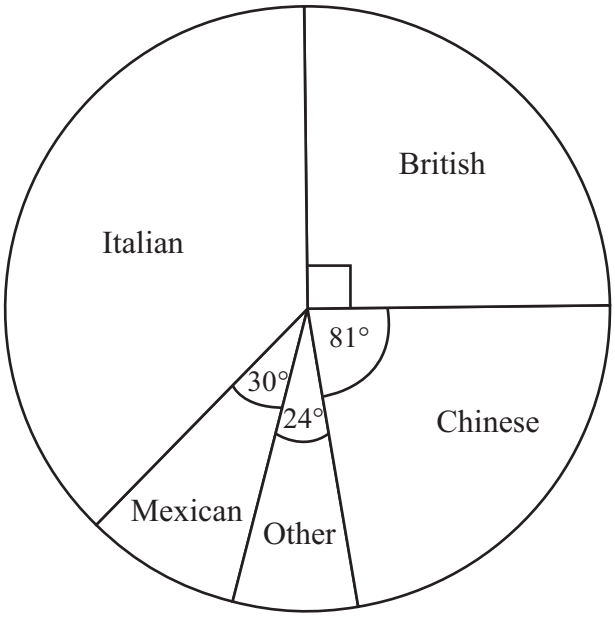
How much did he pay in total for hiring the car for 6 days and refilling with petrol costing £46.78?

Answer £ _____ [2]

Examiner Only	
Marks	Remark
Total Question 15	

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16 120 people were interviewed about their favourite type of food.
The pie chart illustrates the results.



(a) What **fraction** of people prefer Mexican food?

Answer _____ [1]

(b) Calculate the number of people who prefer Italian food.

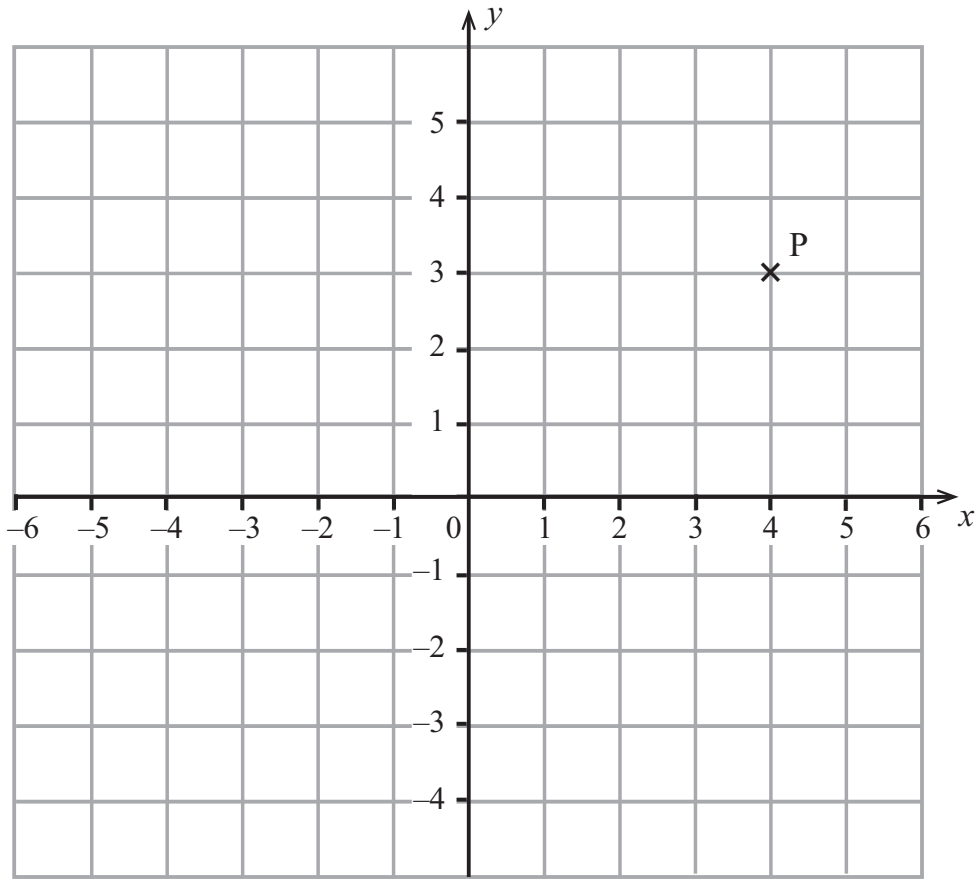
Answer _____ [3]

Examiner Only	
Marks	Remark
Total Question 16	

[Turn over

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17



Examiner Only	
Marks	Remark

(a) Write down the coordinates of the point P which is marked on the grid above.

Answer P (____ , ____) [1]

(b) On the grid above, plot and label the points A (–5, 4) and B (3, –2). [2]

Total Question 17

18 Solve the following equations

(a) $x - 3 = 15$

Answer $x =$ _____ [1]

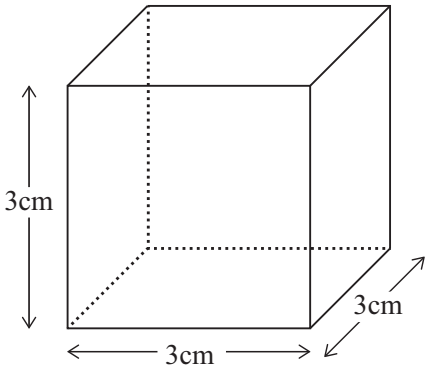
(b) $4y = 36$

Answer $y =$ _____ [1]

Total Question 18

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19



(a) Draw a net of this cube on the 1 cm grid below. [2]

(b) Find the volume of this cube.

Answer _____ [3]

Examiner Only	
Marks	Remark
Total Question 19	

[Turn over

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28GMT1117

20 **(a)** Write the fraction $\frac{36}{48}$ in its lowest terms.

Answer _____ [1]

(b) Calculate 3% of £900

Answer £ _____ [2]

Examiner Only	
Marks	Remark
Total Question 20	

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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

21 (a) Work out the value of $2^2 \times 3^3$ showing each step of your working.

Answer _____ [2]

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

$\frac{2}{10}$ $\frac{3}{20}$ $\frac{7}{30}$ $\frac{11}{40}$

Show clearly how you reach your answer.

Answer _____ [2]

Total Question 21

[Turn over

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22 **(a)** From the numbers in the list below

Examiner Only	
Marks	Remark

24 56 81 40 25 66 59 90 27

(i) write down a square number,

Answer _____ [1]

(ii) write down a cube number.

Answer _____ [1]

(b) Martha's grandmother's age on her next birthday will be both a square number and a cube number at the same time.

What age is Martha's grandmother now?

Answer _____ [2]

Total Question 22

23 Anne bought pink and blue ribbon for her Nursery School.

She bought 3.2 metres of pink ribbon and 2.6 metres of blue ribbon and paid the shopkeeper £8.89

The pink ribbon cost £1.60 per metre.

How much did the blue ribbon cost per metre?

Show clearly how you worked out your answer.

Answer £ _____ [4]

Total Question 23

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24

Year	2008	2009	2010	2011	2012
Rainfall (cm)	60.5	62.5	62.0	61.0	

The mean rainfall over these 5 years was 62 cm. What was the rainfall in 2012?

Answer _____ cm [3]

Examiner Only

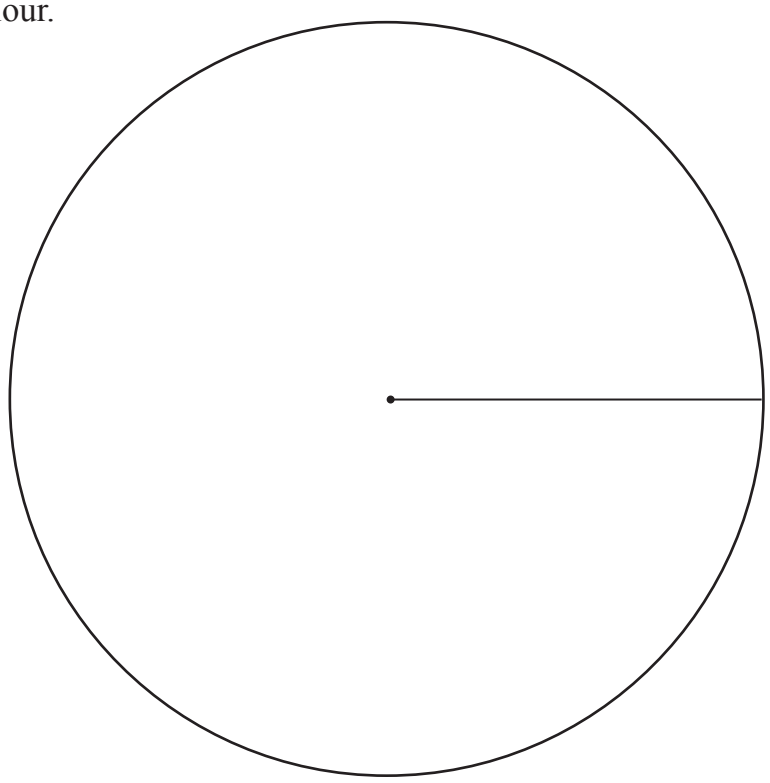
Marks	Remark

Total Question 24

25 The table below shows the number of pairs of shoes of different colours sold in a shop one day.

Colour	Black	Brown	Blue	Other
Number	35	20	18	17
Angle				

Draw a clearly labelled pie chart to show the number of pairs of shoes of each colour.



[4]

Total Question 25

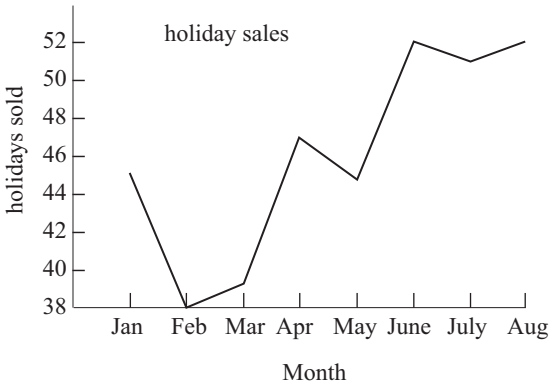
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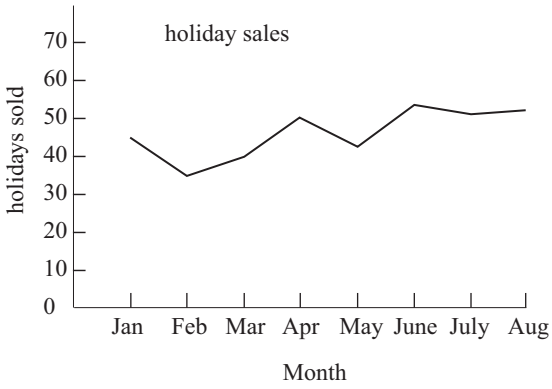
26 The two graphs below show similar information but look different.

Examiner Only	
Marks	Remark

Graph A



Graph B



(a) Which graph appears to show the biggest increase in sales?

Answer Graph _____ [1]

(b) What causes this graph to be misleading?

Answer _____ [1]

Total Question 26

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28GMT1122

27 Calculate the size of angle x in the diagram below.

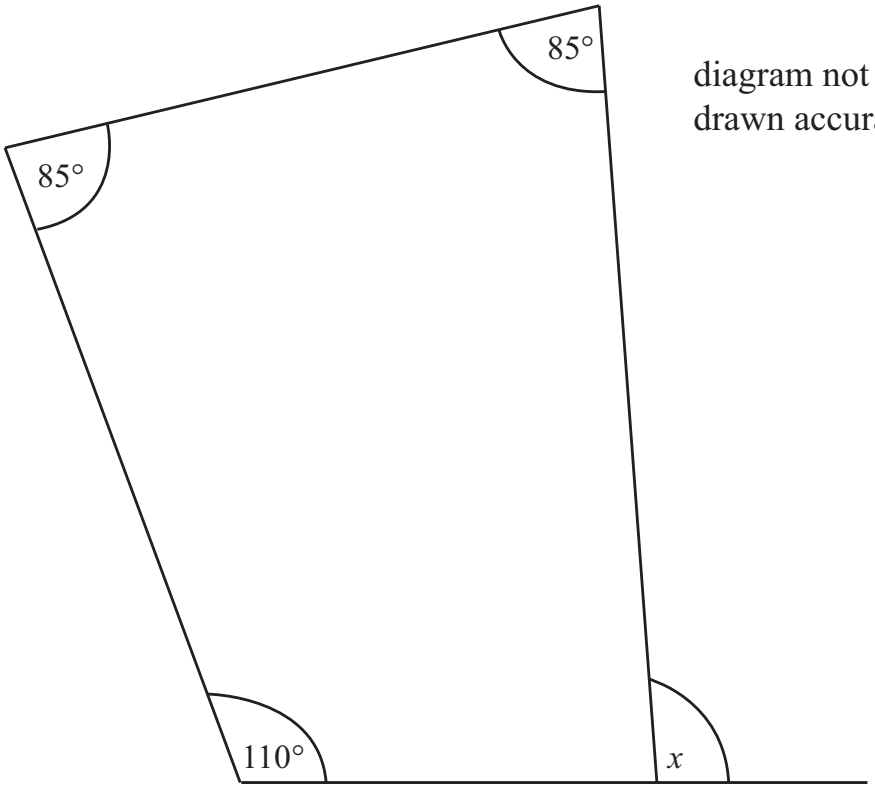


diagram not drawn accurately

Answer $x =$ _____° [3]

Examiner Only	
Marks	Remark
Total Question 27	

[Turn over

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28GMT1123

28

Dublin Connolly				*1000*			*1300*				*1600*		
Newry (L)				*1112*			*1412*				*1712*		
Poyntzpass				|			|				|	
Scarva				|			|				|	
Portadown	0845	0945	1045	*1134*	1145	1245	1345	*1434*	1445	1545	1645	*1734*	1745	1845
Lurgan	0851	0951	1051	*1144*	1151	1251	1351	|	1451	1551	1651	|	1751	1851
Moira	0857	0957	1057	|	1157	1257	1357	|	1457	1557	1657	|	1757	1857
Lisburn	0910	1010	1110	*1203*	1210	1310	1410	|	1510	1610	1710	|	1810	1910
Hilden	0912	1012	1112	|	1212	1312	1412	|	1512	1612	1712	|	1812	1912
Lambeg	0914	1014	1114	|	1214	1314	1414	|	1514	1614	1714	|	1814	1914
Derriaghy	0916	1016	1116	|	1216	1316	1416	|	1516	1616	1716	|	1816	1916
Dunmurry	0919	1019	1119	|	1219	1319	1419	|	1519	1619	1719	|	1819	1919
Finaghy	0922	1022	1122	|	1222	1322	1422	|	1522	1622	1722	|	1822	1922
Balmoral	0924	1024	1124	|	1224	1324	1424	|	1524	1624	1724	|	1824	1924
Adelaide	0926	1026	1126	|	1226	1326	1426	|	1526	1626	1726	|	1826	1926
Great Victoria Street	0930	1030	1130	|	1230	1330	1430	|	1530	1630	1730	|	1830	1930
Great Victoria Street	0834	0934	1034	1134	|	1234	1334	1434	|	1534	1634	1734	|	1834	1934
City Hospital	0837	0937	1037	1137	|	1237	1337	1437	|	1537	1637	1737	|	1837	1937
Botanic	0839	0939	1039	1139	|	1239	1339	1439	|	1539	1639	1739	|	1839	1939
Belfast Central (M)	0842	0942	1042	1142	*1216*	1242	1342	1442	*1507*	1542	1642	1742	*1807*	1842	1942
Belfast Central	0845	0945	1045	1145		1245	1345	1445		1545	1645	1745		1845	1945
Titanic Qtr (Bridge End)	0848	0948	1048	1148		1248	1348	1448		1548	1648	1748		1848	1948
Sydenham ✈	0851	0951	1051	1151		1251	1351	1451		1551	1651	1751		1851	1948
Holywood	0855	0955	1055	1155		1255	1355	1455		1555	1655	1755		1855	1955
Marino	0857	0957	1057	1157		1257	1357	1457		1557	1657	1757		1857	1957
Cultra	0859	0959	1059	1159		1259	1359	1459		1559	1659	1759		1859	1959
Seahill	0902	1002	1102	1202		1302	1402	1502		1602	1702	1802		1902	2002
Helen's Bay	0905	1005	1105	1205		1305	1405	1505		1605	1705	1805		1905	2005
Carnalea	0909	1009	1109	1209		1309	1409	1509		1609	1709	1809		1909	2009
Bangor West	0911	1011	1111	1211		1311	1411	1511		1611	1711	1811		1911	2011
Bangor	0916	1016	1116	1216		1316	1416	1516		1616	1716	1816		1916	2016

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Examiner Only	
Marks	Remark

(a) Sarah takes the 1134 train from Portadown to Belfast Central.
How long should the journey take?

Answer _____ minutes [1]

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(b) James is in Portadown. He has to be in Holywood by 5 pm. What is the latest train he could take from Portadown?

Answer _____ [1]

(c) Using this train service, but not starting in Portadown, Joshua made a journey which lasted exactly 2 hours 7 minutes. What is the earliest time his journey could have started?

Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 28	

29 **(a)** Simplify

$5x + 2y - 3x - 5y$

Answer _____ [2]

(b) Solve

$7x - 3 = 18$

Answer x = _____ [2]

Examiner Only	
Marks	Remark
Total Question 29	

THIS IS THE END OF THE QUESTION PAPER

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DO NOT WRITE ON THIS PAGE

DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
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8	
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10	
11	
12	
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15	
16	
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20	
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25	
26	
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28	
29	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
January 2014

Mathematics

Unit T1
Foundation Tier

[GMT11]

FRIDAY 10 JANUARY
9.15 am–10.45 am

MARK SCHEME

STEMUP.CO.UK

Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

C indicates marks for quality of written communication

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

				AVAILABLE MARKS
1	**(a)**	100 000 000	A1	
	(b)	43 026	A1	
	(c)	4000 or (4) thousand(s)	A1	
	(d)	0.6	A1	4
2	**(a)**	**(i)** 23 and 67	A1	
		(ii) 25 and 80	A1	
		(iii) (99 × 80 =) 7920	A1	
	(b)	Completely correct $\begin{array}{r} 4^{1}5^{1}0 \\ -1\,6\,8 \\ \hline 2\,8\,2 \end{array}$ or $\begin{array}{r} {}^{3}\not{4}\,{}^{14}\not{5}\,{}^{1}\not{0} \\ 1\,6\,8 \\ \hline 2\,8\,2 \end{array}$ (partially correct)	A2 (A1)	5
3	**(a)**	Identification that 1 symbol = 10 letters Monday = 50 letters	MA1 A1	
	(b)	$2\frac{1}{2}$ symbols drawn	MA1	
	(c)	35 letters in frequency table $3\frac{1}{2}$ symbols drawn	MA1 A1	
	(d)	Monday After weekend so includes Saturday's and Monday's post or No delivery on Sunday or similar	A1 A1	7
4	**(a)**	circle drawn with radius (5 ± 0.2) cm	A1	
	(b)	correct radius	A1	
	(c)	X correctly marked	A1	3
5	**(a)**	kilometre	A1	
	(b)	gram	A1	
	(c)	litre	A1	3
6	**(a)**	correct shape drawn	A1	
	(b)	17, 21	A1	
	(c)	add 4 each time	A1	
	(d)	number of sticks is always an odd number	A1	4

			AVAILABLE MARKS
7	size A $\rightarrow \frac{180}{60} = 3$p per bag	C1	
	size B $\rightarrow \frac{224}{80} = 2.8$p per bag	C1	
	size C $\rightarrow \frac{480}{150} = 3.2$p per bag	C1	
	answer = size B	C1	4 QWC
	For 3p, 2.8p, 3.2p, not clear method allow [1] also [1] for ans B answer only, no marks [0]		
8	$\frac{100}{7.48} = 13.4$	MA1	
	Answer 13	A1	2
9	**(a)** values ordered 17 18 21 22 24 29 30 30 32	MA1	
	median = 24	A1	
	(b) range = 15	MA1	3
10	203 – (47 + 71)	M1	
	85 correctly positioned in chart If MO then 47 + 71 = 118 gets MA1	A1	2
11	**(a)** **(i)** 11.6 ± 0.2	A1	
	(ii) 102 ± 2	A1	
	(b) **(i)** *a* or *c*	A1	
	(ii) *b* or *d* or *e*	A1	
	(iii) *f* or *g*	A1	5
12	CB = (8 ± 0.2) cm or AC = (5.5 ± 0.2) cm	A1	
	AC = (5.5 ± 0.2) cm or CB = (8 ± 0.2) cm and right-angled triangle completed	A1	2
13	**(a)** 81	A1	
	(b) 1.6	A1	
	(c) 10.24	A1	3
14	**(a)** 0.413, 0.52, 0.7	A1	
	(b) **(i)** answer between –0.9 and –0.7	A1	
	(ii) correct indication; range 3.05 to 3.25	A1	3

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			AVAILABLE MARKS
15	$46.78 + 6 \times 39.5$	M1	
	£283.78	A1	2
	If MO then $6 \times 39.5 = 237$ gets MA1		
16	**(a)** $\frac{30}{360}$ oe	A1	
	(b) $360 - (90 + 81 + 30 + 24) = 135$	MA1	
	$\frac{135}{360} \times 120$	M1	
	$= 45$	A1	4
17	**(a)** (4, 3)	A1	
	(b) Both points plotted correctly	A1, A1	3
18	**(a)** $x = 18$	A1	
	(b) $y = 9$	A1	2
19	**(a)** five 3×3 squares in correct position	A1	
	sixth 3×3 square in correct position	A1	
	(b) $3 \times 3 \times 3$	M1	
	$27\,\text{cm}^3$	A1, A1 (units)	5
20	**(a)** $\frac{3}{4}$	A1	
	(b) $\frac{3}{100} \times 900$	M1	
	$= 27$	A1	3
21	**(a)** $2 \times 2 \times 3 \times 3 \times 3$ or 4×27	C1	
	$= 108$	A1	
	(b) $\frac{2}{10} = 0.2$ or $\frac{24}{120}$ or 20%		
	$\frac{3}{20} = 0.15$ or $\frac{18}{120}$ or 15%	C1	
	$\frac{7}{30} = 0.233$ or $\frac{28}{120}$ or 23%		
	$\frac{11}{40} = 0.275$ or $\frac{33}{120}$ or 27 or 28%		
	closest to $\frac{1}{4}$ is $\frac{7}{30}$	C1	4 QWC

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			AVAILABLE MARKS
22	**(a)** **(i)** 25 or 81	A1	
	(ii) 27	A1	
	(b) 64 (seen)	A1	
	Answer 63	A1	4
23	Pink ribbon 3.2 × £1.60 = £5.12	M1, A1	
	Remaining cost = £8.89 – £5.12 = £3.77	MA1	
	Cost of blue = £3.77/2.6 = £1.45	MA1	4
24	60.5 + 62.5 + 62.0 + 61.0 = 246	MA1	
	62 × 5 = 310	MA1	
	310 – 246 = 64	MA1	3
25	140° 80° 72° 68°	MA2	
	(If 1, 2 or 3 angles are correct award [1])		
	sectors with correct labels (tolerance of ±2° in drawing sectors)	A2	4
	If no angles are written in the table, then award [1] for each correctly drawn and labelled sector.		
26	**(a)** Graph A	A1	
	(b) Uses top part of graph only	A1	
	or Truncated scale or similar		2
27	360 – (110 + 85 + 85)	M1	
	80	A1	
	180 – 80 = 100	MA1	3
28	**(a)** 42 minutes	A1	
	(b) 1545	A1	
	(c) 1300	A1	3
29	**(a)** $2x - 3y$	A1, A1	
	(b) $7x = 18 + 3$	M1	
	$x = 3$	A1	4
		Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2013

Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

GMT11

TUESDAY 11 JUNE, 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 with a gel pen**.
Answer **all twenty-four** 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

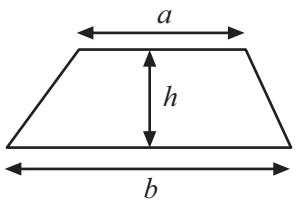
The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in **question 22**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

8165

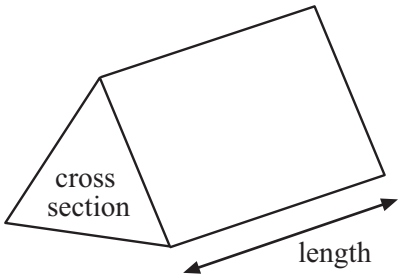
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Formula Sheet

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



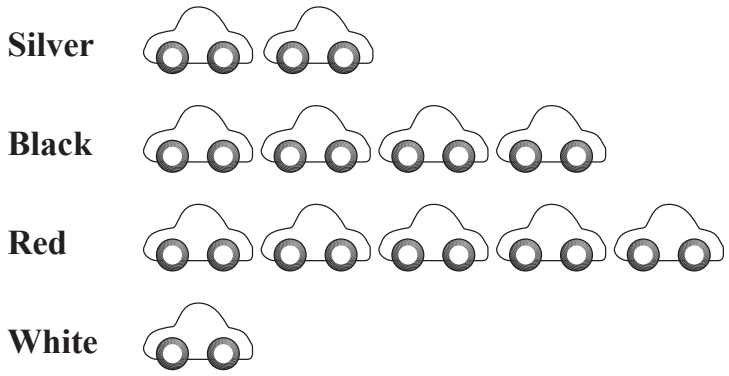
Volume of prism = area of cross section × length



8165

1 60 cars were sold in a garage. The first four rows of the pictogram are shown below.

Car Sales



(a) 20 red cars were sold.

Complete the key:  = _____ cars [1]

(b) How many black cars were sold?

Answer _____ [1]

(c) How many more red cars than silver cars were sold?

Answer _____ [1]

(d) Complete the row of the pictogram for blue cars. [2]

Examiner Only	
Marks	Remark
Total Question 1	

[Turn over

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24GMT1103

Examiner Only	
Marks	Remark

2 **(a)** Write nine thousand in figures.

Answer _____ [1]

(b) Circle three numbers below that round to nine thousand to the nearest thousand.

9473 90003 8977 899 9511 8495 8500 [3]

Total Question 2

3 Here are five digits. 5 1 8 7 3

(a) Use **all** of the digits to write the largest possible number.

Answer _____ [1]

(b) Use **four** of the digits to write an even number.

Answer _____ [1]

(c) Use **two** of the digits to write a multiple of 7

Answer _____ [1]

(d) Use **two** of the digits to write a square number.

Answer _____ [1]

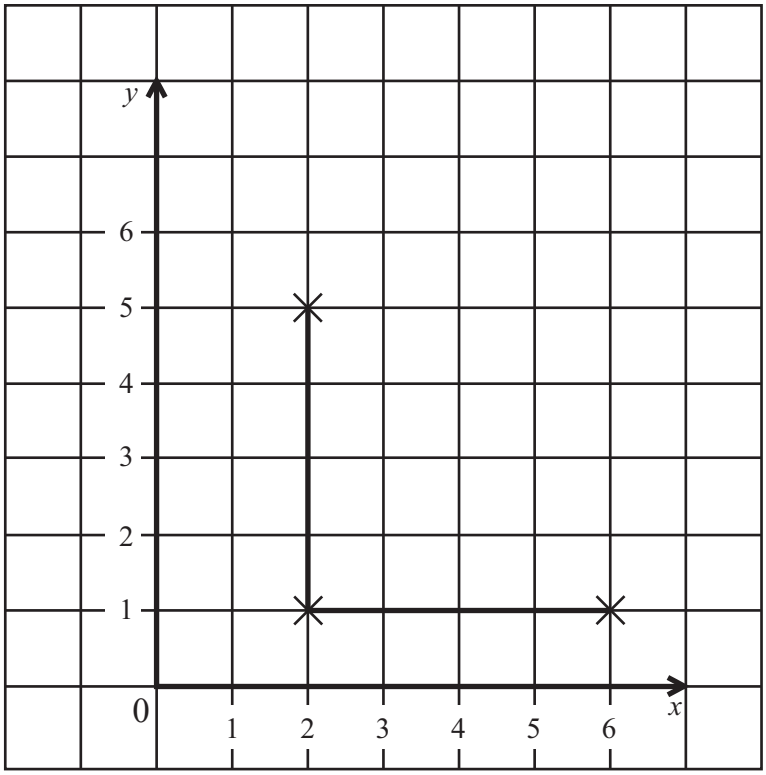
(e) Use **four** of the digits to write **two** numbers that add up to 70

Answer _____ and _____ [2]

Total Question 3

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4 **(a)** Phillip is plotting points to form a square.
He has plotted 3 points and drawn 2 sides.
Write down the co-ordinates of the 4th corner.



Answer (_____, _____) [2]

(b) The first 4 odd numbers are 1, 3, 5, 7

What number is 1 less than the 10th odd number?

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 4	

[Turn over

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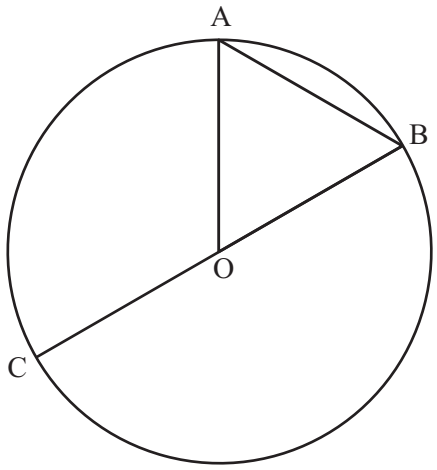
5 **(a)** Name a quadrilateral with

(i) two pairs of equal sides but no parallel sides,

Answer _____ [1]

(ii) only one pair of parallel sides.

Answer _____ [1]



O is the centre of the circle.

(b) Complete the sentences

(i) A, B and C are all points on the _____ of the circle. [1]

(ii) The line OB is a _____ of the circle. [1]

(iii) The straight line AB is a _____ of the circle. [1]

(c) Shade a segment of the circle. [1]

Examiner Only	
Marks	Remark
Total Question 5	

Examiner Only	
Marks	Remark

6 **(a)** Tom is reading a book which contains 96 pages.
He has read 25% of the book.
How many pages of the book has he read?

Answer _____ pages [2]

(b) Joan buys 9 scones costing 18p each.
What change should she receive from £5?

Answer £ _____ [2]

(c) Write this set of numbers in order of size.
Start with the smallest number.

6, –7, –11, 3, –5

Answer _____ , _____ , _____ , _____ , _____ [1]

(d) Write this set of numbers in order of size.
Start with the smallest number.

0.74, 0.089, 0.8, 0.85, 0.803

Answer _____ , _____ , _____ , _____ , _____ [1]

Total Question 6

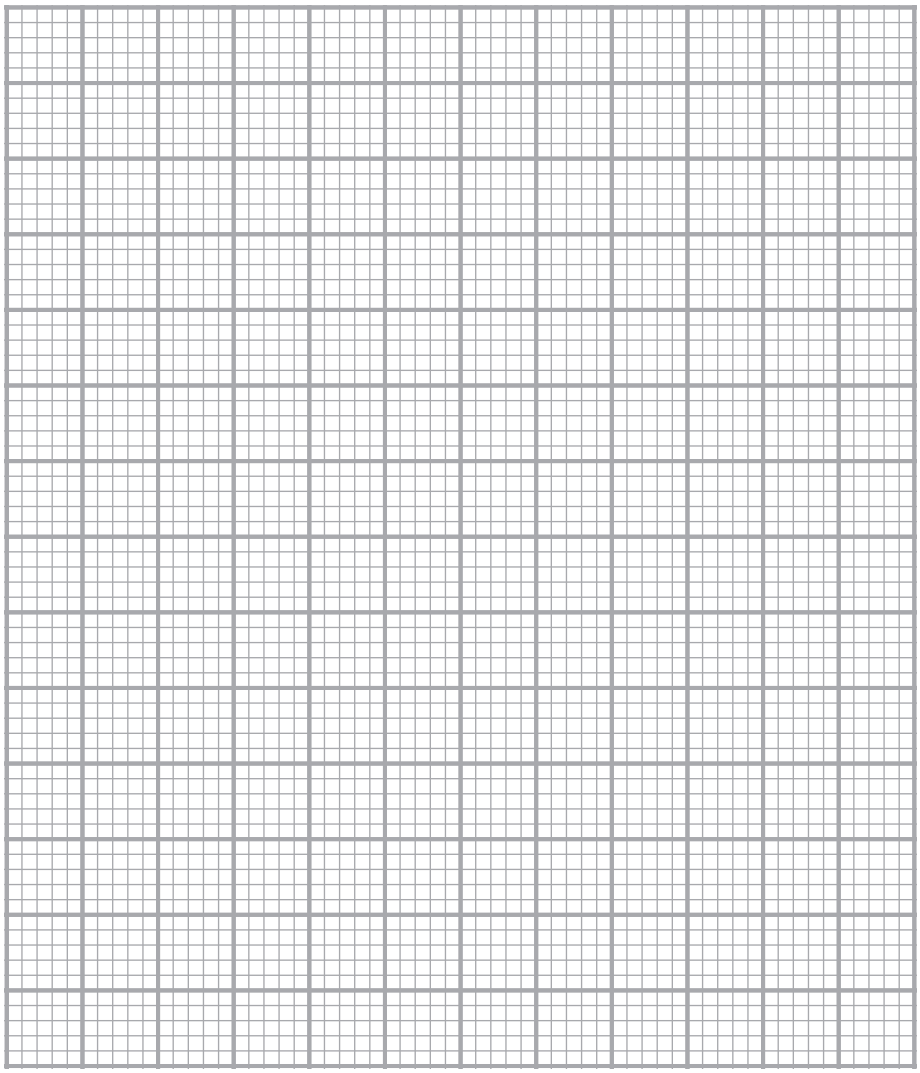
[Turn over

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24GMT1107

7 Vicky recorded the types of drinks sold from a drinks machine.

Type of Drink	Frequency
Coffee	7
Tea	13
Hot Chocolate	6
Cola	5
Orange	3

(a) On the graph paper, draw a bar chart to show this information.



[3]

Examiner Only

Marks	Remark

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(b) Which is the most popular type of drink?

Answer _____ [1]

(c) How many drinks did Vicky record altogether?

Answer _____ [1]

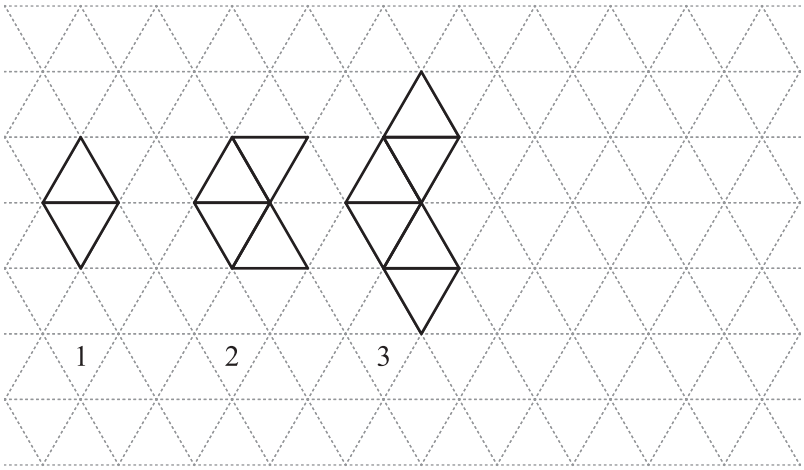
Examiner Only	
Marks	Remark
Total Question 7	

[Turn over

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8 Sticks are used to make this pattern of shapes.

Examiner Only	
Marks	Remark



(a) Draw the 4th pattern and complete the table for the number of sticks.

Pattern Number	1	2	3	4
Number of Sticks	5	9	13	

[2]

(b) What pattern do you notice about the numbers in the "Number of Sticks" row?

Answer _____ [1]

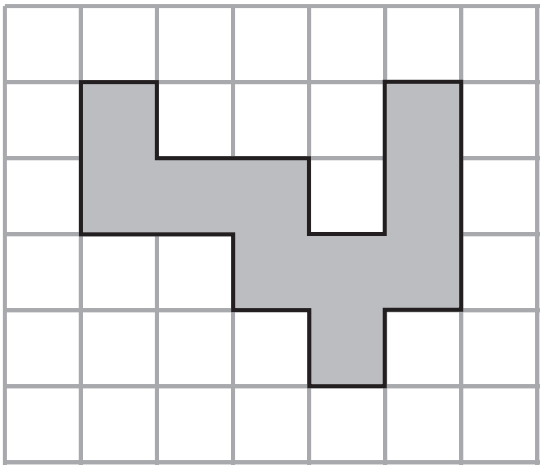
(c) Find the number of sticks in the 9th pattern.

Answer _____ [2]

Total Question 8

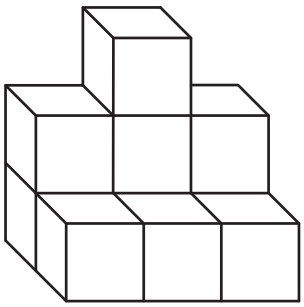
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9 **(a)** A shape is drawn on a centimetre square grid.



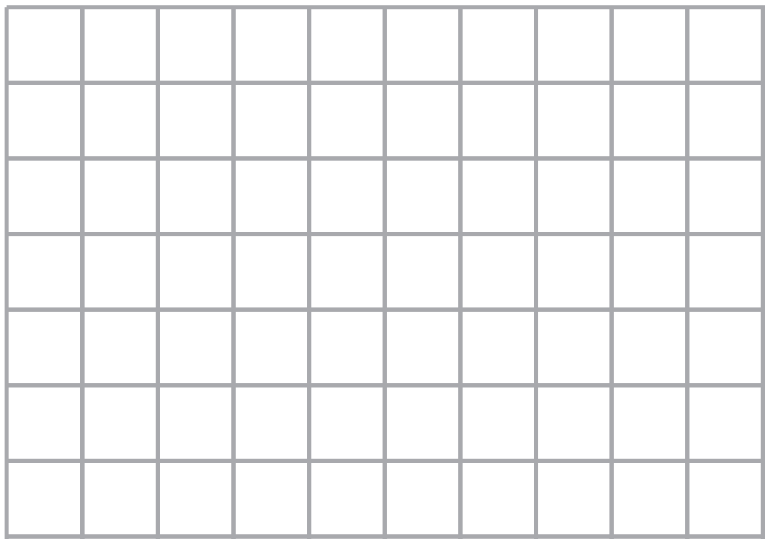
Work out the perimeter of the shape. Answer _____ cm [1]

(b) This symmetrical solid is made up of centimetre cubes.



(i) What is the volume of the solid? Answer _____ cm^3 [1]

(ii) On the grid below draw the front elevation of the solid.



[2]

Examiner Only	
Marks	Remark
Total Question 9	

24GMT1111
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10 (a) A large shopping mall consists of 380 shop units.

5% of the units are not occupied.

How many of the units are occupied?

Answer _____ shop units [3]

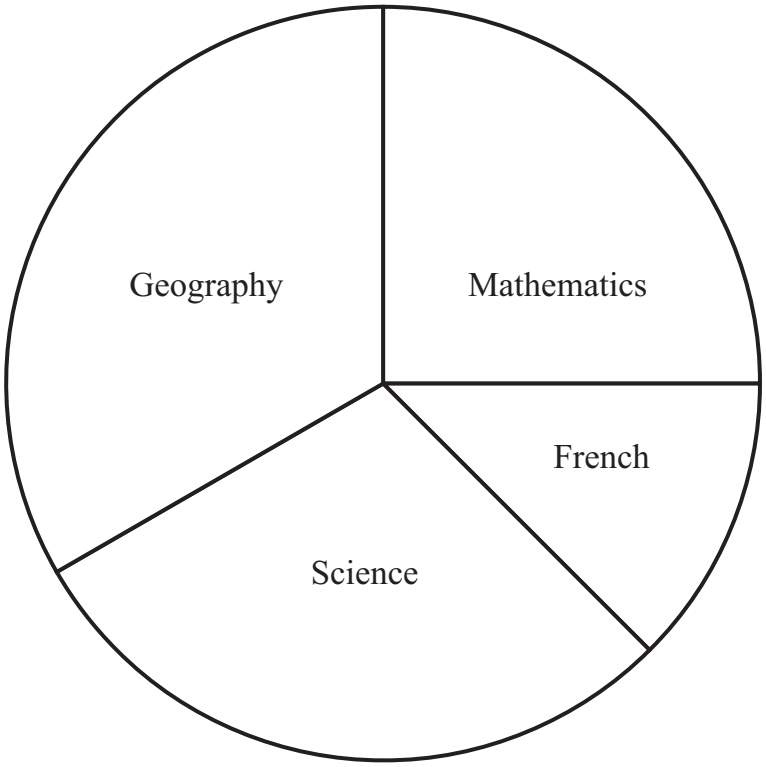
(b) Without using a calculator, multiply 274 by 29
Show your work.

[3]

Examiner Only	
Marks	Remark
Total Question 10	

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11 Nina spent two hours doing homework one evening.
The pie chart shows how the time was spread over four subjects.



(a) How much time was spent on Mathematics?

Answer _____ minutes [1]

(b) Estimate the amount of time spent on Geography.

Answer _____ minutes [1]

(c) Measure the angle for Science.

Answer _____° [1]

Examiner Only	
Marks	Remark
Total Question 11	

[Turn over

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12 The number of newspapers sold each hour in a small shop was recorded.

35 23 22 14 17 19 21 25

What was the mean number of newspapers sold?

Answer _____ [3]

Examiner Only	
Marks	Remark
Total Question 12	

13 A bookshelf is 2.5 m wide.
How many books each of width 18 mm can be stored on the shelf?

Answer _____ [3]

Total Question 13

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14 (a) The cash price for a table is £890

It can be bought on credit by paying a deposit of 10% of the cash price and 24 monthly payments of £39.50

How much more is paid for the table when it is bought on credit?

Answer £ _____ [4]

(b) (i) Explain what is meant by the cube of 5

Answer _____ [1]

(ii) Find the cube root of 64

Answer _____ [1]

(c) Work out the answer to the following, without using a calculator.
Show your work.

$$\frac{7}{12} - \frac{1}{6}$$

[2]

Examiner Only	
Marks	Remark
Total Question 14	

[Turn over

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15 **(a)** Calculate the volume of a cuboid of length 9 cm, width 8 cm and height 3 cm.

Answer _____ [3]

(b) A cube has the same volume as the cuboid. Calculate the length of the side of the cube.

Answer _____ cm [2]

Examiner Only	
Marks	Remark
Total Question 15	

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16 (a)

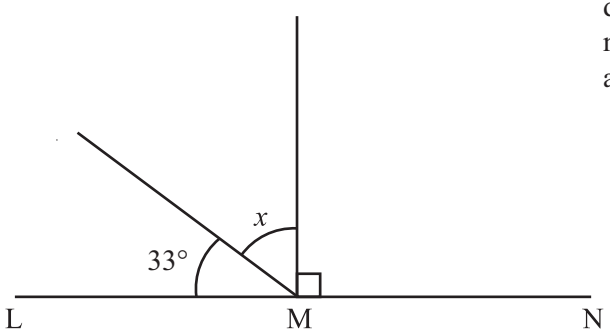


diagram
not drawn
accurately

In the diagram LMN is a straight line.

Calculate the size of the angle marked x.

Answer x = _____ ° [1]

(b)

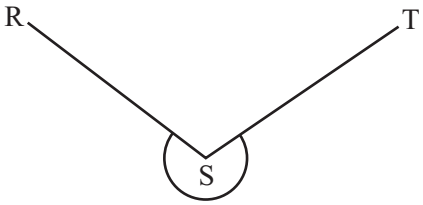


diagram
not drawn
accurately

(i) What type of angle is the one marked at S?

Answer _____ [1]

(ii) Angle RST = 103°.
Calculate the size of the marked angle.

Answer _____ ° [1]

Examiner Only	
Marks	Remark
Total Question 16	

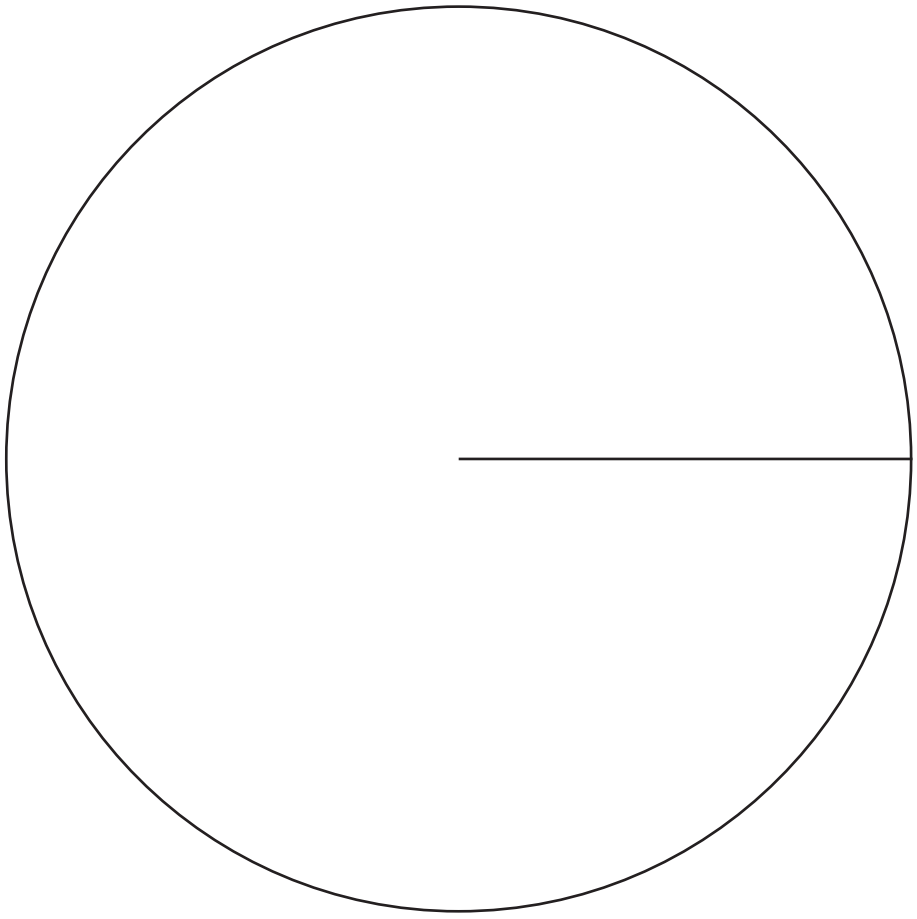
[Turn over

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17 The number of crisps sold in a tuck shop was recorded as follows.

Flavour	Frequency	Angle
Salt and Vinegar	10	
Ready Salted	8	
Smokey Bacon	17	
Cheese and Onion	25	

Draw a pie chart to illustrate this information.



[4]

Examiner Only	
Marks	Remark
Total Question 17	

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18 Which of the following fractions is nearest in size to $\frac{1}{4}$?

$\frac{6}{25}$ $\frac{13}{50}$ $\frac{49}{200}$ $\frac{97}{400}$

Show your work.

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 18	

19 Construct a triangle ABC where AB is 8 cm, AC is 5 cm and angle A is 55°

A ×

[2]

Total Question 19

[Turn over

20 Calculate $\frac{2}{0.5^2}$

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 20	

21

Timetable: Enniskillen Bus Centre – Omagh Bus Centre **Service 94** (Monday–Friday)								
Calling points:								
Enniskillen, Bus Centre	...	0655	0735	0740	0905	1130	1330	1545
Mullaghmeen, Village	...	...	...	...	...	...	...	...
Ballinamallard, Church	...	0710	...	0755	0920	...	1345	1605
Trillick, Warnock's Shop	...	0720	0802	0805	0930	...	1355	1615
Irvinestown, Bypass	...	...	...	...	...	1200	...	...
Dromore (Tyrone), Bypass	0727	0730	...	0815	0940	1220	1405	1625
Prices Shop, near Dromore	...	0738	...	0823	0948	1225	1413	1633
Omagh, Bus Centre	0752	0752	...	0850	1005	1240	1430	1655

(a) The 0740 bus from Enniskillen is running 8 minutes late.
At what time will it arrive in Ballinamallard?

Answer _____ [1]

(b) A girl needs to be in Omagh for an appointment at 1.15 pm. She leaves Enniskillen on the latest possible bus to be in time for her appointment.
How long will she have to spend in Omagh before the appointment?

Answer _____ minutes [2]

Total Question 21	

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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

22 The boys in Class 12A scored the following goals in a penalty competition:

6, 10, 9, 8, 7, 6, 7, 10, 9, 8

The 8 boys in Class 12B scored a total of 72 goals.

Which class did better in the competition?
Explain your answer.

Answer _____

because _____

_____ [4]

Total Question 22

23 In a greengrocer's, cooking apples cost £2.65 per kg.
Mary buys 0.6 kg of cooking apples.
She also buys 0.4 kg of tomatoes.
At the checkout her bill for both items comes to £2.83
Work out the price **per kg** for the tomatoes.

Answer £ _____ [4]

Total Question 23

[Turn over

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24 **(a)** Simplify

$5y + 3y - 4y$

Answer _____ [1]

(b) Solve

(i) $\frac{x}{3} = 9$

Answer $x =$ _____ [1]

(ii) $\frac{30}{x} = 6$

Answer $x =$ _____ [1]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark
Total Question 24	

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For Examiner's use only	
Question Number	**Marks**
1	
2	
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24	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2013

Mathematics

Unit T1
Foundation Tier

[GMT11]

TUESDAY 11 JUNE

9.15 a.m. – 10.45 a.m.

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right-hand column andthey are prefixed by the letters **M, A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.
A indicates marks for accurate working, whether in calculation, readings from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded i.e. where the method is not correct no marks can be given.
MA indicates marks for combined method and accurate working.
C indicates marks for quality of written communication.
oe indicates "or equivalent" i.e. where a solution can be expressed in an alternative correct form, e.g. $\frac{1}{4} = 0.25$
ft indicates "follow through". See explanation below.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

(xi) Incorrect money notation will generally lose one mark but will be penalised only once per paper.

(xii) In general, a tolerance of ±2° is allowed in drawing angles, and ±2 mm in measuring length.

(xiii) In algebra, if further inaccurate work is done to a correct answer, some marks may be lost.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

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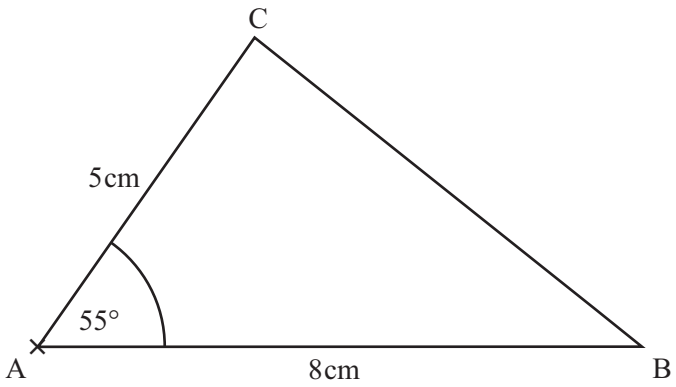
				AVAILABLE MARKS
1	**(a)**	4	A1	
	(b)	16	A1	
	(c)	12	A1	
	(d)	3 cars identified 3 cars drawn	M1 A1	5
2	**(a)**	9000	A1	
	(b)	9473, 8977, 8500	A1, A1, A1	4
3	**(a)**	87531	A1	
	(b)	***8	A1	
	(c)	35	A1	
	(d)	81	A1	
	(e)	17, 53 **or** 57, 13	A2	6
4	**(a)**	(6, 5)	A1, A1	
	(b)	10th odd number is 19 1 less than 10th is 18	A1 A1	4
5	**(a)**	**(i)** kite	A1	
		(ii) trapezium	A1	
	(b)	**(i)** circumference	A1	
		(ii) radius	A1	
		(iii) chord	A1	
	(c)	Segment correctly shaded	A1	6
6	**(a)**	96 ÷ 4 24	MA1 A1	
	(b)	162p **or** £1.62 £3.38	MA1 A1	
	(c)	–11, –7, –5, 3, 6	A1	
	(d)	0.089, 0.74, 0.8, 0.803, 0.85	A1	6

				AVAILABLE MARKS
7	**(a)**	scales	A1	
		correct heights (allow A1 for 3 correct)	A2	
	(b)	tea	A1	
	(c)	34	A1	5
8	**(a)**	Suitable pattern drawn	A1	
		Number of sticks = 17	A1	
	(b)	They are increasing by 4 each time	A1	
	(c)	$4 \times 9 + 1 =$ **or** $5 + 4 \times 8 =$	M1	
		37	A1	5
9	**(a)**	22	MA1	
	(b)	**(i)** 10 accept "10 or 11"	MA1	
		(ii) front elevation (correct diagram using 2 cm × 2 cm squares award A1)	A2	4
10	**(a)**	0.95 **or** $380 \times 0.05 = 19$	MA1	
		380×0.95 **or** $380 - 19$	M1	
		361 **or** 361	A1	
	(b)	2466	A1	
		5480	A1	
		7946	A1	
		Alternatively, 5800 + 2030 + 116 (A1 for two correct)	A2	
		7946	A1	6
11	**(a)**	30	A1	
	(b)	40 ± 5	A1	
	(c)	105 ± 2	A1	3
12		Candidate Total ÷ 8	M1	
		176 ÷ 8	A1	
		22	A1	3
13		$250 \div 1.8$ **or** $\frac{2.5}{0.018}$ **or** $\frac{2500}{18}$	MA1	
		= 138.888 ...	A1	
		Ans 138	A1	3

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				AVAILABLE MARKS
14	**(a)**	£89	A1	
		39.50×24	MA1	
		948	A1	
		$(948 + 89) - 890 = 147$	MA1	
	(b)	**(i)** $5 \times 5 \times 5$	A1	
		(ii) 4	A1	
	(c)	$\frac{7}{12} - \frac{2}{12}$ **or** $\frac{42}{72} - \frac{12}{72}$ **oe**	MA1	
		$\frac{5}{12}$ **or** $\frac{30}{72}$ **oe**	A1	8
15	**(a)**	$8 \times 9 \times 3$	M1	
		$= 216\ \text{cm}^3$	A1, A1(units)	
	(b)	$\sqrt[3]{216}$	M1	
		$= 6$	A1	5
16	**(a)**	57°	A1	
	(b)	**(i)** Reflex	A1	
		(ii) 257	A1	3
17	see overlay			
	60°, 48°, 102°, 150°		A2	
	(award [1] for evidence of 6)			
	all sectors correct and labelled (allow A1 for 2 correct and labelled)		A2	
	Alternatively, with no work shown,			
	4 sectors correct and labelled A4			
	3 sectors correct and labelled A3			
	2 sectors correct and labelled A2			
	1 sector correct and labelled A1			
	Deduct only 1 from total if no labels			4
18	0.24, 0.26, 0.245, 0.2425 (or % or fractions)		MA1	
	$\frac{49}{200}$		A1	2

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			AVAILABLE MARKS
19			
	Correct triangle (overlay) (55° and one correct length gets A1)	MA2	2
20	8 ($2 \div \frac{1}{4}$ **or** $2 \div 0.25$ seen in work gets A1)	A2	2
21	**(a)** 0803	A1	
	(b) indicates 1130 bus 1.15 pm – 12.40 pm = 35 minutes	MA1 MA1	3
22	12 B because 12 A's mean = $80 \div 10 = 8$ 12 B's mean = $72 \div 8 = 9$	C1 C1, C1 C1	QWC 4
23	2.65×0.6 (=1.59) 2.83 – 1.59 =1.24 $1.24 \div 0.4$ £3.10	MA1 MA1 MA1 A1	4
24	**(a)** $4y$	A1	
	(b) **(i)** 27	A1	
	(ii) 5	A1	3
		Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

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.

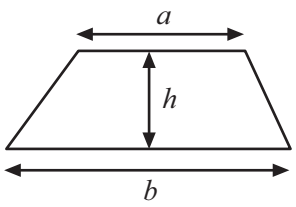
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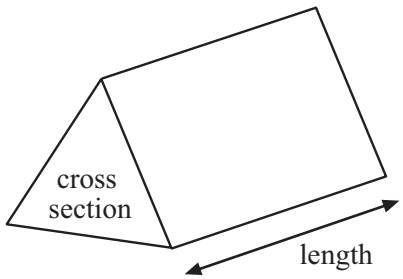
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Formula Sheet

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

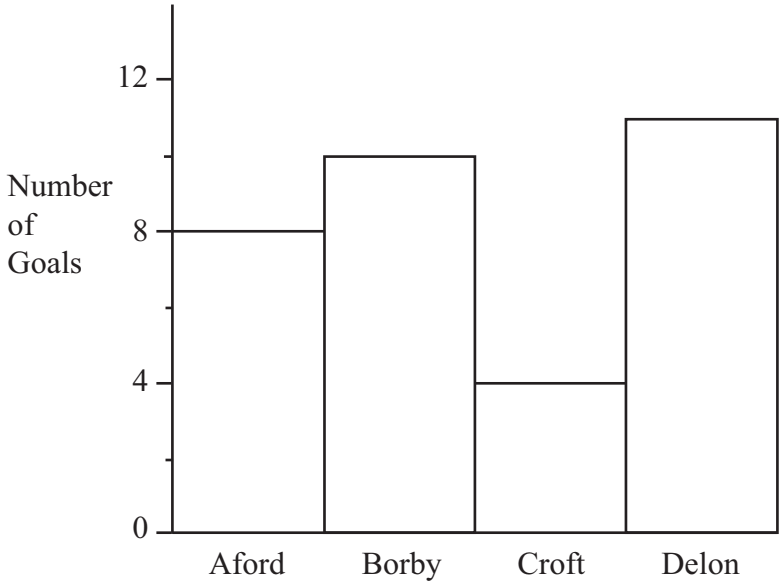


Volume of prism = area of cross section × length



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?

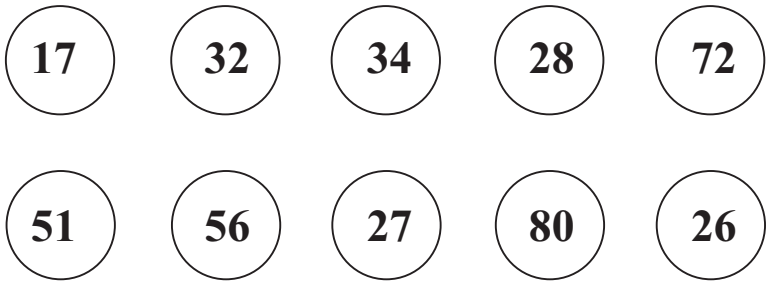
Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 1	

[Turn over

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Examiner Only	
Marks	Remark



(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]

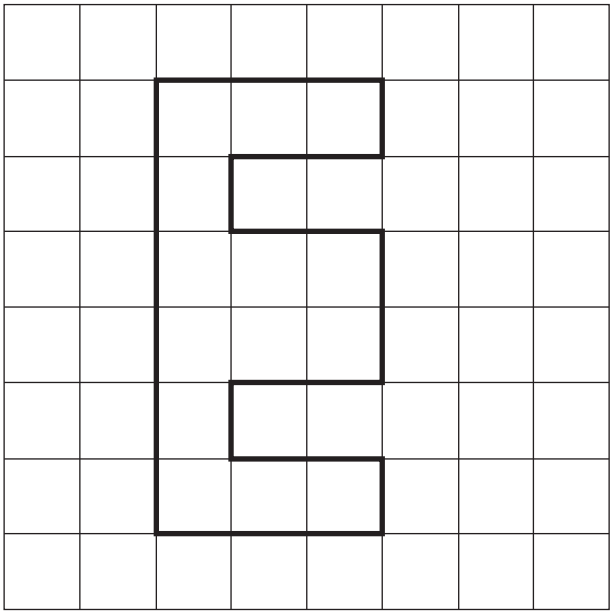
(b) What is the largest number you can get by multiplying any two numbers in the circles?

Answer _____ [2]

Total Question 2

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



Calculate:

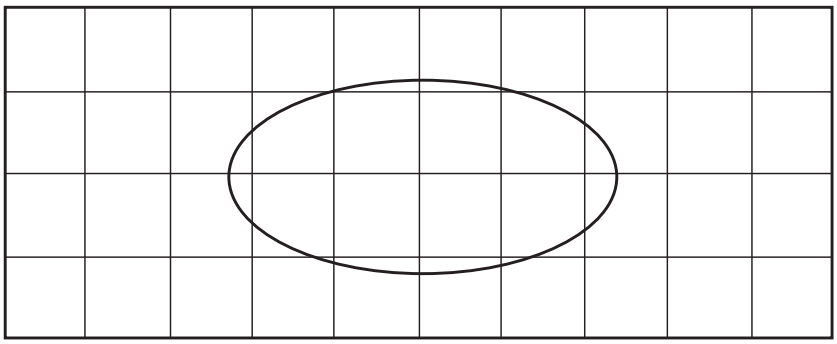
(a) the area of the shape.

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.

Answer _____ cm^2 [2]

Examiner Only	
Marks	Remark
Total Question 3	

[Turn over

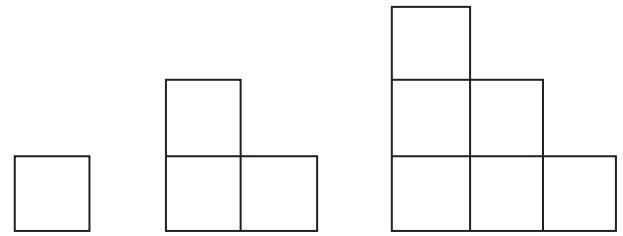
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4 **(a)** Find the **next** term in the sequence

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?

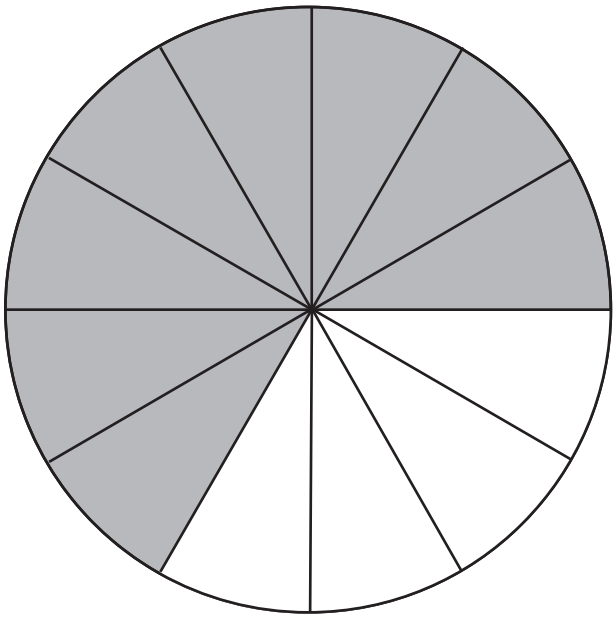
Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 4	

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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]

Examiner Only	
Marks	Remark
Total Question 5	

[Turn over

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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]

Examiner Only	
Marks	Remark
Total Question 6	

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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.

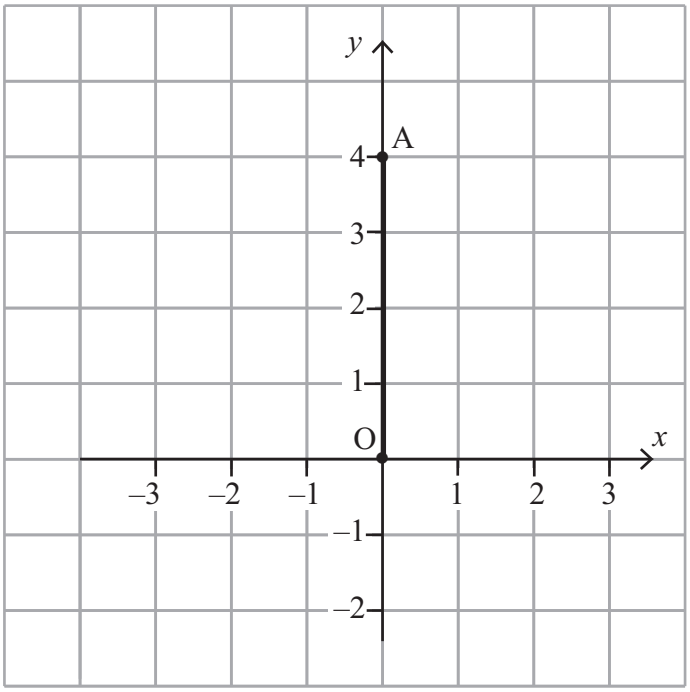
[1]

Total Question 8

[Turn over

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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]

Examiner Only	
Marks	Remark
Total Question 9	

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

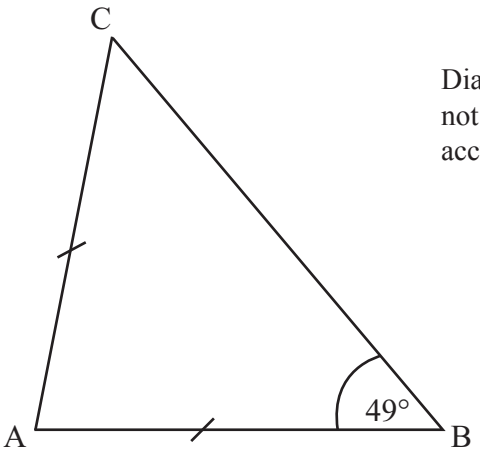


Diagram not drawn accurately

(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]

Examiner Only	
Marks	Remark
Total Question 10	

[Turn over

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

Examiner Only	
Marks	Remark

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	

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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?

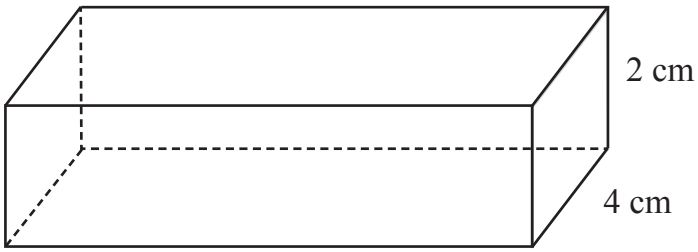
Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 12	

[Turn over

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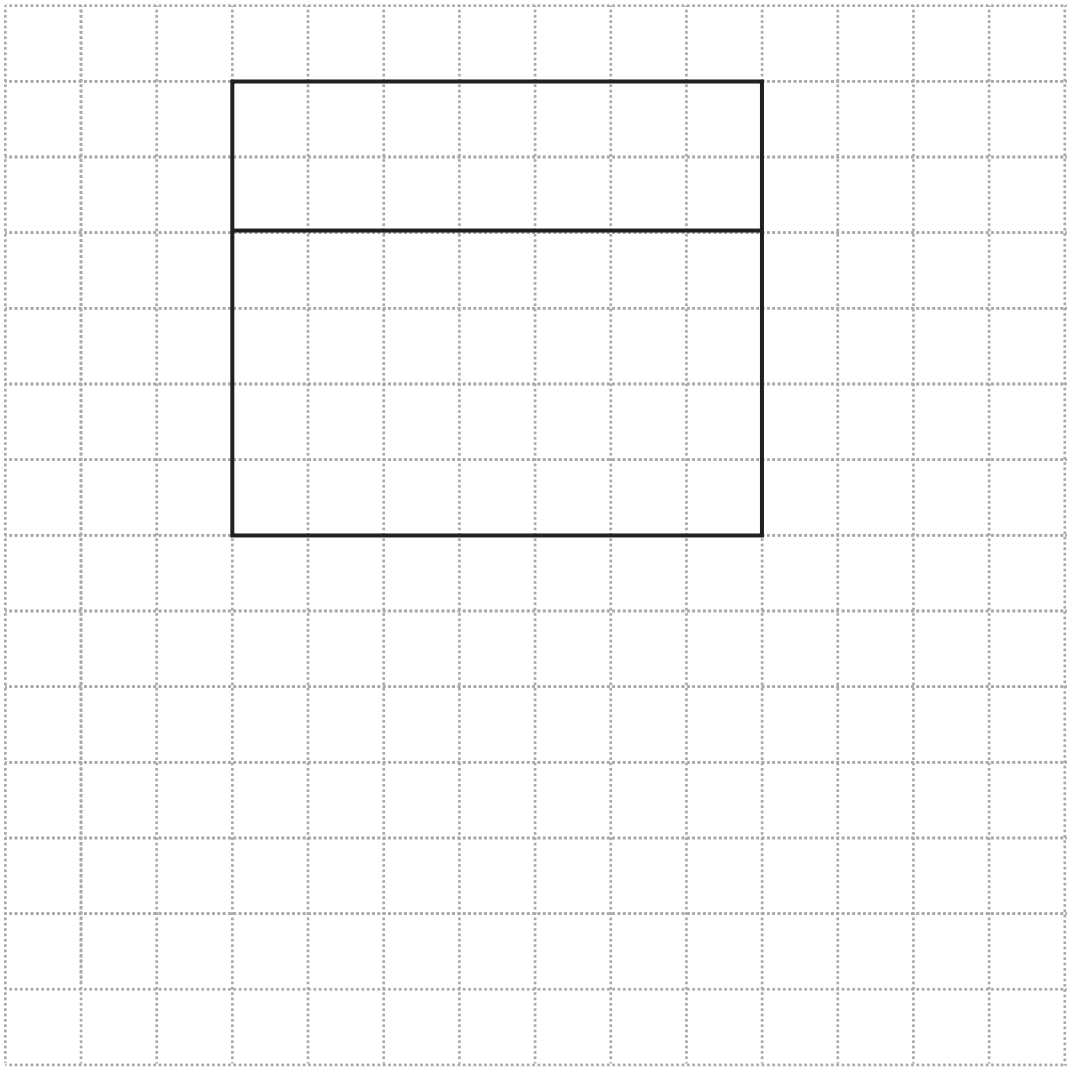
13 The diagram shows a cuboid.



(a) Work out the volume of the cuboid.

Answer _____ cm^3 [2]

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



[3]

Examiner Only	
Marks	Remark
Total Question 13	

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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]

Examiner Only	
Marks	Remark
Total Question 14	

[Turn over

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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]

Examiner Only	
Marks	Remark
Total Question 15	

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16

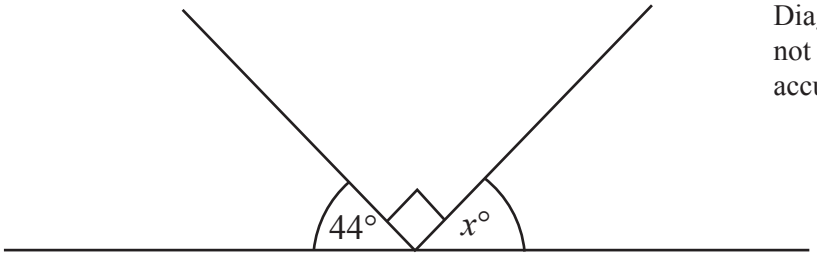


Diagram not drawn accurately

(a) Work out the value of x.

Answer $x =$ _____ [1]

(b) Give a reason for your answer.

_____

_____ [1]

Examiner Only	
Marks	Remark
Total Question 16	

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



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Answer £ _____ [3]

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

Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 17	

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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

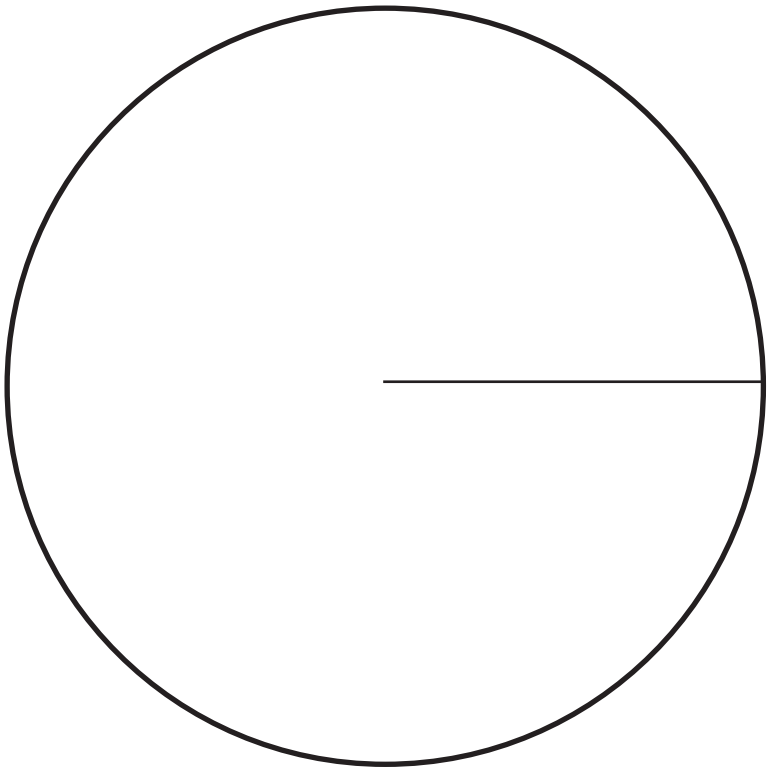
[Turn over

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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]

Examiner Only	
Marks	Remark
Total Question 20	

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



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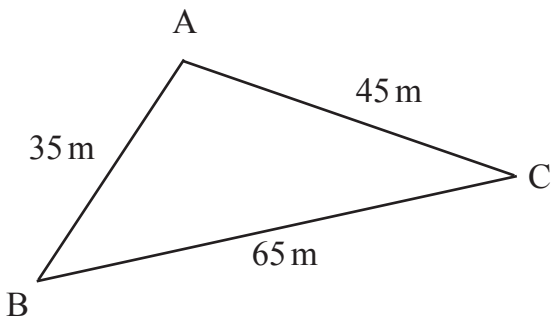
A TV costs £265
Sam pays a deposit of £85 for this TV.
He then pays £15 each month.
How many complete months will it take before he has paid for the TV?
Explain your working clearly, using words and numbers.

Answer _____ months [3]

Examiner Only	
Marks	Remark
Total Question 21	

[Turn over

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



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.

× Portadown

Scale: 1 cm to 3 km

× Armagh

Answer _____ km [2]

Examiner Only	
Marks	Remark
Total Question 22	

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

Answer _____ [1]

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

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 23	

[Turn over

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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]

Examiner Only	
Marks	Remark
Total Question 24	

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

Answer _____ [2]

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

Answer y = _____ [1]

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

Answer p = _____ [2]

Examiner Only	
Marks	Remark
Total Question 25	

THIS IS THE END OF THE QUESTION PAPER

DO NOT WRITE ON THIS PAGE

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
January 2013

Mathematics

Unit T1
Foundation Tier

[GMT11]

FRIDAY 11 JANUARY

9.15 a.m.–10.45 a.m.

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

C indicates marks for quality of written communication.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

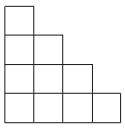
(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

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				AVAILABLE MARKS
1	**(a)**	Croft	A1	
	(b)	(10 – 8 =) 2	MA1	
	(c)	8 + 10 + 4 + 11 = 33	MA1 A1	4
2	**(a)**	**(i)** 26, 34 or 28, 32	A1	
		(ii) 32, 72	A1	
		(iii) 28 or 56	A1	
		(iv) 27	A1	
	(b)	80 × 72 5760	MA1 A1	6
3	**(a)**	14	A1	
	(b)	26	A1	
	(c)	Answer in the range 7.5 to 8.5 Answer in the range 7 to 9 allow A1	A2	4
4	**(a)**	$\frac{1}{10}$ or 0.1 A1		
	(b)	**(i)** Stage 4 drawn (10 squares) 	MA1	
		(ii) 10 and 15	A1 (both correct)	
		(iii) Triangular (numbers)	A1	4
5	**(a)**	$\frac{8}{12}$	MA1	
		$\frac{2}{3}$	A1	
	(b)	60%	A1	
	(c)	6800	A1	
	(d)	51074	A1	
	(e)	0.35	A1	6

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				AVAILABLE MARKS
6	**(a)**	1	A1	
	(b)	(6 – 1 =) 5	A1	
	(c)	(9 + 4 + 7 + 5 + 1 + 3 =) 29	A1	3
7	**(a)**	3.5 × 32p = 112p or £1.12 3 × 1.74 = £5.22 or 522p £6.34 (f.t. for final mark for correct method only)	MA1 MA1 A1	
	(b)	£3.66 (f.t. for 10 – answer in **(a)**)	MA1	4
8	**(a)**	9.5 (±0.2) cm or 95 (±2) mm A1 for correct value without units or for less accurate answer with correct units in range (9–10 cm) or (90–100 mm) otherwise AO.	A2	
	(b)	Distance from S or T to mid-point is between 45 and 49 mm	A1	3
9	**(a)**	(0, 4)	A1	
	(b)	Any set of co-ordinates with a **negative** y coordinate [apart from (0, $-y$)]	A1	2
10	**(a)**	acute	A1	
	(b)	isosceles	A1	
	(c)	49	A1	
	(d)	180 – 49 × 2 f.t. for 180 – 49 – answer **(c)** 82 f.t. for 131 – answer **(c)**	MA1 A1	5
11	**(a)**	34	A1	
	(b)	Disford	A1	
	(c)	Disford and Follony	A1	
	(d)	26 + 18 = 44	MA1 A1	5
12	**(a)**	8000 ÷ 72 or 111.111 → 111	MA1, A1	
	(b)	8	A1	3

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				AVAILABLE MARKS
13	**(a)**	$4 \times 7 \times 2$	MA1	
		56	A1	
	(b)	All 4 rectangles drawn in correct position A2 for 2 different rectangles drawn in correct position A1 for only 1 rectangle drawn in correct position	A3	5
14	**(a)**	18, 19, 24, 26, 27, 30, 31, 33, 35, 37	M1	
		median 28.5	MA1	
	(b)	Total = 280	M1	
		$280 \div 10$ f.t. for Total ÷ 10	MA1	
		28 f.t. for Total ÷ 10 calculated correctly	A1	5
15	**(a)**	**(i)** 15 Accept –15	A1	
		(ii) 9 Accept –9	A1	
	(b)	**(i)** 4	A1	
		(ii) –5	A1	4
16	**(a)**	46	A1	
	(b)	angles on a straight line add up to 180°	A1	2
17	**(a)**	$\frac{8}{100} \times 18\,000 = 1440$	M1, A1	
		$= 120$ f.t. for final mark only if M1 awarded	MA1	
	(b)	17	A1	4
18		$50 - 3k$ Allow A1 for $50 - k - k - k$ or $50 - (k + k + k)$	A2 (allow A1 for $3k$ seen)	2
19	**(a)**	2.7	A1	
	(b)	0.6899, 0.698, 0.73	A1	
	(c)	47, 53	A1, A1	
	(d)	5	A1	5

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								AVAILABLE MARKS
20		Terns	Waders	Geese	Ducks	Swans		
	Angles	150°	60°	90°	30°	30°	MA2	
	Sectors	Correct and labelled					MA2	4
21	265 – 85 = 180 still to pay						C1	
	£180 at £15 per month							
	So 180 ÷ 15 gives 12 months						C1, A1	3
22	**(a)** See template							
	triangle drawn with sides of 7 cm, 9 cm and 13 cm						A3	
	Award A1 for 7 cm, 9 cm and 13 cm on all seen							
	(b) 6 cm (±0.2)						MA1	
	18 km (±0.6) f.t. for candidate's measurements × 3						MA1	5
23	**(a)** (9 × 512 =)4608						A1	
	(b) 14.66 (allow A1 for either 12.96 or 1.7 seen)						A2	3
24	**(a)** (38 – 12 =) 26						A1	
	(b) 19						A1	
	(c) No						A1	4
	Men's median (23) > women's median (19)						C1	
	or Total time for men (428) > Total time for women (339)							
	or Men's mean (28.53) > Women's mean (22.6)							
25	**(a)** $12t - 4$						A1, A1	
	(b) $y = 32$						MA1	
	(c) $3p = 18$						MA1	
	$p = 6$						MA1	5
	S.C. $3p = 14$ leading to $p = \frac{14}{3}$ or $4\frac{2}{3}$ or 4.67 or 4.66 award MA1							
							Total	**100**

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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2012

Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

GMT11

WEDNESDAY 6 JUNE 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.
Write your answers in the spaces provided in this question paper.
Complete in blue or black ink only. **Do not write in pencil or with a gel pen.**
Answer **all twenty-four** 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

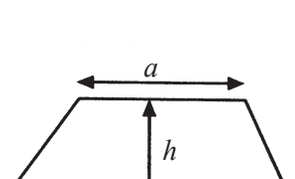
The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in **questions 11, 21 and 22**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is overleaf.

7418

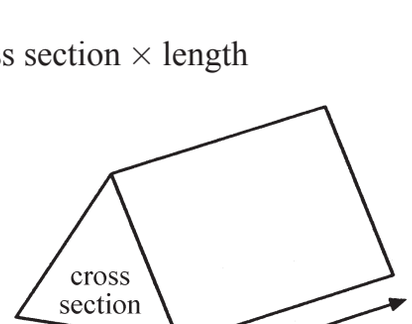
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Formula Sheet

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

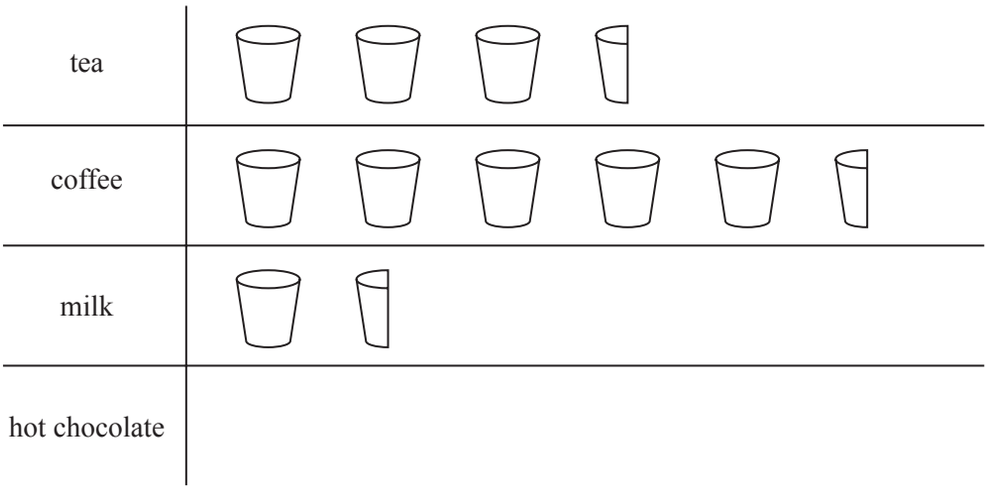


Volume of prism = area of cross section × length



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1 The pictogram shows the number of drinks sold in a small cafe one Saturday.



Key: = 10 cups

(a) How many cups of tea were sold?

Answer _____ [1]

(b) **In total there were 150 drinks sold.**

(i) Calculate the number of cups of hot chocolate sold.

Answer _____ [1]

(ii) Complete the pictogram to show the number of cups of hot chocolate sold. [1]

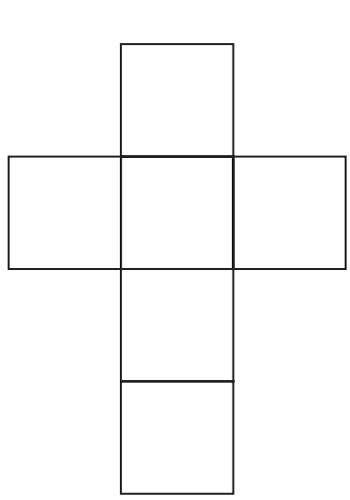
Examiner Only	
Marks	Remark
Total Question 1	

[Turn over

2 **(a)** The following are nets of 3D shapes.

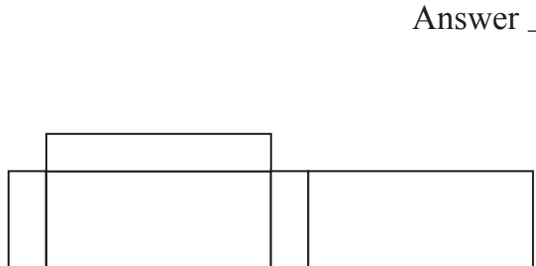
Write down the names of the 3D shapes.

(i)



Answer _____ [1]

(ii)



Answer _____ [1]

(b) When the net in part **(a)(ii)** is folded to make a 3D shape, how many vertices will it have?

Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 2	

Examiner Only	
Marks	Remark

3 **(a)** Write down the largest number which can be made with the digits

4 9 6 1

Answer _____ [1]

(b) Write

(i) 5389 to the nearest hundred,

Answer _____ [1]

(ii) 36% as a decimal,

Answer _____ [1]

(iii) 28.49 to the nearest whole number,

Answer _____ [1]

(iv) 0.47 as a fraction.

Answer _____ [1]

(c) Which of the following are multiples of 16? Circle your answers.

8 62 3 32 4 16

[2]

(d) Jill's age is the smallest number which has 2, 3 and 5 as factors. What age is Jill?

Answer _____ [1]

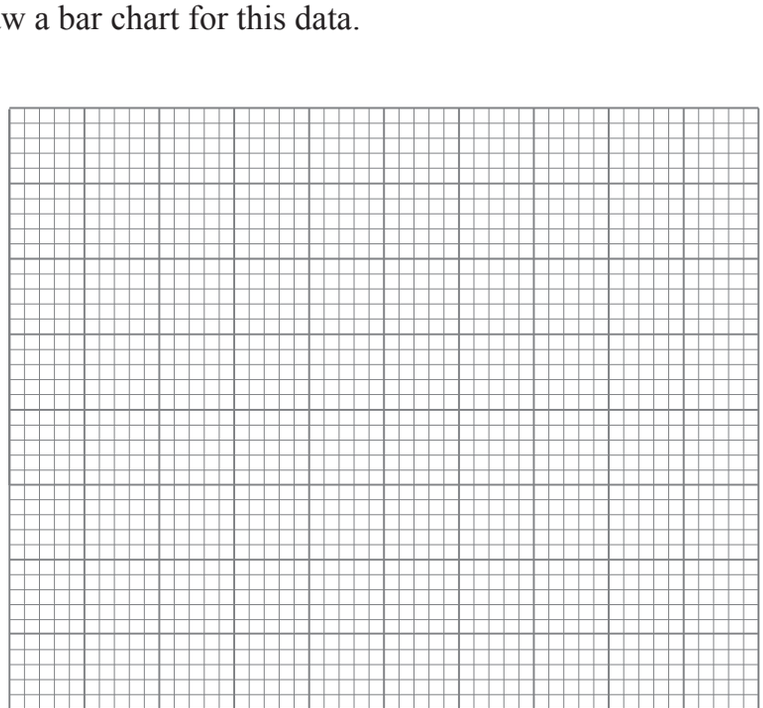
Total Question 3

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4 **(a)** Twenty children were asked how many pets they had.

Number of pets	Frequency
0	3
1	8
2	5
3	3
4	1

(i) Draw a bar chart for this data. [3]



(ii) What number of pets is the mode?

Answer _____ [1]

Examiner Only	
Marks	Remark

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(b) Forty basketball players wrote down how many points they had scored all season.

8	10	42	54	86	95	61	16	10	22
28	52	73	41	22	82	64	62	32	77
28	70	52	48	54	18	22	66	56	51
44	38	39	19	71	81	70	82	70	90

Complete the frequency table below.

Number of points	Tally (if required)	Frequency
0–20		
21–40		
41–60		
61–80		
81–100		

[2]

Examiner Only	
Marks	Remark
Total Question 4	

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5 **(a)** How many golf balls, costing £2.99 each, can Michael buy for £20?

Answer _____ [2]

(b) His friend John buys 4 of these golf balls. How much change does he get from £20?

Answer £_____ [2]

Examiner Only	
Marks	Remark
Total Question 5	

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Examiner Only	
Marks	Remark

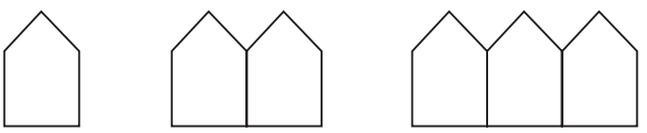
6 **(a)** Find the next two terms in this sequence and explain the rule you used:

2, 10, 50, 250, _____, _____ .

Rule _____ [2]

(b) Aine uses matches to make pentagons.

Shape 1 Shape 2 Shape 3 Shape 4



(i) Draw the fourth shape in this pattern. [1]

(ii) Complete the table below.

Shape	1	2	3	4	5
Number of matches	5	9	13	__	__

[1]

Total Question 6

[Turn over

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Examiner Only	
Marks	Remark

7 **(a)** Which metric unit is the most suitable to measure

(i) the distance from Belfast to Dublin,

Answer _____ [1]

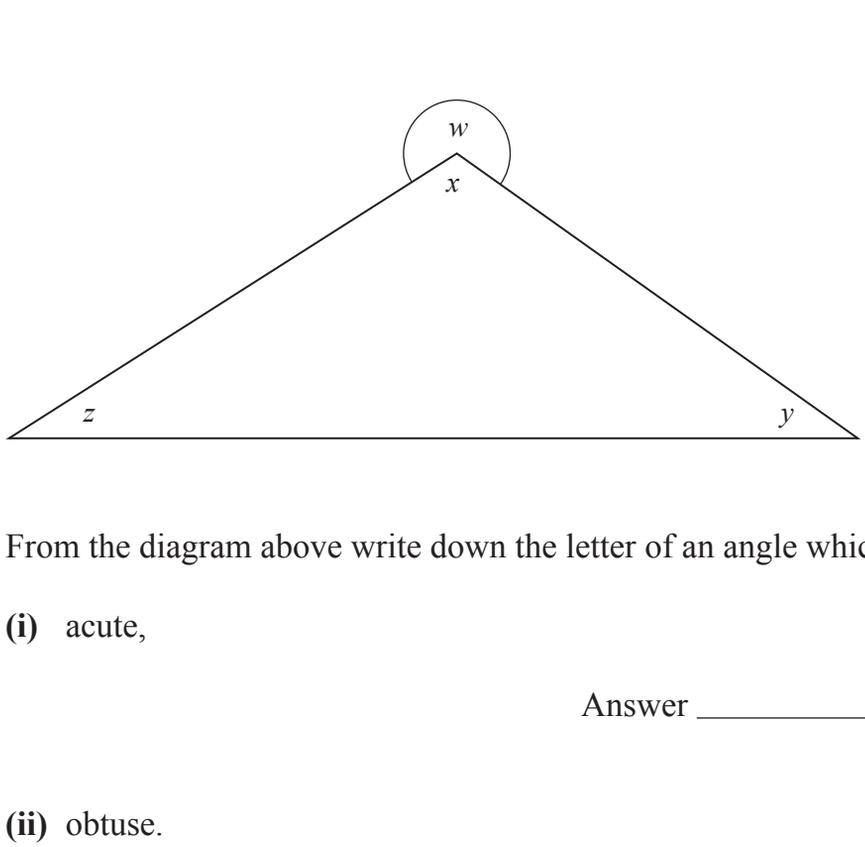
(ii) the weight of an onion,

Answer _____ [1]

(iii) the capacity of a large carton of milk?

Answer _____ [1]

(b)



From the diagram above write down the letter of an angle which is

(i) acute,

Answer _____ [1]

(ii) obtuse.

Answer _____ [1]

Total Question 7

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8

Examiner Only	
Marks	Remark

15 17 10 18 49 12 38 120 125

From the numbers above write down

(a) a square number,

Answer _____ [1]

(b) the factors of 60,

Answer _____ [2]

(c) a cube number,

Answer _____ [1]

(d) a prime number.

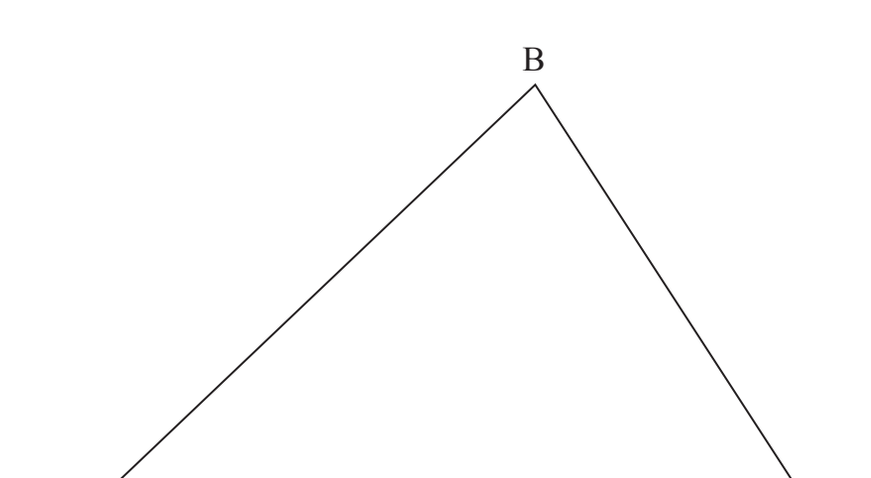
Answer _____ [1]

Total Question 8	

9 **(a)** Mark the mid-point of the line VW with an X.

V _____ W [1]

(b)



In the triangle ABC measure

(i) the length of AC,

Answer _____ cm [1]

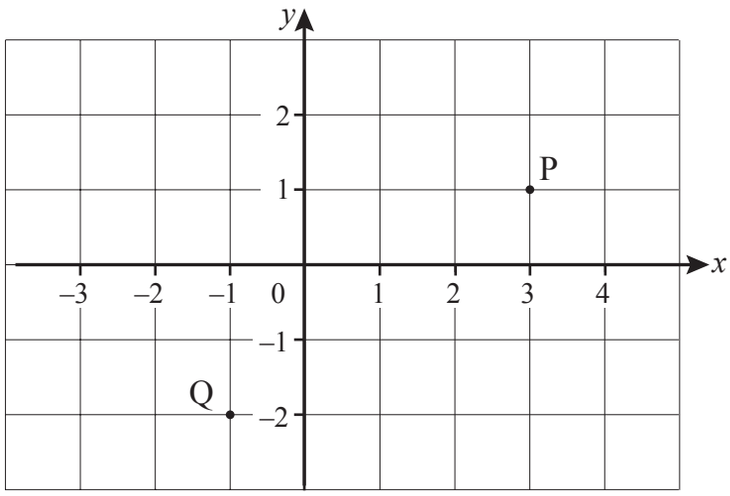
(ii) the size of angle BAC.

Answer _____ ° [1]

Examiner Only	
Marks	Remark
Total Question 9	

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10



(a) Write down the co-ordinates of the points P and Q.

P (____, ____), Q (____, ____) [2]

(b) Plot the point R (0, 2) on the diagram. [1]

Examiner Only	
Marks	Remark
Total Question 10	

[Turn over

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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

11 The scores for a class of 12 pupils in a music test were recorded

17 37 28 17 17 24 17 26 17 37 35 34

(a) Calculate the mean score.

Answer _____ [3]

(b) Find the median score.

Answer _____ [2]

(c) Which of the three averages "mean, mode or median" would be unsuitable to use as the class average? Explain your answer.

_____ because _____

_____

_____ [2]

Total Question 11	

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12 **(a)** Pete thinks of two numbers. The **sum** of the numbers is 8. The **product** of the numbers is 15. What are Pete's two numbers?

Answer _____ and _____ [2]

(b) The table shows temperatures at 8 am and 8 pm in different parts of the world.

	Temperature at 8 am in °C	**Temperature at 8 pm in °C**
Dubai	18	14
London	8	−2
Alaska	−6	−13
Sydney	26	20

(i) What is the difference between the highest and lowest temperatures recorded?

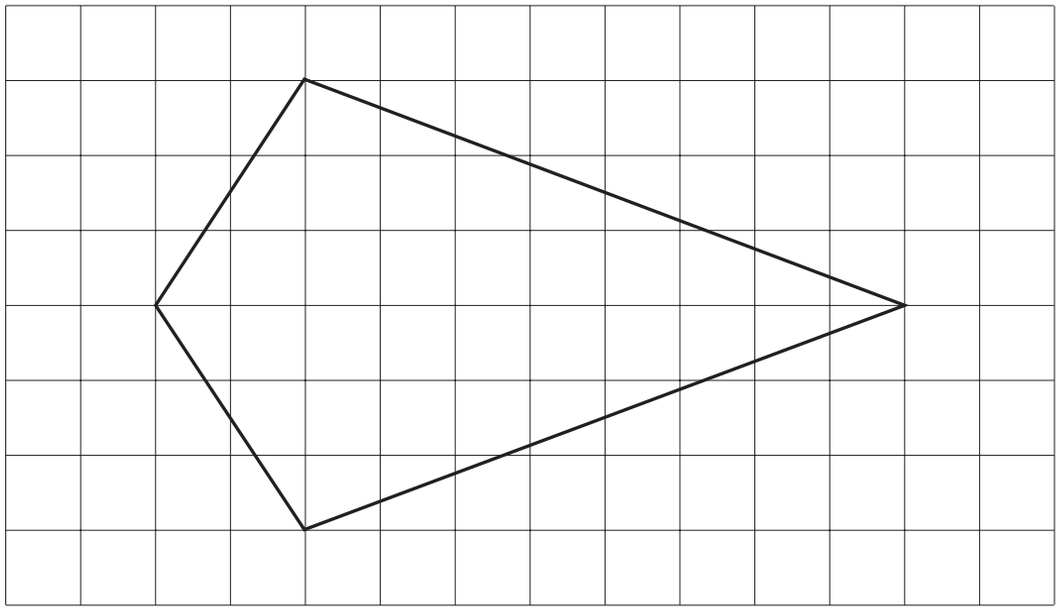
Answer _____ °C [2]

(ii) How much colder is it in Alaska at 8 am than in London at 8 pm?

Answer _____ °C [2]

Examiner Only	
Marks	Remark
Total Question 12	

13 **(a)** Find the area of the quadrilateral drawn on the 1 cm grid below.



Answer _____ [2]

(b) Find the volume of a shoebox measuring 30 cm by 20 cm by 10 cm.



Answer _____ cm^3 [2]

Examiner Only	
Marks	Remark
Total Question 13	

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14 **(a)** In the first round of a long jump competition Jane jumps 4 metres.

In the second round she jumps 5% longer.

How many more centimetres does she jump in the second round?

Answer _____ cm [2]

(b) Calculate, giving your answers in decimal form

(i) $28 + \frac{15}{40}$

Answer _____ [1]

(ii) $(28 + 15) \div 40$

Answer _____ [1]

(c) Bill says $\frac{28+15}{40}$ is the same as **(b)(i)**

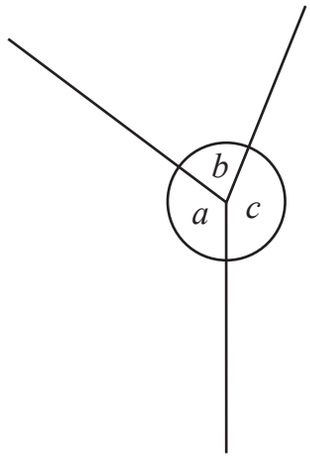
Ben says it is the same as **(b)(ii)**

Who is right?

Answer _____ [1]

Examiner Only	
Marks	Remark
Total Question 14	

15 **(a)** What is the sum of the three angles a, b, c drawn below?



Answer _____ ° [1]

(b) Calculate the size of angle x in the diagram below.

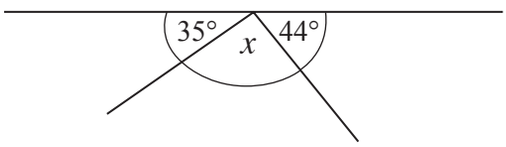


Diagram not drawn accurately

Answer x = _____ ° [2]

Examiner Only	
Marks	Remark
Total Question 15	

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16 **(a)** Solve the following equations

(i) $4x = 28$

Answer $x =$ _____ [1]

(ii) $x - 3 = 17$

Answer $x =$ _____ [1]

(iii) $3x + 11 = 17$

Answer $x =$ _____ [2]

(b) Simplify $3b - 2g + 4b + 7g$

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 16	

[Turn over

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17 Ages of 24 people taking a car driving test

1	5	7	7	8	8	8	9			
2	0	0	0	0	1	2	3	5	7	7
3	2	2	4	6	6					
4	1	2								

Key: 3 | 2 = age 32

(a) One age has been recorded inaccurately. Put an **X** through the inaccurate age and give a reason for your answer.

Reason _____ [1]

(b) The test centre manager says, "The range of ages of those who sat the test was 28". Use this information to make the stem and leaf diagram correct. [1]

Examiner Only	
Marks	Remark
Total Question 17	

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18 Write in the missing numbers.

(a) $\sqrt{2.25} + \square = 4$ [1]

(b) $\square - 3^3 = 11$ [1]

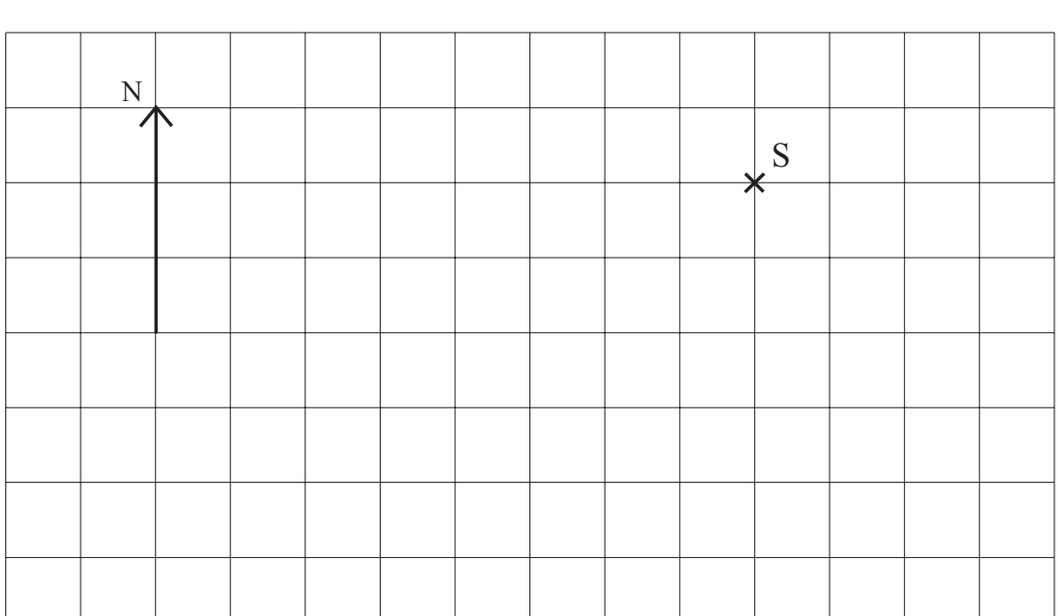
(c) $\dfrac{3}{0.5^2} = \square$ [1]

Examiner Only	
Marks	Remark
Total Question 18	

[Turn over

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19 Two lighthouses are at the points R and S on the diagram.



(a) What is the compass direction of S from R?

Answer _____ [1]

(b) The scale of the drawing is 1 cm to 4 km.

What is the actual distance between the two lighthouses?

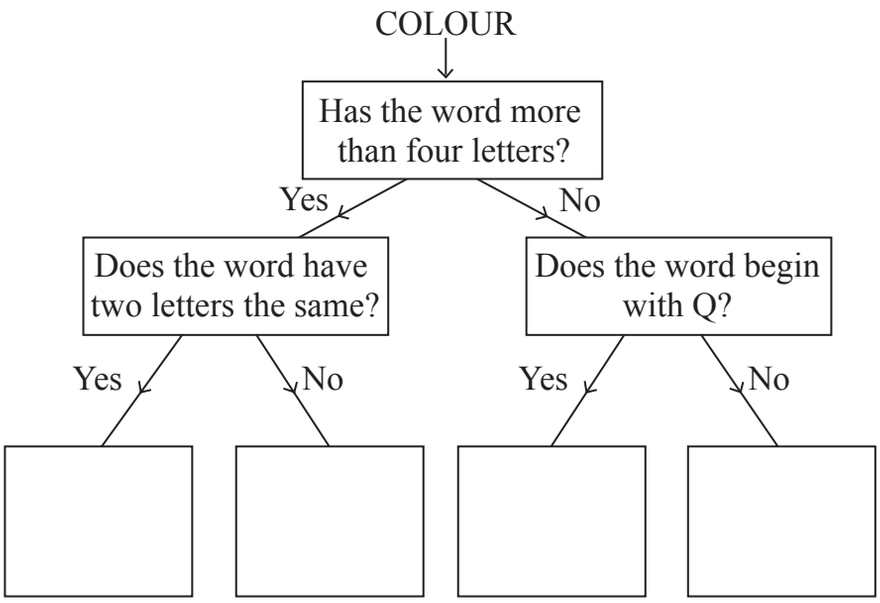
Answer _____ km [3]

Examiner Only	
Marks	Remark
Total Question 19	

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20 Use the decision tree to write the colours in the correct boxes.

PINK GREEN YELLOW WHITE



[2]

Examiner Only	
Marks	Remark
Total Question 20	

28GMT1123
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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

21 Bill bought 36 memory sticks at £4.20 each.

He sold 28 of them for £4.50 each and the other 8 for £3 each.

Did he make a profit or loss, and by how much?

Show your working.

Answer _____ by £ _____ [4]

Total Question 21	

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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

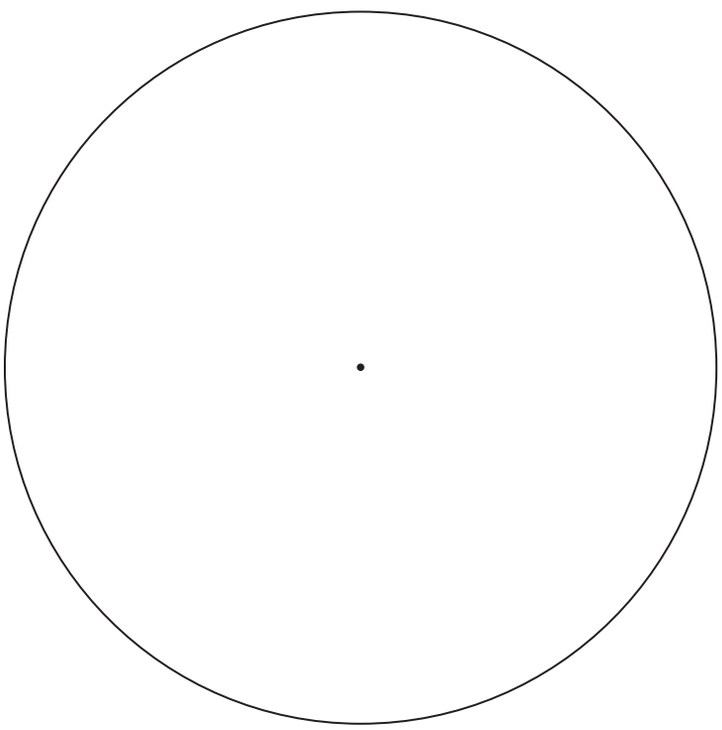
22 (a) Show how to work out $\frac{7}{12} - \frac{1}{2}$ if you do not have a calculator.

[2]

(b) The following table gives the numbers of the pets owned by a group of primary school children.

Pet	Dog	Cat	Rabbit	Guinea Pig
Number of children	55	35	20	10
Angle				

Draw a pie chart to illustrate this data.



[4]

Total Question 22

23 Draw accurately and label a triangle ABC with AB = 7 cm, angle A = 60° and angle B = 70°. Start with the line AB below.

A _____ B [2]

Examiner Only	
Marks	Remark
Total Question 23	

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24 Calculate the size of angle x in the kite below.

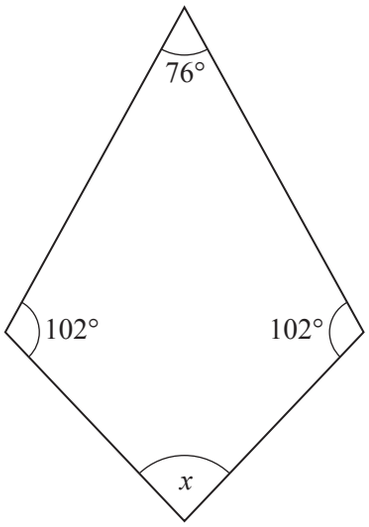


Diagram not drawn accurately

Answer $x =$ _____ ° [2]

Examiner Only	
Marks	Remark
Total Question 24	

THIS IS THE END OF THE QUESTION PAPER

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DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
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19	
20	
21	
22	
23	
24	
QWC	
Total Marks	

Examiner Number

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Rewarding Learning

General Certificate of Secondary Education
2012

Mathematics

Unit T1
Foundation Tier
[GMT11]

WEDNESDAY 6 JUNE
9.15 am–10.45 am

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The marks awarded for each question are shown in the right-hand column and they are prefixed by the letters **M, A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, readings from tables, graphs or answers.

MA indicates marks for combined method and accurate working.

The solution to a question gains marks for correct method and marks for an accurate working based on this method. Where the method is not correct no marks can be given.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier only a proportion of the marks will be available (based on the professional judgement of the examiner).

General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

				AVAILABLE MARKS
1	**(a)**	35	A1	
	(b)	**(i)** 45	A1	
		(ii) $4\frac{1}{2}$ cups drawn	A1	3
2	**(a)**	**(i)** Cube	A1	
		(ii) Cuboid	A1	
	(b)	8	A1	3
3	**(a)**	9641	A1	
		(i) 5400	A1	
		(ii) 0.36	A1	
		(iii) 28	A1	
		(iv) $\frac{47}{100}$	A1	
	(c)	32 16	A2	
	(d)	30	A1	8
4	**(a)**	**(i)** bar chart	M1, A2	
		(ii) 1	A1	
	(b)	6 8 10 10 6 Allow A1 for 3 correct frequencies	A2	6
5	**(a)**	$\frac{20}{2.99} \approx 6.68$	M1	
		6 balls	A1	
	(b)	$4 \times £2.99 = £11.96$	MA1	
		£20 – £11.96 = £8.04	MA1	4

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				AVAILABLE MARKS
6	**(a)**	1250, 6250	A1	
		Suitable rule	A1	
	(b)	**(i)** Correct 4th shape	A1	
		(ii) 17, 21	A1	4
7	**(a)**	**(i)** kilometre or Km	A1	
		(ii) gram or g	A1	
		(iii) litre or l	A1	
	(b)	**(i)** *y* **or** *z*	A1	
		(ii) *x*	A1	5
8	**(a)**	49	A1	
	(b)	10, 12, 15	(A1 for two correct) A2	
	(c)	125	A1	
	(d)	17	A1	5
9	**(a)**	Correct mid point ± 2 mm	A1	
	(b)	**(i)** 10.5 ± 0.2	A1	
		(ii) 44 ± 2	A1	3
10	**(a)**	P (3, 1)	A1	
		Q (–1, –2)	A1	
	(b)	R plotted	A1	3
11	**(a)**	Total = 306	MA1	
		$\frac{306}{12}$	M1	
		= 25.5	A1	
	(b)	Ordered: 17 17 17 17 17 24 26 28 34 35 37 37	MA1	
		Median = 25	A1	
	(c)	Mode although it is the most common result, it is also the lowest result and is not comparable to mean or median in illustrating overall class performance (or similar explanation)	A1	
		Quality of written communication	A1	7

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				AVAILABLE MARKS
12	**(a)**	3 and 5	A2	
	(b)	**(i)** $26 \longrightarrow -13 = 39$	M1, A1	
		(ii) $-6 \longrightarrow -2 = 4$	M1, A1	6
13	**(a)**	30 cm^2	A1, A1 (units)	
	(b)	$30 \times 20 \times 10$	M1	
		6000	A1	4
14	**(a)**	4 m = 400 cm	M1	
		$\frac{400}{100} \times 5 = 20$	MA1	
	(b)	**(i)** 28.375	A1	
		(ii) 1.075	A1	
	(c)	Ben	A1	5
15	**(a)**	360	A1	
	(b)	$180 - (35 + 44)$	M1	
		101	A1	3
16	**(a)**	**(i)** 7	MA1	
		(ii) 20	MA1	
		(iii) $3x = 6$	MA1	
		$x = 2$	A1	
	(b)	$7b + 5g$	A1, A1	6
17	**(a)**	15 years old – too young to take a driving test	A1	
	(b)	45 correctly placed in stem and leaf diagram	A1	2
18	**(a)**	2.5	A1	
	(b)	38	A1	
	(c)	12	A1	3

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			AVAILABLE MARKS
19	**(a)** NE	A1	
	(b) 8.5 ± 0.2	A1	
	34 ± 0.8	M1, A1	4
20	Green / Yellow | White | | Pink	M1, A1	2
	allow [1] for 2 correct		
21	36 × £4.20 = £151.20 **or** 28 × 0.30 = £8.40 (profit)	MA1	
	28 × £4.50 = £126 } 8 × £3 = £24 } 8 × 1.20 = £9.60 (loss)	MA1	
	(Total) = £150 9.60 – 8.40	MA1	
	Loss by £1.20	MA1	4
22	**(a)** $\frac{1}{2} = \frac{6}{12}$	MA1	
	$\frac{7}{12} - \frac{6}{12} = \frac{1}{12}$	A1	
	(b) Angles 165, 105, 60, 30	MA2	
	Pie chart (sectors and labels)	A2	6
23	Angle A = 60 ± 2°	A1	
	Angle B = 70 ± 2° and triangle completed	A1	2
24	360 – (102 + 102 + 76)	M1	
	80	A1	2
		Total	**100**

New Specification

Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
January 2012

Mathematics

Unit T1
(With calculator)
Foundation Tier

[GMT11]

WEDNESDAY 11 JANUARY

9.15 am–10.45 am

GMT11

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
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16	
17	
18	
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23	
24	
Total Marks	

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.
Write your answers in the spaces provided in this question paper.
Answer **all twenty-four** 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.

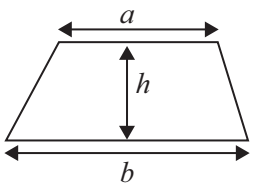
INFORMATION FOR CANDIDATES

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 **question 20**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is overleaf.

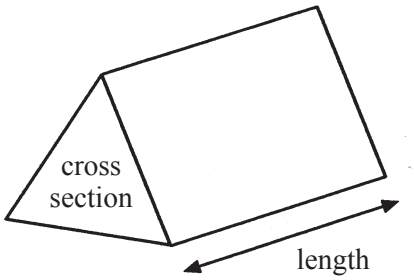
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Formula Sheet

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



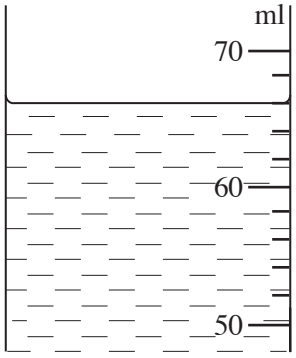
Volume of prism = area of cross section × length



Answer **all** questions.

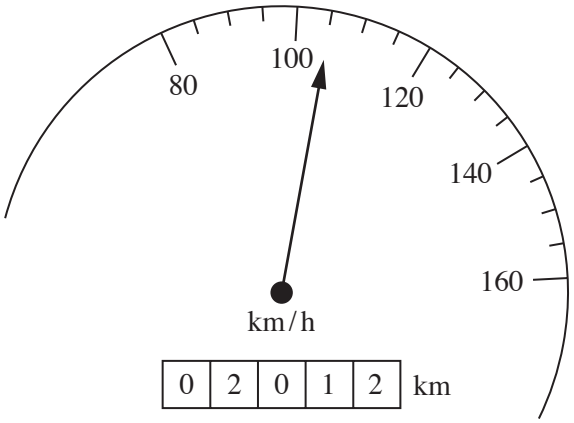
Examiner Only	
Marks	Remark

1 **(a)** Write down the volume of water in this measuring cylinder.



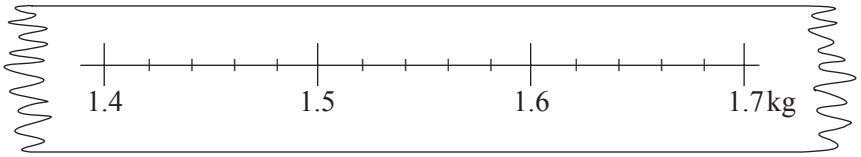
Answer _____ ml [1]

(b) Write down the speed shown by the arrow.



Answer _____ km/h [1]

(c) Draw an arrow to show the mass of a block of wood of 1.53 kg.



[1]

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Examiner Only	
Marks	Remark

2 Here is a pictogram showing the number of members who played at the local tennis club last week.

Monday	⊕ ⊕ ◖
Tuesday	⊕ ⊕ ⊕ ⊕
Wednesday	⊕ ⊕ ◢
Thursday	⊕ ⊕ ◖
Friday	⊕ ⊕ ⊕ ◔
Saturday	

⊕ represents 4 members

(a) Write down the number of members who played on Wednesday.

Answer _____ [1]

(b) On which two days were there the same number of members playing?

Answer _____ and _____ [1]

(c) How many members in total played on Thursday and Friday if no member played on both days?

Answer _____ [1]

(d) On Saturday 21 members played at the club.

Show this on the pictogram. [1]

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Examiner Only	
Marks	Remark

3 **(a)** Write 0.4 as a percentage.

Answer _____% [1]

(b) Write 0.35 as a fraction.

Give your answer in its **simplest** form.

Answer _____ [2]

(c) Write 5% as a decimal.

Answer _____ [1]

---

4 Write down the next term of the sequence

25, 19, 13, 7, ...

Answer _____ [1]

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Examiner Only	
Marks	Remark

5 Tim Jackson visited a shop called "Music Mania."

He bought 3 CDs at £7.99 each and 2 DVDs at £8.50 each.

(a) Calculate his total bill.

Answer £ _____ [2]

(b) Tim paid by cheque.

Complete the cheque below.



[2]

6 Thirteen students had the following number of books in their bags.

3, 8, 4, 3, 6, 5, 9, 3, 7, 4, 3, 5, 6

(a) What is the median number of books?

Answer _____ books [2]

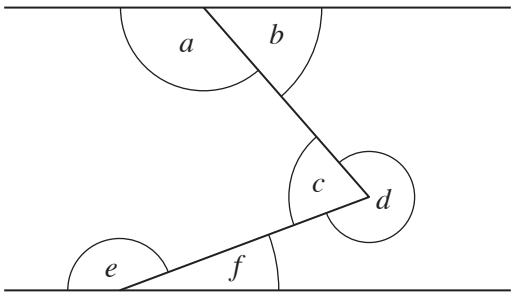
(b) What is the mode of the number of books?

Answer _____ books [1]

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Examiner Only	
Marks	Remark

7 (a)



From the diagram, write down a letter for an angle which is

(i) acute, Answer _____ [1]

(ii) obtuse, Answer _____ [1]

(iii) reflex. Answer _____ [1]

(b) (i) Using the point marked "C" as the centre, draw a circle with a radius of 3.5 cm.

C •

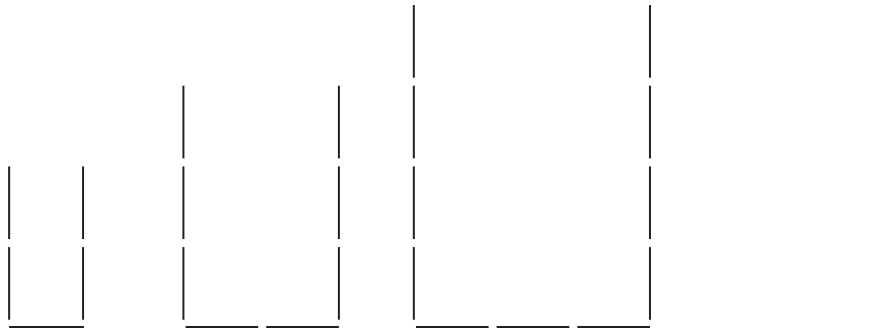
[1]

(ii) Draw a diameter on this circle. [1]

(iii) Draw any chord parallel to your diameter. [1]

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8 Some "U" shapes drawn below are made with matches.



Shape 1 Shape 2 Shape 3 Shape 4

(a) Draw Shape 4. [1]

Shape Number	1	2	3	4	5
Number of Matches	5	8	11		

(b) Complete the table for Shapes 4 and 5. [1]

(c) What pattern do you notice in the "Number of Matches" row?

Answer _____ [1]

(d) Find the number of matches in Shape 10.

Answer _____ [2]

Examiner Only

Marks	Remark

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9 Michael did an investigation into the colours of cars on the road.

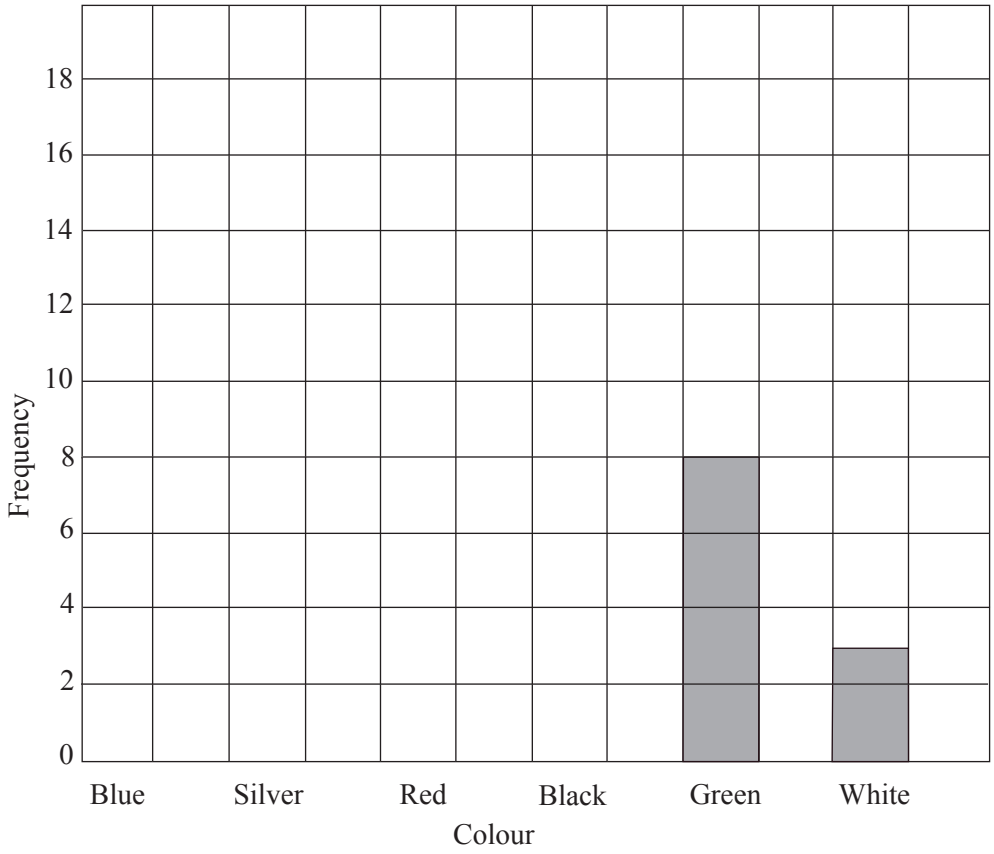
He recorded the data in a frequency table and drew a bar chart.

Below is part of Michael's frequency table.

Colour	Tally	Frequency
Blue	𝍸 𝍸 |	
Silver	𝍸 𝍸 𝍸 ||	
Red	𝍸 ||||	
Black	𝍸	

(a) Complete the frequency column in Michael's table. [1]

Part of Michael's bar chart is shown below.



(b) Complete the bar chart for the colours Blue, Silver, Red and Black. [1]

Examiner Only

Marks	Remark

10

4	5	6
8	9	10
12	14	17
21	25	35

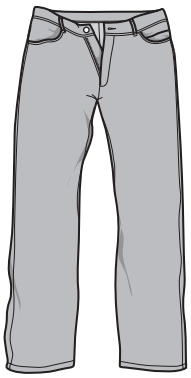
From the numbers in the grid, write down:

(a) the multiples of 3, Answer _____ [2]

(b) the factors of 48, Answer _____ [2]

(c) the prime numbers. Answer _____ [2]

11



JEANS – $\frac{1}{3}$ OFF TAG PRICE



SHIRTS – 15% OFF TAG PRICE

Jim buys jeans and a shirt in the sale.
The price tag on the jeans is £54.
The price tag on the shirt is £28.
What is the total cost of his items in the sale?

Answer £ _____ [4]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

12 **(a)** There are 10 students on a school bus.

Their ages in years are 12, 15, 13, 17, 10, 14, 16, 15, 16, 11

What is the mean age of the 10 students?

Answer _____ years [3]

(b)

Ayr						
90	Carlisle					
73	96	Edinburgh				
132	196	144	Fort William			
33	96	44	160	Glasgow		
94	136	45	105	61	Perth	
51	101	124	184	84	144	Stranraer

Mileages

(i) John travels from Carlisle to Perth. What distance does he travel?

Answer _____ miles [1]

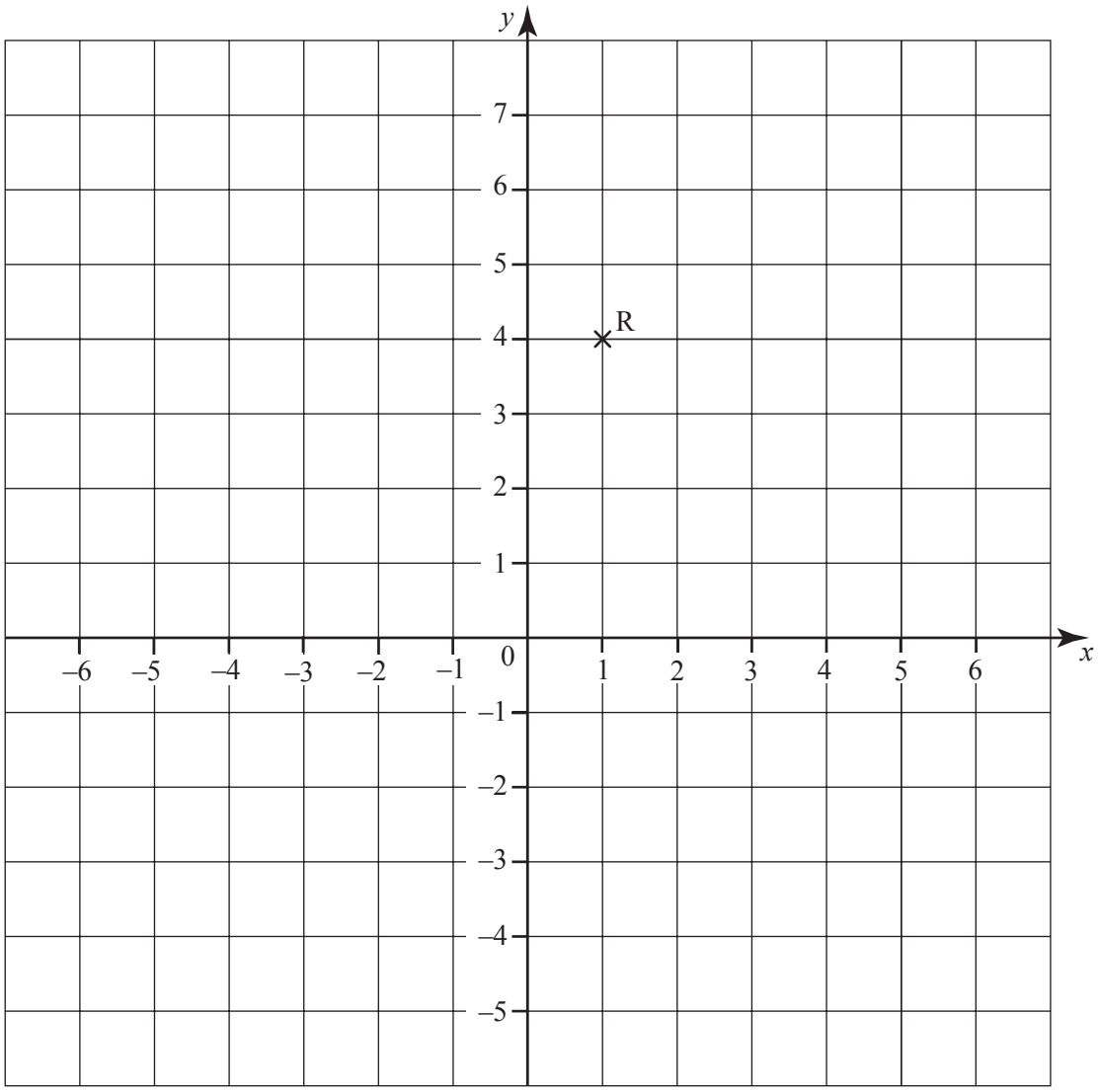
(ii) Mark travels from Carlisle to Glasgow and then on to Perth.

How many more miles does Mark travel than John?

Answer _____ miles [2]

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13



Examiner Only	
Marks	Remark

(a) Write down the co-ordinates of the point R.

Answer (_____ , _____) [1]

(b) Plot and label the points S (–5, 2) and T (–1, –2). [2]

(c) Join R, S and T to form a triangle.

What type of triangle is RST?

Answer _____ [1]

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14 The shoe sizes for 18 pupils in a class are recorded in the frequency table below.

Shoe size	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	$8\frac{1}{2}$	9
Number of pupils	1	0	5	4	4	2	1	0	1	0

(a) Write down the modal shoe size.

Answer _____ [1]

(b) Work out the range of these pupils' shoe sizes.

Answer _____ [1]

15 420 pupils travel by bus to a school football match.

Each bus can carry 48 pupils.

(a) What is the least number of buses needed?

Answer _____ [2]

(b) How many pupils are on the last bus?
(Assume all the other buses are full.)

Answer _____ [1]

Examiner Only

Marks	Remark

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16 The table shows the minimum and maximum daily temperatures in six cities in January.

City	Minimum (°C)	Maximum (°C)
Paris	–1	12
London	–2	9
Barcelona	3	16
Moscow	–15	–1
Athens	0	15
Glasgow	–5	4

(a) Which city recorded the lowest **minimum** temperature?

Answer _____ [1]

(b) What is the difference in °C between Glasgow's minimum and maximum temperatures?

Answer _____ °C [1]

(c) Which two cities had the same difference between their minimum and maximum temperatures?

Answer _____ and _____ [1]

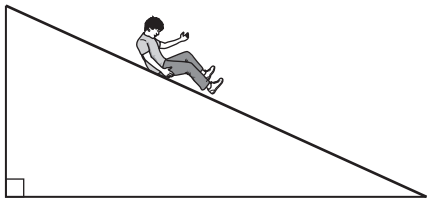
Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

17 (a) (i)



David plays on a slide which has a ladder of vertical height 1.5 m and a sloped length of 3 m.

Using a scale of 1 m = 3 cm, construct, **as a right-angled triangle**, a scale drawing to represent the slide.

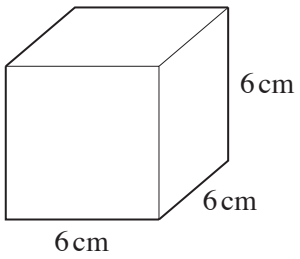
[2]

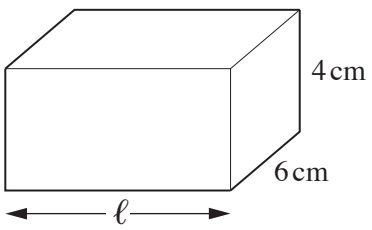
(ii) Measure the angle the sloped length makes with the ground.

Answer _____° [1]

(b) The volumes of this cube and this cuboid are the same.

What is the missing length marked ℓ on the cuboid?





Answer _____ [3]

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Examiner Only	
Marks	Remark

18 **(a)** Calculate

(i) the cube of 4.5,

Answer _____ [1]

(ii) the square root of 3.24,

Answer _____ [1]

(iii) $\dfrac{1}{2.5^2}$

Give your answer as a **decimal**.

Answer _____ [2]

(b) Which of the following fractions is nearest in size to $\frac{3}{5}$?
Show your working.

$\frac{7}{10}$ $\frac{11}{20}$ $\frac{17}{30}$ $\frac{1}{2}$

Answer _____ [2]

---

19 **(a)** Calculate the size of angle a.

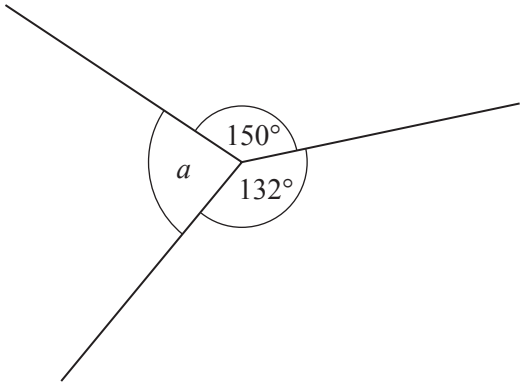


Diagram not drawn accurately

Answer a = _____° [2]

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(b) A square just touches a triangle as shown.

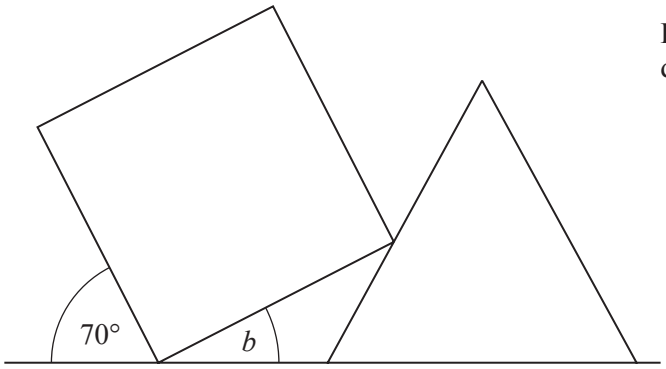


Diagram not drawn accurately

Calculate the size of angle b.

Answer b = _____ ° [2]

(c) Calculate the size of angle c.

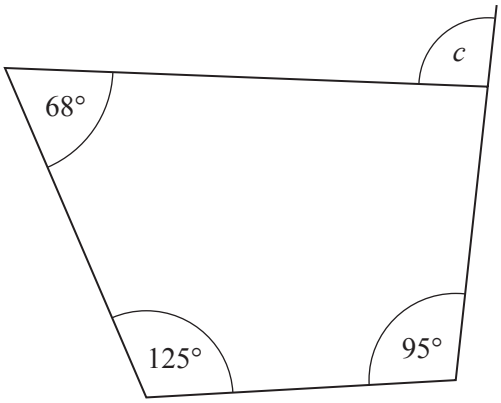


Diagram not drawn accurately

Answer c = _____ ° [3]

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Marks	Remark

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Quality of written communication will be assessed in this question.

Show your working.

Examiner Only

Marks	Remark

20 (a) Each student in Year 10 studies one language (French, Spanish or German).

There are 135 students in Year 10.

Two-fifths study French, one-third study Spanish and the rest study German.

How many students study German?

Answer _____ [4]

(b) Below is a portion of Miss Johnston's bank statement for September.

Account Summary
Opening Balance £1224.08
Monthly Overdraft Limit £500.00

Miss Johnston
1st September–30th September

Account details

DATE	PAYMENT DETAILS	OUT	IN	BALANCE
02 Sept	Balance forward			1224.08
04 Sept	Southford BS	1013.27		_____
11 Sept	Travelwide Ins.	134.28		76.53
23 Sept	Carcomp. Finance	253.68		_____
27 Sept	Cheque Lodge.		52.00	_____

(i) Complete **all** the blank spaces on the statement. [3]

(ii) How much more could Miss Johnston have spent in September, without exceeding her overdraft limit?

Answer £ _____ [1]

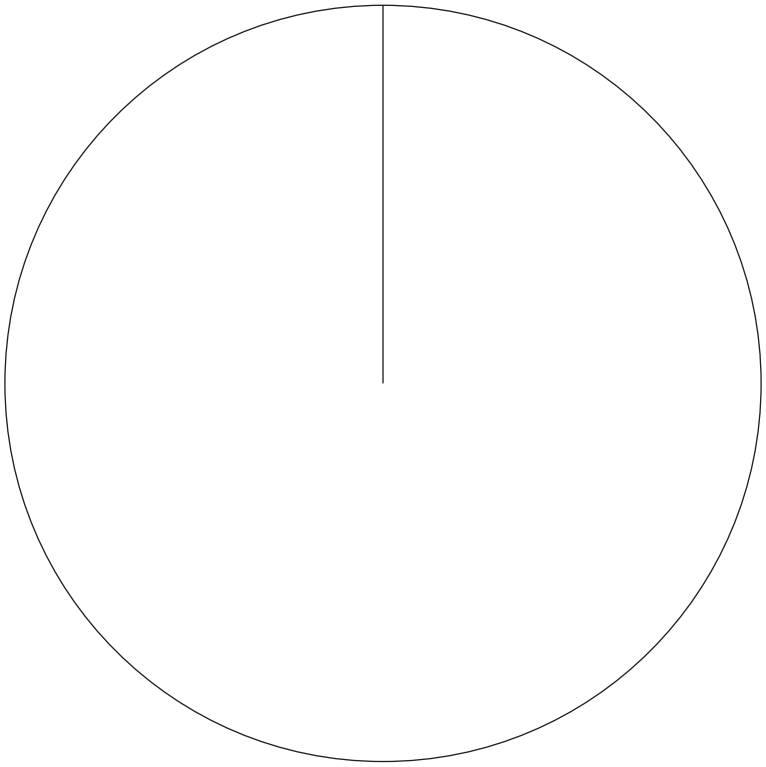
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21 A travel agency recorded the types of holiday which were booked on a particular week.

The table below shows the results.

Type of Holiday	Frequency	Degrees
Bed & Breakfast	20	
Hotel half-board	22	
Self-catering	6	
Camping	12	

Complete an accurate pie chart below to show this information.



[4]

Examiner Only

Marks	Remark

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22

Examiner Only	
Marks	Remark

Haveringham to Amberleyton		MONDAY TO SATURDAY							
		SO	SX						
Haveringham	d	0520	0520	0550	0750	0850	0932	0950	1032
Norterton	d	...	...	0600	0800	0900	...	1000	...
Hamlington	d	0550	0550	0605	0805	0905	0942	1005	1042
Bristead	d	...	...	0612	0812	0912	...	1012	...
North Petersville	a	0605	0605	0618	0818	0918	0957	1018	1057
	d	0610	0610	0623	0823	0923	1002	1023	1102
Oxerton	d	...	...	0629	0829	0929	...	1029	...
Crosstley	d	...	...	0636	0836	0936	...	1036	...
Manningham	a	0622	0622	0641	0641	0941	1014	1041	1114
	d	...	0625	0644	0844	0944	1017	1044	1117
East Tuttingley	d	...	...	0648	0848	0948	1021	1048	1121
Amberleyton	a	...	0638	0658	0858	0958	1031	1053	1131

General Notes:
SO Saturdays only. SX Not Saturdays, a Arrival time, d Departure time

(a) How many minutes does the 0932 train from Haveringham take to reach Manningham?

Answer _____ minutes [1]

(b) What is the earliest train you could take from Hamlington on a Saturday to get to Amberleyton without changing trains?

Answer _____ [1]

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Examiner Only	
Marks	Remark

23 Solve the equations

(a) $9x - 5 = 58$

Answer $x =$ _____ [2]

(b) $\frac{x}{8} = 3$

Answer $x =$ _____ [1]

---

24 A group of students take class tests in both English and Mathematics.

Each test is marked out of 50.

The stem and leaf diagrams below show the distribution of marks for both tests.

	English
0	
1	2 5 6 9
2	3 6 7 7 8
3	0 2 4 5 5
4	1 2 2 3 6
5	0

	Mathematics
0	9
1	0 1 2 6 7
2	1 3 4 5 7 8 8
3	2 5 7 9
4	1 4 8
5	

Key: 2 | 5 means 25

(a) Which subject has the bigger range of marks and by how much?

Answer _____ has the bigger range by _____ [2]

(b) Which subject has the bigger median mark and by how much?

Answer _____ has the bigger median mark by _____ [2]

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THIS IS THE END OF THE QUESTION PAPER

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112505

New Specification

Rewarding Learning

General Certificate of Secondary Education
January 2012

Mathematics

Unit T1

Foundation Tier

[GMT11]

WEDNESDAY 11 JANUARY
9.15 am – 10.45 am

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded, i.e. where the method is not correct no marks can be given.

MA indicates marks for combined method and accurate working.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of folllowing through their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant fugures seen. E.g. the answer in tghe mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their puspose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. the mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

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				AVAILABLE MARKS
1	**(a)**	66	A1	
	(b)	105	A1	
	(c)	1.53 correctly marked	MA1	3
2	**(a)**	9	A1	
	(b)	Monday and Thursday	A1	
	(c)	25	A1	
	(d)	$5\frac{1}{4}$ circles marked	A1	4
3	**(a)**	40%	A1	
	(b)	$\frac{35}{100} = \frac{7}{20}$	A1, A1	
	(c)	0.05	A1	4
4		1	A1	1
5	**(a)**	$3 \times 7.99 + 2 \times 8.50$ $= 40.97$	M1 A1	
	(b)	Cheque details completed	A2 (A1 for 2 of 3 parts completed)	4
6	**(a)**	3, 3, 3, 3, 4, 4, 5, 5, 6, 6, 7, 8, 9 5	MA1 A1	
	(b)	3	A1	3
7	**(a)**	**(i)** one from angles f, b or c	A1	
		(ii) either angle a or e	A1	
		(iii) angle d	A1	
	(b)	**(i)** circle with radius 3.5 cm drawn correctly	MA1	
		(ii) diameter drawn	MA1	
		(iii) a chord drawn parallel to the diameter	MA1	6

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				AVAILABLE MARKS
8	**(a)**	correct shape	A1	
	(b)	14, 17	A1	
	(c)	add 3 (each time)	A1	
	(d)	32	M1, A1	5
9	**(a)**	11, 17, 9, 5	A1	
	(b)	Bars drawn to heights of 11, 17, 9 and 5	A1	2
10	**(a)**	6, 9, 12, 21	A2 (A1 for 3 correct)	
	(b)	4, 6, 8, 12	A2 (A1 for 3 correct)	
	(c)	5, 17	A2 (A1 for 1 correct)	6
11		$\frac{1}{3}$ of £54 = £18 £54 – £18 = £36	MA1, MA1	
		15% of £28 = £4.20		
		£28 – £4.20 = £23.80	MA1	
		£36 + £23.80 = 59.80	MA1	4
12	**(a)**	(12 + 15 + 13 + 17 + 10 + 14 + 16 + 15 + 16 + 11) ÷ 10	M1	
		139 ÷ 10	MA1	
		13.9	A1	
	(b)	**(i)** 136	A1	
		(ii) 96 + 61 = 157	MA1	
		157 – 136 = 21	A1	6
13	**(a)**	(1, 4)	A1	
	(b)	correct points	A1, A1	
	(c)	isosceles	A1	4
14	**(a)**	$5\frac{1}{2}$	A1	
	(b)	4	A1	2

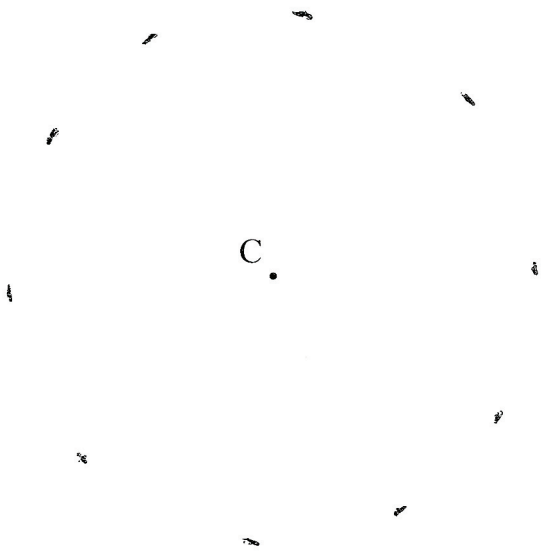
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				AVAILABLE MARKS
15	**(a)**	$420 \div 48$ $= 9$ buses	M1 A1	
	(b)	36	A1	3
16	**(a)**	Moscow	A1	
	(b)	9	A1	
	(c)	Paris and Barcelona	A1	3
17	**(a)**	**(i)** Height (4.5 cm) and sloped length (9 cm) correctly drawn (±2 mm)	MA1, MA1	
		(ii) 30 (±2) **or** candidate's angle (±2)	A1	
	(b)	$6 \times 6 \times 6 = 216$ $4 \times 6 \times \ell = 24\ell$ $24\ell = 216 \quad \ell = 9$ cm	MA1 MA1, A1 (units)	6
18	**(a)**	**(i)** 91.125	A1	
		(ii) 1.8	A1	
		(iii) $\frac{1}{6.25}$ **or** $\frac{4}{25}$ 0.16	A1 A1	
	(b)	$\frac{42}{60}, \frac{33}{60}, \frac{34}{60}, \frac{30}{60}$ **or** 0.7, 0.55, 0.566 . . ., 0.5 $\frac{17}{30}$	M1 A1	6
19	**(a)**	$a = 360 - (150 + 132)$ $= 78$	M1 A1	
	(b)	**(i)** $b = 180 - (70 + 90)$ $= 20$	M1 A1	
	(c)	$360 - (68 + 125 + 95) = 72$ $180 - 72 = 108$	M1, A1 A1	7

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				AVAILABLE MARKS
20	**(a)**	$\frac{2}{5}$ of 135 = 54 (French)	MA1	
		$\frac{1}{3}$ of 135 = 45 (Spanish)	MA1	
		54 + 45 = 99 (French or Spanish)	MA1	
		135 – 99 = 36 (German)	MA1	
	(b)	**(i)** 210.81; –177.15; –125.15	A1, A1, A1	
		(ii) £374.85	A1	8
21	Angles are 120°, 132°, 36° and 72°		M1, A1	
	Each sector correctly drawn and labelled (±2°)		MA2	4
	(For no work shown A1 each correct, labelled sector)			
22	**(a)**	42 min	A1	
	(b)	06:05	A1	2
23	**(a)**	$9x = 63$	MA1	
		$x = 7$	A1	
	(b)	24	MA1	3
24	**(a)**	Mathematics; 1	A1, A1	
	(b)	English; 5	A1, A1	4
			Total	**100**

GCSE NEW SPEC MATHEMATICS JANUARY 2012
UNIT T1
OVERLAYS QUESTION 7B



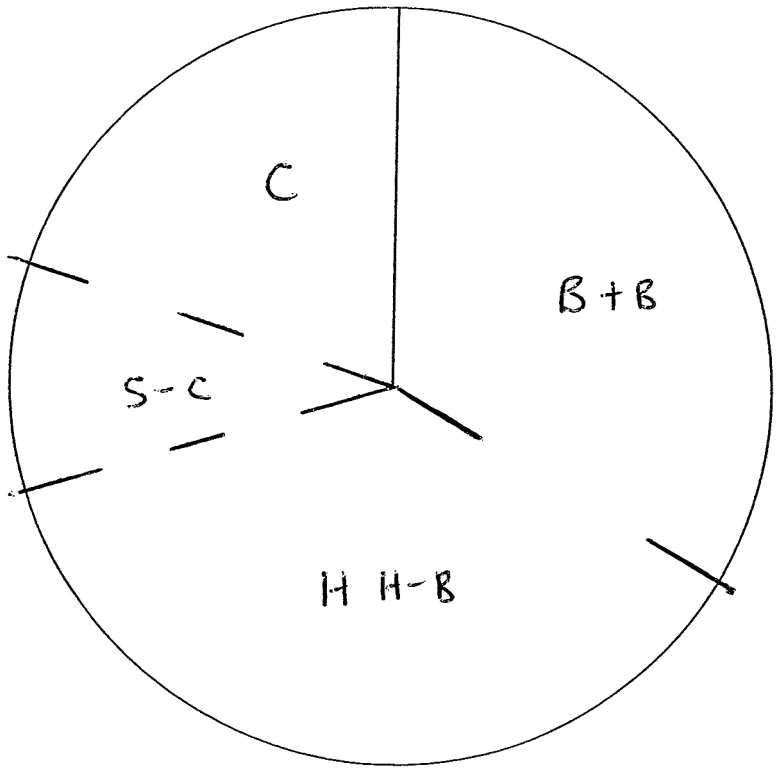
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GCSE NEW SPEC MATHEMATICS JANUARY 2012
UNIT T1
OVERLAYS QUESTION 17A



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GCSE NEW SPEC MATHEMATICS JANUARY 2012
UNIT T1
OVERLAYS QUESTION 21



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New Specification

Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2011

Mathematics

Unit T1
(With calculator)
Foundation Tier

[GMT11]

TUESDAY 31 MAY

9.15 am–10.45 am

GMT11

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	

Total Marks	

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.
Write your answers in the spaces provided in this question paper.
Answer **all twenty-three** 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.

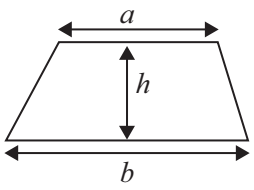
INFORMATION FOR CANDIDATES

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 **question 15**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is overleaf.

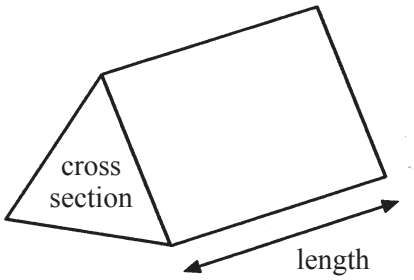
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Formula Sheet

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



Volume of prism = area of cross section $\times$ length



Answer **all** questions.

Examiner Only

Marks	Remark

1

23	75	44
50	12	47
14	49	24

(a) **From the numbers in the grid**, write down

(i) two numbers with a total of 70

Answer _____, _____ [1]

(ii) two numbers with a difference of 30

Answer _____, _____ [1]

(iii) two factors of 48

Answer _____, _____ [1]

(iv) a square number.

Answer _____ [1]

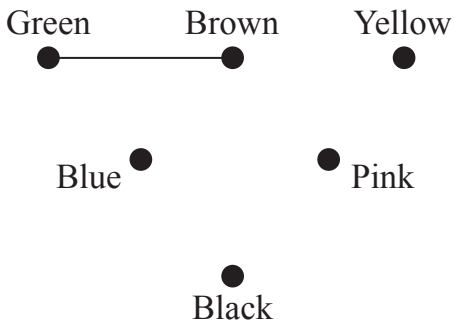
(b) What is the biggest number you can get by multiplying any two numbers in the grid?

Answer _____ [2]

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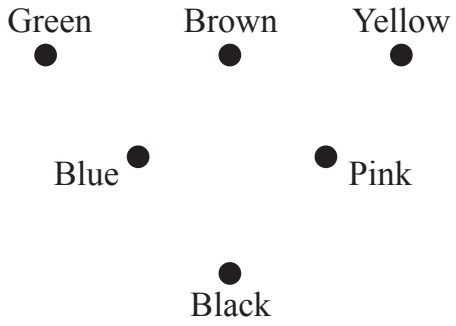
Examiner Only	
Marks	Remark

2 **(a)** Six snooker balls are spaced as shown.



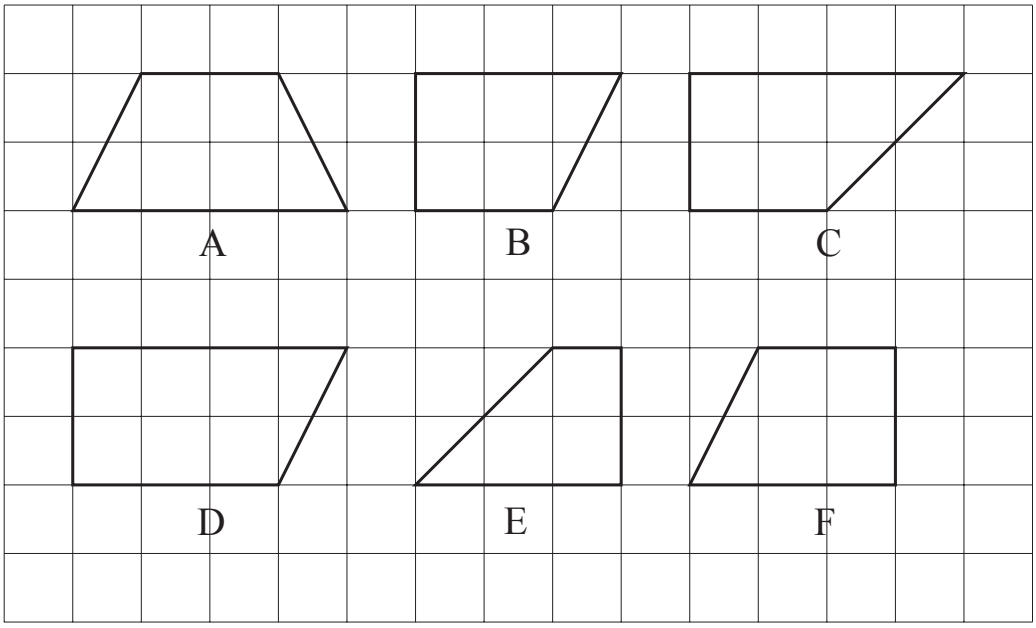
(i) On the diagram above, draw another straight line linking 2 balls to make an obtuse angle. [1]

(ii) On the diagram below draw 2 straight lines linking balls to make an acute angle. [1]



(b) Six shapes are shown.

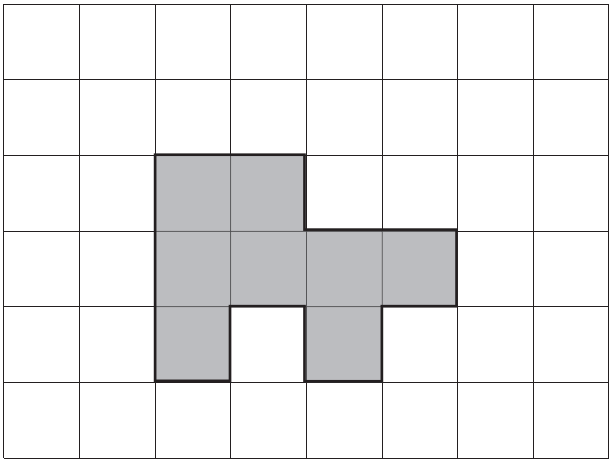
Which two shapes are congruent?



Answer Shape _____ and shape _____ are congruent. [1]

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(c) A shape is drawn on a centimetre square grid.



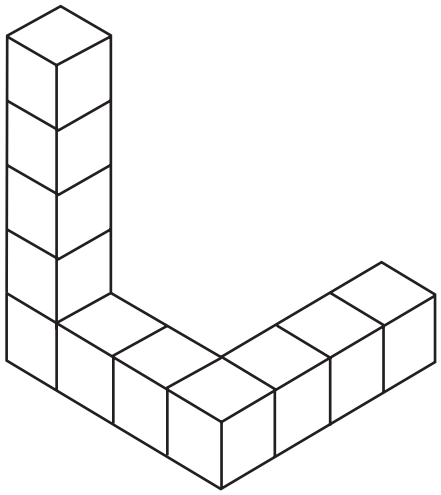
(i) Work out the perimeter of this shape (above).

Answer _____ cm [1]

(ii) Work out the area of the shape.

Answer _____ cm^2 [1]

(d) This solid is made of centimetre cubes.



What is the volume of this solid?

Answer _____ [2]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

3 80 cakes were sold in a bakery. The first four rows of the pictogram are shown below.

CAKE SALES

Fruit	O	O	O	O	O	
Iced Sponge	O	O	O	O		
Chocolate	O	O	O	O	O	O
Lemon	O	O				
Carrot						

(a) 24 chocolate cakes were sold.

Complete the key: O = _____ cakes [1]

(b) How many iced sponge cakes were sold?

Answer _____ [1]

(c) How many more fruit cakes than lemon cakes were sold?

Answer _____ [1]

(d) Complete the row of the pictogram for carrot cakes. [2]

Examiner Only	
Marks	Remark

4 (a)



The triangle is divided into 9 equal parts.

(i) Write down, **in its simplest form**, the fraction of the triangle which is **shaded**.

Answer _____ [2]

(ii) What **percentage** is not shaded?

Answer _____% [1]

(b) Write $\frac{2}{5}$ as a percentage.

Answer _____% [1]

(c) Write 5634 to the nearest 100

Answer _____ [1]

(d) Write down the two fractions from this list which are **not** equal to $\frac{3}{4}$

$$\frac{9}{12} \quad \frac{15}{20} \quad \frac{3}{12} \quad \frac{12}{16} \quad \frac{15}{25}$$

Answer _____, _____ [2]

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5 The following scores were obtained in a test.

8, 5, 9, 6, 4, 7, 9, 8, 5, 7, 8, 6, 8, 7, 6

(a) Find

(i) the median,

Answer _____ [2]

(ii) the mode.

Answer _____ [1]

(b) **(i)** Which type of diagram would you use to display this information?

Answer _____ [1]

(ii) Give a reason for your answer.

_____

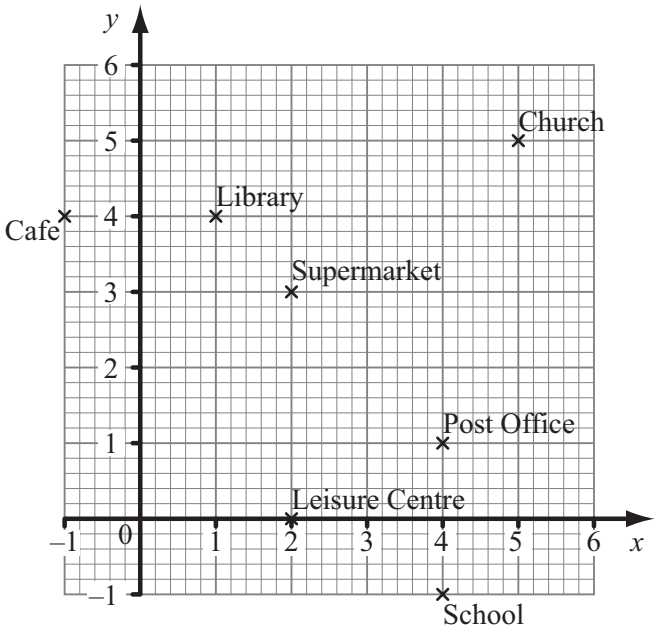
_____ [1]

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Marks	Remark

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Examiner Only	
Marks	Remark

6



The grid shows the position of places in a town.

(a) Write down the co-ordinates of the Leisure Centre.

Answer (_____ , _____) [1]

(b) Complete the sentence:

The _____ has co-ordinates (4, –1). [1]

---

7 **(a)** 29, 25, 21, 17, ..., ...

Find the next **two** terms in the sequence and describe the rule you used.

Answers _____ , _____ Rule _____

_____ [3]

(b) Find the **next** term in the sequence

0.1, 0.3, 0.9, 2.7, ...

Answer _____ [1]

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8 Look at the pattern of squares and triangles.

Examiner Only	
Marks	Remark

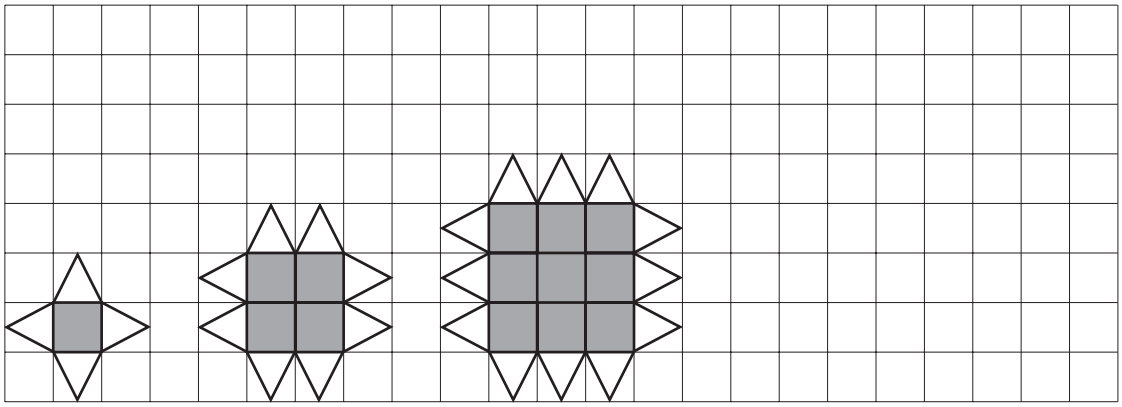


Diagram 1 Diagram 2 Diagram 3 Diagram 4

(a) On the grid, draw Diagram 4 [1]

(b) Complete the table below

Diagram	**1**	**2**	**3**	**4**	**5**
Number of squares	1	4	9		
Number of triangles	4	8	12		

[2]

(c) If the pattern was continued one diagram would have 64 squares. How many triangles would be in that diagram?

Answer _____ [2]

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Examiner Only	
Marks	Remark

9 **(a)** Write down the number forty-one thousand and twenty-two in figures.

Answer _____ [1]

(b) Calculate $\sqrt{2.25}$

Answer _____ [1]

(c) Write down the largest of these three numbers.

0.4677 0.462 0.47

Answer _____ [1]

(d) Write 72.06619 correct to two decimal places.

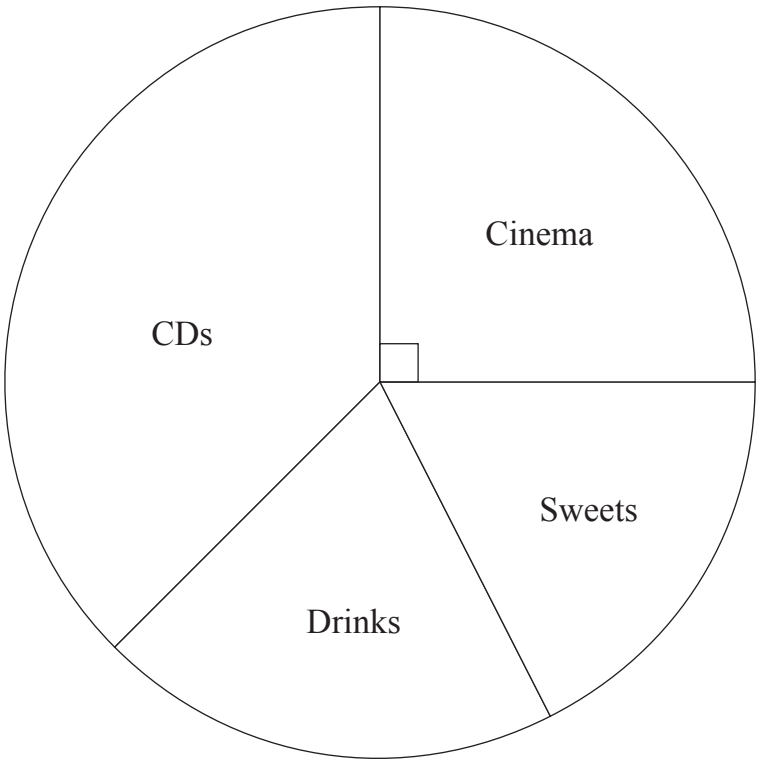
Answer _____ [1]

(e) Write 23.35 correct to three significant figures.

Answer _____ [1]

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10 The pie chart shows how Angie spent £16 pocket money.



(a) How much money was spent on the cinema?

Answer £_____ [1]

(b) Calculate how much money was spent on drinks.

Answer £_____ [2]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

11 The number of boys attending football practice each week was recorded.

23 13 25 16 22 15 19 16 15 16

What was the mean number of boys?

Answer _____ [3]

---

12 Renee has £20 to buy as many pens as possible at 35p each.

(a) How many pens can she buy?

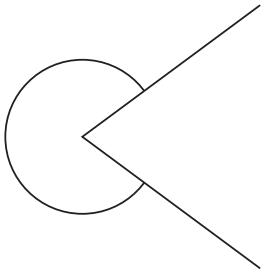
Answer _____ [2]

(b) How much change should she get?

Answer _____ p [1]

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13 **(a)** Circle the correct answer.



The angle marked is

(i) opposite **(ii)** reflex

(iii) acute **(iv)** obtuse [1]

(b) In the diagram PQR is a straight line.

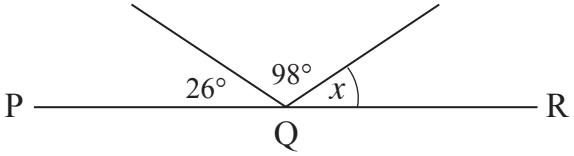


Diagram not drawn accurately

Calculate the size of the angle marked x.

Answer x = _____° [1]

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Marks	Remark

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(c) Calculate the size of the angle marked y.

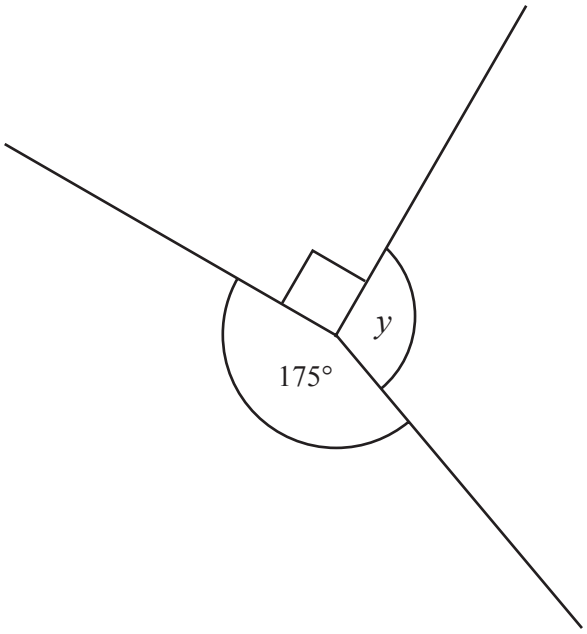
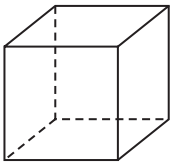


Diagram not drawn accurately

Answer $y =$ _____° [1]

(d) 

Complete the net of the cube below. [2]



Examiner Only

Marks	Remark

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14 Here is a **sketch** of a triangular field.

The side AB is 220 m long, the side AC is 120 m long and the angle BAC is 50°.

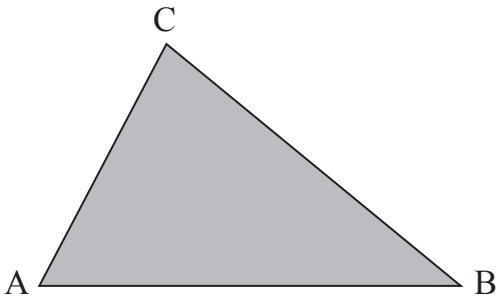


Diagram not drawn accurately

(a) Using a scale of 1 cm = 20 m, make an accurate scale drawing of the field. The line AB has already been drawn for you.

A ——————————————————— B

220 m

[2]

(b) Use your scale drawing to find the size of the angle ACB.

Answer _____ ° [1]

Examiner Only

Marks	Remark

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Quality of written communication will be assessed in this question.

Examiner Only	
Marks	Remark

15 John bought 20 apples and 6 pears. The total cost was £6.90. Apples cost £1.20 for 5. What was the cost of one pear?

Explain clearly how you calculate the answer.

Answer _____ [4]

---

16 **(a)** $5a = 14$ Write down the value of $15a$

Answer _____ [1]

(b) Solve $3t - 7 = 5$

Answer $t =$ _____ [2]

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17 **(a)** The stem and leaf diagram shows the weights of bags of onions.

Examiner Only	
Marks	Remark

3 |	5 7 8 9
4 |	2 5 6 8 9 9
5 |	1 3 4

Key 3 | 5 = 3.5 kg

Write down

(i) the range,

Answer _____ kg [1]

(ii) the median.

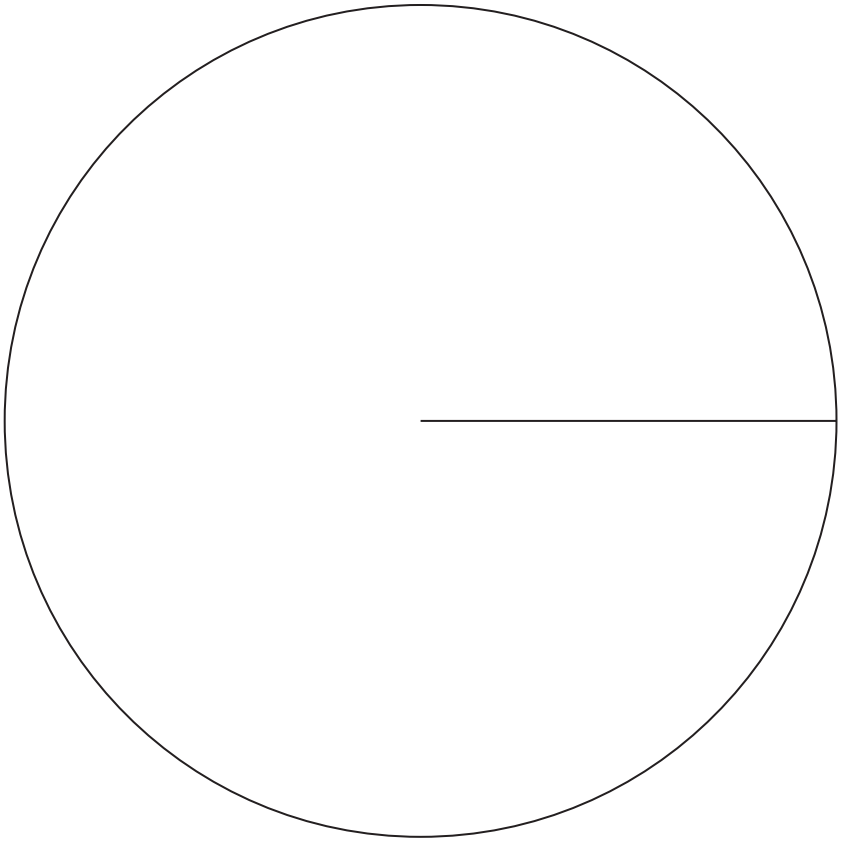
Answer _____ kg [1]

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(b) The number of buns sold in a bakery was recorded as follows.

Cream	16
Fruit	10
Jam	9
Chocolate	25

Draw a pie chart to illustrate this information.



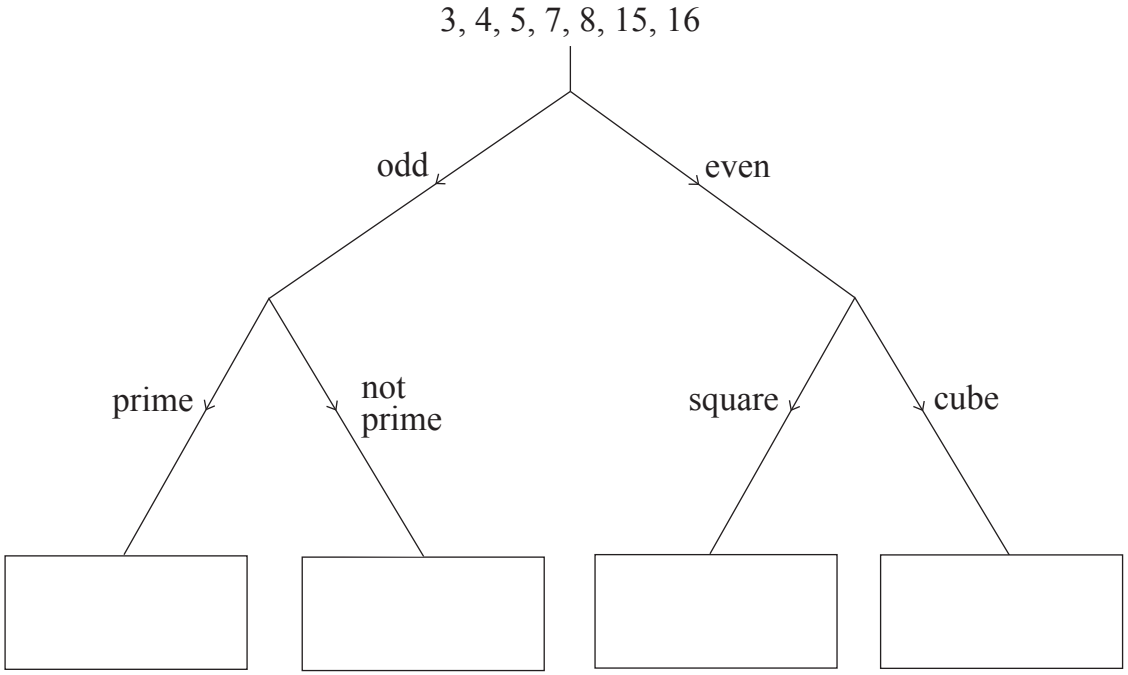
[4]

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

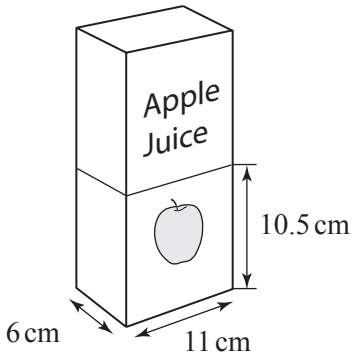
18 Using the decision tree diagram, sort these numbers into the correct boxes.



[2]

19 **(a)** A rectangular carton holds apple juice. The base of the carton has dimensions of 6 cm and 11 cm. The height of the juice in the carton is 10.5 cm above the base. ($1\,cm^3 = 1\,ml$)

What is the volume of juice left in the carton in millilitres?



Answer _____ ml [2]

(b) John pours himself a glass of juice. The volume in the carton is now 412.5 ml. What is the height of the juice above the base now?

Answer _____ cm [2]

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Examiner Only	
Marks	Remark

20 Aine buys 500 g of beef mince at £8.30 per kg and 300 g of pork mince at £9.50 per kg.

Barney buys 400 g of lamb mince at £10.20 per kg and 400 g of sausage meat at £7.00 per kg.

Who pays more and by how much?

Answer _____ pays _____ more [6]

---

21 **(a)** Calculate

(i) the cube root of 64

Answer _____ [1]

(ii) $3.3^2 + 6^3$

Answer _____ [1]

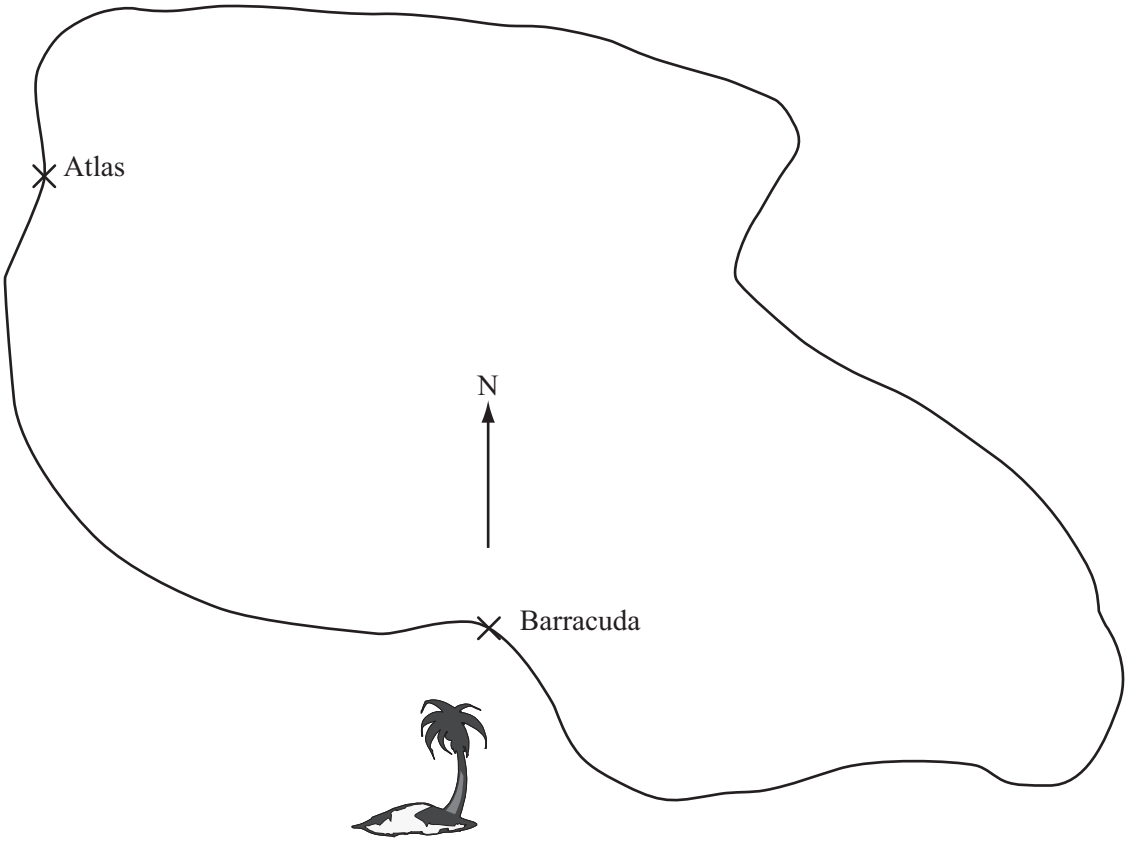
(b) Write down a prime number between 48 and 58.

Answer _____ [1]

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22 An outline map of Tanua Island is shown.

The Atlas and the Barracuda are two hotels on this island.



Scale: 1 cm to 5 km

(a) Use the diagram to calculate the actual distance of the Atlas from the Barracuda.

Answer _____ km [2]

(b) A new hotel, the Capri, is being built 25 km North East of the hotel Barracuda. Mark the correct position of this new hotel. [2]

(c) What is the direction of the Barracuda from the new hotel?

Answer _____ [1]

Examiner Only

Marks	Remark

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23 Andrew earns £900 a month. He spends $\frac{1}{4}$ of this money on rent and $\frac{1}{5}$ on computer games. What fraction of the £900 has he left?

Answer _____ [4]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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New Specification

Rewarding Learning

General Certificate of Secondary Education
2011

Mathematics

Unit T1
Foundation Tier

[GMT11]

TUESDAY 31 MAY
9.15 am–10.45 am

MARK SCHEME

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Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The solution to a question gains marks for correct method and marks for accurate working based on this method. The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **A** and **MA** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.
A indicates marks for accurate working, whether in calculation, reading from tables, graphs or answers. Accuracy marks may depend on preceding **M** (method) marks, hence **M**0 **A**1 cannot be awarded i.e. where the method is not correct no marks can be given.
MA indicates marks for combined method and accurate working.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

It should be noted that where an error trivialises a question, or changes the nature of the skills being tested, then as a general rule, it would be the case that not more than half the marks for that question or part of that question would be awarded; in some cases the error may be such that no marks would be awarded.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier, only a proportion of the marks will be available (based on the professional judgement of the examiner).

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General Marking Advice:

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

Quality of written communication

In GCSE Mathematics, particular questions are identified where candidates must demonstrate the quality of their written communication.

In particular, candidates must:

(i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear (i.e. comprehension and meaning is clear by using the correct notation and labelling conventions);

(ii) select and use a form and style of writing appropriate to their purpose and to complex subject matter (i.e. reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning); and

(iii) organise information clearly and coherently, using specialist vocabulary where appropriate (i.e. mathematical methods and processes used are coherently and clearly organised and appropriate mathematical vocabulary used).

This assessment may be through, for example, an explanation of the geometrical properties of a given shape or, for example, through concise mathematical argument in a multi-step problem.

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				AVAILABLE MARKS
1	**(a)**	**(i)** 23, 47	A1	
		(ii) 14, 44	A1	
		(iii) 12, 24	A1	
		(iv) 49	A1	
	(b)	50×75 3750	MA1 A1	6
2	**(a)**	**(i)** Line drawn correctly	MA1	
		(ii) Lines drawn correctly	MA1	
	(b)	Shape **B** and **F**	A1	
	(c)	**(i)** 16	A1	
		(ii) 8	A1	
	(d)	$11\,cm^3$	A1, A1 (units)	7
3	**(a)**	4	A1	
	(b)	16	A1	
	(c)	12	A1	
	(d)	3 circles drawn	M1, A1	5
4	**(a)**	**(i)** $\frac{6}{9}$	MA1	
		$\frac{2}{3}$	A1	
		(ii) $33\frac{1}{3}$	A1	
	(b)	40	A1	
	(c)	5600	A1	
	(d)	$\frac{3}{12}$, $\frac{15}{25}$	A1, A1	7

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				AVAILABLE MARKS
5	**(a)** **(i)**	at least 8 numbers correctly ordered 4, 5, 5, 6, 6, 6, 7, 7, 7, 8, 8, 8, 8, 9, 9 7	MA1 A1	
	(ii)	8	A1	
	(b) **(i)**	Bar chart	A1	
	(ii)	Suitable reason	A1	5
6	**(a)**	(2, 0)	A1	
	(b)	School	A1	2
7	**(a)**	13, 9 Subtract 4	A1, A1 A1	
	(b)	8.1	A1	4
8	**(a)**	Diagram correct	A1	
	(b)	16 and 25 16 and 20	A1 A1	
	(c)	64 squares − diagram 8 diagram 8 − 32 triangles	MA1 MA1	5
9	**(a)**	41022	A1	
	(b)	1.5	A1	
	(c)	0.47	A1	
	(d)	72.07	A1	
	(e)	23.4	A1	5
10	**(a)**	4	A1	
	(b)	$\frac{72}{360} \times £16 = £3.20$	M1, A1	3

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			AVAILABLE MARKS
11	180 ÷ 10 18	M1, A1 A1	3
12	**(a)** 2000 ÷ 35 or 57.14 57	MA1 A1	
	(b) 5p or £0.05	MA1	3
13	**(a)** reflex	A1	
	(b) 56	A1	
	(c) 95	A1	
	(d) any suitable net one square misplaced or missing allow A1	A2	5
14	**(a)** AC drawn 6 cm Angle BAC = 50 ± 2°	MA1 MA1	
	(b) Angle ACB measured correctly from diagram (± 2°)	MA1	3
15	20 apples cost 4 × £1.20 = £4.80 6 pears cost £6.90 − £4.80 = £2.10 so 1 pear cost 35p	MA2 MA1 MA1 (QWC)	4
16	**(a)** 42	A1	
	(b) $3t = 12$ $t = 4$	MA1 MA1	3

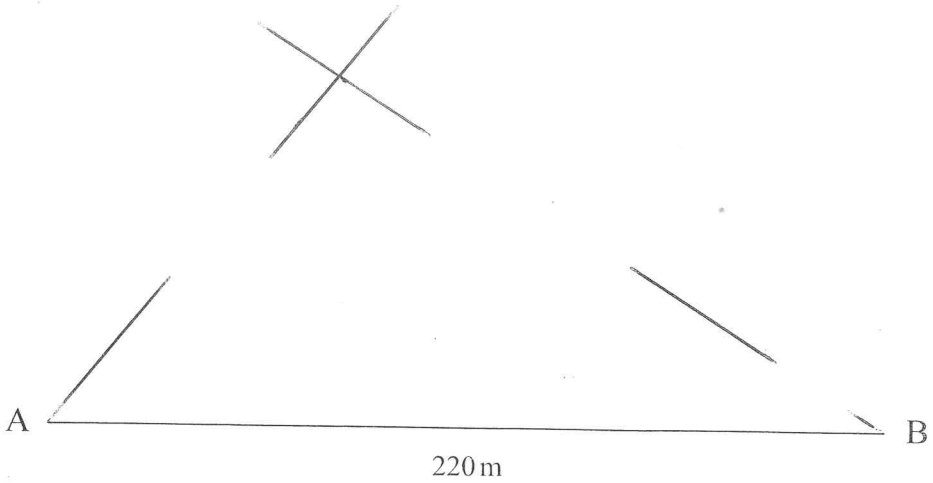
			AVAILABLE MARKS
17	**(a)** **(i)** 1.9	A1	
	(ii) 4.6	A1	
	(b) see overlay 96°, 60°, 54°, 150° (award one mark for evidence of 6) all sectors correct and labelled (allow A1 for 2 correct + labelled) alternatively, with no work shown, 4 sectors correct and labelled A4 3 sectors correct and labelled A3 2 sectors correct and labelled A2 1 sector correct and labelled A1 deduct only 1 from total if no labels	A2 A2	6
18	3, 5, 7 15 4,16 8 (A1 for 4 correct)	A2	2
19	**(a)** $6 \times 11 \times 10.5 = 693$	M1, A1	
	(b) $6 \times 11 \times h = 412.5$		
	$h = \frac{412.5}{66}$	MA1	
	$h = 6.25$	A1	4
20	$0.5 \times £8.30 + 0.3 \times £9.50 = £4.15 + £2.85 = £7.00$ $0.4 \times £10.20 + 0.4 \times £7.00 = £4.08 + £2.80 = £6.88$ Answer Aine ... 12p	M1, A1 M1, A1 M1, A1	6
21	**(a)** **(i)** 4	A1	
	(ii) 226.89	A1	
	(b) 53	A1	3
22	**(a)** 8.4 (± 0.2) cm 42 (± 1) cm	MA1 MA1	
	(b) Correct bearing at 045 ± 2° Correct distance of 5 ± 0.2 cm	A1 A1	
	(c) SW accept 225° or bearing from candidate's drawing	A1	5

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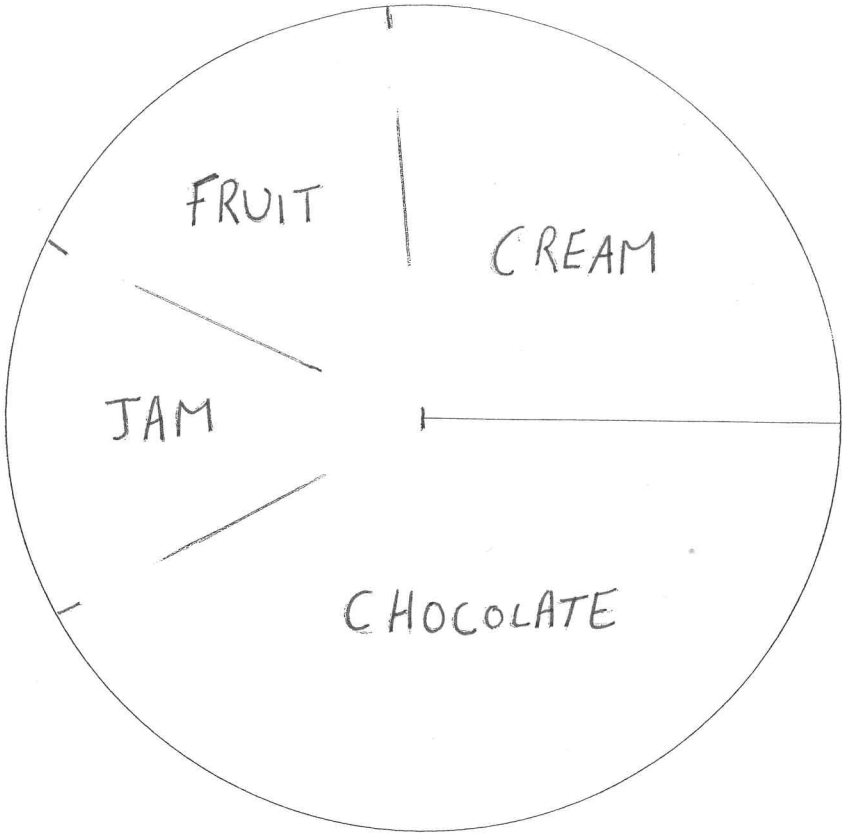
			AVAILABLE MARKS
23	£225 or $\frac{1}{4} + \frac{1}{5}$	MA1	
	£180 or $\frac{9}{20}$	MA1	
	£495 or $1 - \frac{9}{20}$	MA1	
	$\frac{495}{900}$ or $\frac{11}{20}$	MA1	4
		Total	**100**

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GCSE NEW SPEC MATHEMATICS SUMMER 2011
UNIT T1
OVERLAYS QUESTION 14



GCSE NEW SPEC MATHEMATICS SUMMER 2011
UNIT T1
OVERLAYS QUESTION 17B



GCSE NEW SPEC MATHEMATICS SUMMER 2011
UNIT T1
OVERLAYS QUESTION 22

