

Surname	
Other Names	

Centre Number	
Candidate Number	0



GCSE
4370/03
MATHEMATICS – LINEAR
PAPER 1
FOUNDATION TIER

A.M. MONDAY, 9 June 2014

1 hour 45 minutes

**CALCULATORS ARE
NOT TO BE USED
FOR THIS PAPER**

ADDITIONAL MATERIALS

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

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer all the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3.14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

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

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question 3.

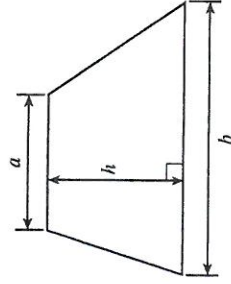


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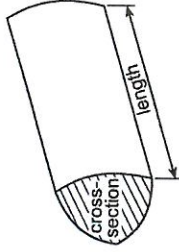
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CJ/IS/14-4370-03

Formula List



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



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



0 2

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(4370-03)

Examiner only

1. (a) (i) Write down, in figures, the number three million, four hundred and eleven thousand and two. [1]

3,411,002

- (ii) Write down, in words, the number 72065. [1]

Seventy two thousand and Sixty Five

- (b) Using the following list of numbers

17 6 53 40 63 36 39 81

write down

- (i) two numbers that add up to 80, [1]

17 + 63

- (ii) the number that is the difference between 67 and 28, [1]

67
- 28
39

- (iii) a multiple of 7, [1]

63

- (iv) the answer when 48 is divided by 8, [1]

6

- (v) the square of 9, [1]

9 x 9 = 81

- (c) Write down a factor of 96 which is between 10 and 20. [1]

12

- (d) Write 6571

- (i) correct to the nearest 10, [1]

6570

- (ii) correct to the nearest 100, [1]

6600



0 3

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(4370-03)

Turn over.

Examiner only

2. (a) Each of the digits 5, 2, 6 and 7 is used once to make a four-digit number.

- (i) What is the largest number that can be made? [1]

7652

- (ii) What is the smallest even number that can be made? [1]

Smallest Number 2567

- (b) Find the value of each of the following.

- (i) 0.2×0.3 [1]

0.06

- (ii) $6.2 - 3.28$ [1]

6.20
- 3.28
2.92

- (c) Estimate the value of 29×982 . [2]

$3 \times 100 = 300$



0 4

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

A window cleaner takes 15 minutes to clean each window in a large building.
He charges using the following formula:

$$\text{payment} = \text{£}8 \times \text{number of hours worked} + \text{call-out charge}$$

Calculate the payment for cleaning 20 windows when the call-out charge is £12.

[6]

he can clean 4 windows in an hour
so he will take $20 \div 4 = 5$ hours to clean all windows M1

$$\text{So, Payment} = 8 \times 5 + 12$$

$$= 40 + 12$$

$$= 52$$

so he will charge £52 A1

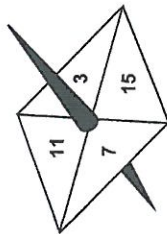
1370
030005

02

4. Choose the best word from those given below to describe the chance of each of the following events occurring.

impossible unlikely even chance likely certain

- (a) You get an odd number when the following spinner is spun once. [1]



certain B1

- (b) You win a raffle when 200 tickets are sold and you have bought one. [1]

unlikely B1

- (c) You get an even number when a fair dice is rolled once. [1]

even chance. 31



0 5



0 6

- (i) 15, +6 21, +6 27, +6 33, +6 39
- (ii) 62, -6 56, -5 51, -4 47, -3 44

(b) Describe, in words, the rule for continuing the sequence 48, 12, 3, $\frac{3}{4}$,
dividing previous number by 4.

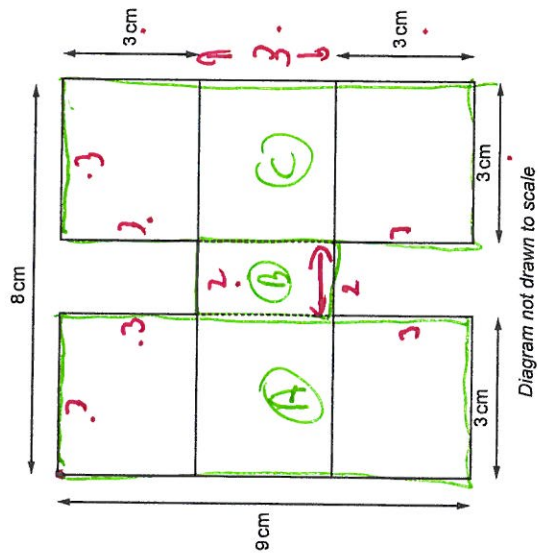
- (c) Find the value of $p = 3a + 4b - 6c$ when $a = 2$, $b = 3$ and $c = -1$.

$$\begin{aligned} p &= 3 \times 2 + 4 \times 3 - 6 \times -1 \\ &= 6 + 12 + 6 \\ &= 24 \end{aligned}$$

- (d) Simplify $5x + 2x - 3x$.

47c

6. Two rectangles, each 9 cm by 3 cm, and an overlapping rectangle, 8 cm by 3 cm, are placed so that they make the H shape shown in the diagram.



- (a) Calculate the perimeter of the shape.

(9) Calculate the perimeter of the shape.

$9 + 3 + 3 + 2 + 3 + 3 + 3 + 3 + 3 + 3 + 3$

= 46 cm

- (b) Calculate the area of the shape.
Write down the units of your answer.

write down the units of your answer.

$\text{Area of (A)} = 9 \times 3 = 27$

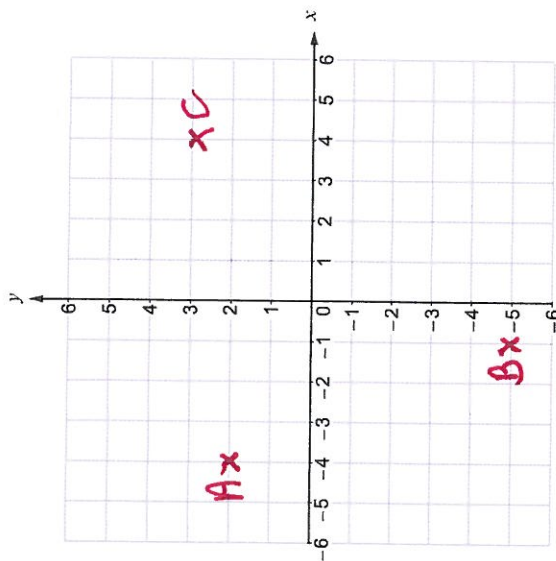
Average $\textcircled{13} = 2 \times 3 = 6$

$$\text{Area } f(c) = 9 \times 3 = 27 \text{ cm}^2$$

9

Examiner only

7. On the squared paper below, plot the points $A(-4, 2)$, $B(-1, -5)$ and $C(4, 3)$. [3]



61 91 91

4370 0300009



0 9

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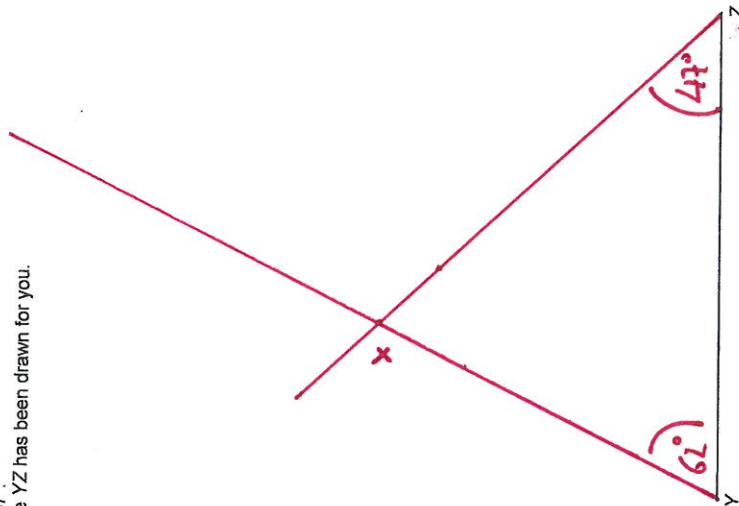
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Turn over.

10

Examiner only

8. (a) Complete an accurate drawing of triangle XYZ in which $YZ = 10$ cm, $\angle Y = 62^\circ$ and $\angle Z = 47^\circ$. The side YZ has been drawn for you. [3]



- (b) Write down the special name given to an angle which is more than 90° , but less than 180° . [1]

obtuse



1 0

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(4370-03)

M1 M1 A1 91

9. A rectangular tank has a length of 20 cm, a width of 15 cm and a height of 10 cm. Water is poured into the tank until it is half full. Calculate the volume of the water in litres. [4]

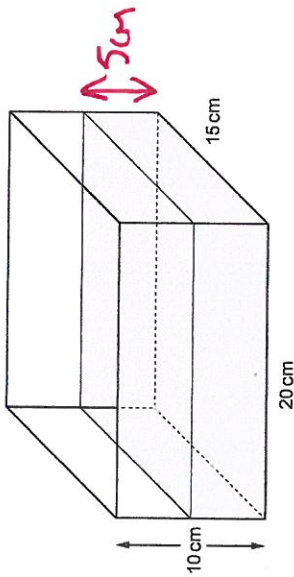


Diagram not drawn to scale

$$\begin{aligned} \text{Volume} &= 20 \times 15 \times 5 \\ &= 100 \times 5 \\ &= 1500 \text{ cm}^3 \end{aligned}$$

$$1 \text{ litre} = 1000 \text{ cm}^3$$

$$\text{Volume} = 1500 \div 1000 = 1.5 \text{ litres}$$

M1

A1

M1

A1



1 1

10. The table shows typical ranges for fares and journey times for London taxis.

London Taxis		Tariff 1	Tariff 2	Tariff 3
Distance (up to)	Approximate journey time	Monday to Friday 06:00 to 20:00	Monday to Friday 20:00 to 22:00 Saturday and Sunday 06:00 to 22:00	Every night 22:00 to 06:00
1 mile	6 - 13 mins	£5.60 - £8.60	£5.60 - £8.80	£6.60 - £8.80
2 miles	10 - 20 mins	£8.40 - £13.40	£8.80 - £13.60	£10.20 - £14.40
4 miles	16 - 30 mins	£15 - £21	£16 - £22	£17 - £27
6 miles	28 - 40 mins	£23 - £28	£28 - £31	£28 - £32

Example:

A journey of 5 miles at midnight would cost between £28 and £32, depending on the length of time of the journey.

Use the table to answer the following questions.

- (a) Peter hires a taxi on a Thursday at 10:25 a.m. for a journey of 2 miles. What is the least amount he should be charged and what would be the earliest time he would get there? [2]

Least amount charged

£8.40

Earliest time

10:35 am

B1

B1



1 2

- (b) Joanna and her 4 friends are out together on a Friday at 23:30 p.m.

They are staying at the same hotel, which is about $3\frac{1}{2}$ miles away.

They could hire a taxi or they could buy tickets on the underground tube costing £4 each.

For the 5 friends, explain how it is possible that hiring a taxi might

- **save money, or**
- **cost more money.**

- cost more money.
- You must show all your working for both of these possibilities.

You must show all your working for both of these possibilities.

Taxi will be on tariff 3

3rd index is "up to 4" so range between f17 and f27 B)

Cost of tube will be $\text{₹} 4 \times 5 = \text{₹} 20$

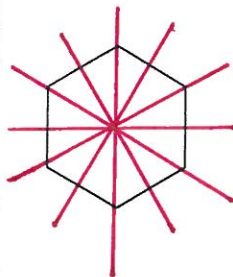
So if journey time is short then taxi will be cheaper (£17) B)

but if journey is long, tube will be cheaper (20)

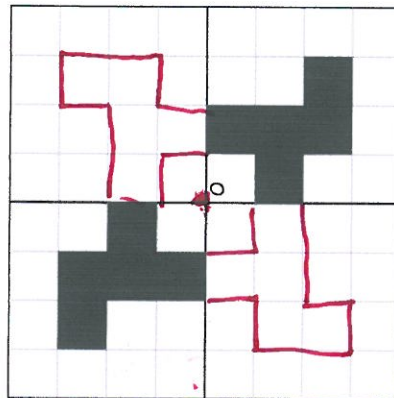
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11. (a) Draw all the lines of symmetry on the following diagram.



- (b) Draw two more shapes so that the completed pattern has rotational symmetry of order 4 about O . [2]



151

131

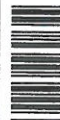


12. Calculate the value of $\frac{3}{8}$ as a decimal.

[2]

$$0.375$$

$$8 \overline{) 3.000} \quad \frac{3}{8} = 0.375$$

M1
A1

13. There are four balls numbered 2, 2, 3 and 4 respectively in machine A and four balls numbered 3, 4, 5 and 6 respectively in machine B.

In a game, both machines A and B select one ball at random.

The score for the game is the 2-digit number whose units digit is the number from machine A and whose tens digit is the number from machine B.

For example, if the number on the ball from machine A is 4 and the number on the ball from machine B is 3, the score is 34.

- (a) Complete the following table to show all the possible scores. [2]

Machine B	Machine A			
	2	2	3	4
6	62	62	63	64
5	52	52	53	54
4	42	42	43	44
3	32	32	33	34

B2

A player wins a prize by getting a score of 42 or less.

- (b) (i) Matthew plays the game once. What is the probability that he wins a prize? [2]

B2

$$\frac{6}{16}$$

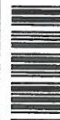
- (ii) One day 400 people play this game once. Approximately how many would you expect to win a prize? [2]

M1

$$\frac{6}{16} \times 400 = 6 \times 25 = 150$$

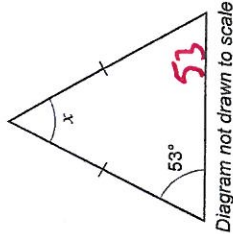
A1

$$\frac{0.25}{16} \times 400$$



14. (a) Find the size of angle x .

[2]



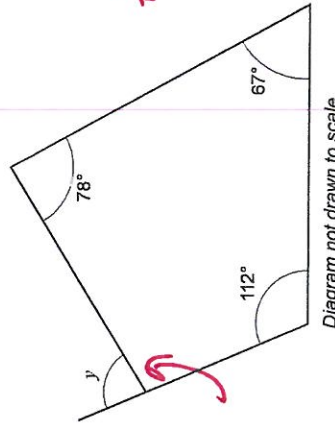
$$53 + 53 = 106$$

$$x = 180 - 106$$

$$x = 74$$

- (b) Find the size of angle y .

[3]



$$360 - 257 = 103$$

$$y = 180 - 103$$

$$y = 77$$



1 7

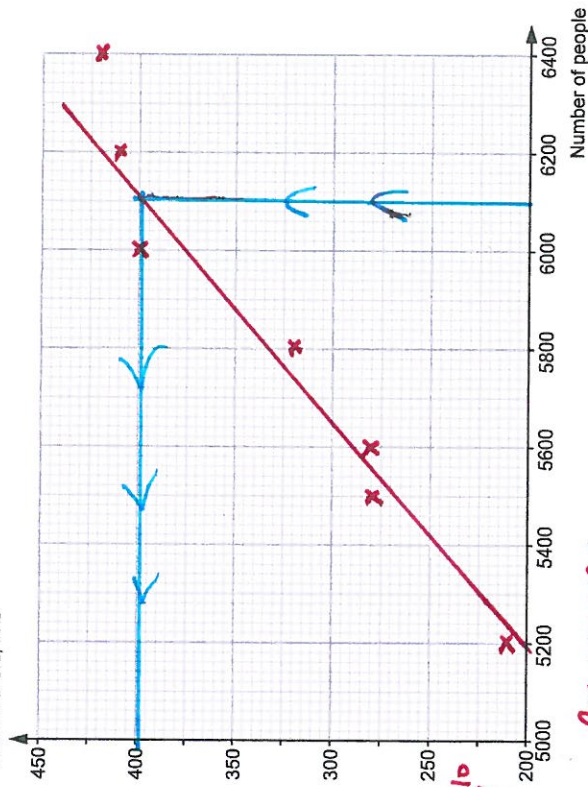
15. A festival took place over 7 days in August. Each day, the number of people at the festival and the amount of money taken by the ice cream sellers were recorded. The table below shows the results.

Number of people	5500	6000	5000	5800	6200	6400	6200
Amount taken by ice cream sellers, in £	280	400	210	320	420	410	410

- (a) On the graph paper below, draw a scatter diagram of these results.

[2]

Amount taken by ice cream sellers, in £



$$200 \div 10 = 20 \rightarrow$$



1 8

- (b) Write down the type of correlation that is shown by the scatter diagram.

Examiner only

positive

- (c) Draw, by eye, a line of best fit on your scatter diagram

51

- (d) Estimate the amount of money that may have been taken by ice cream sellers during one day had 6100 people attended the festival on that day.

£4400

51

- (e) Explain why it is not possible to work out how much a typical ice cream costs at the festival.

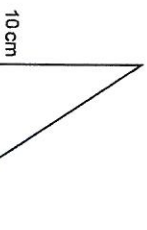
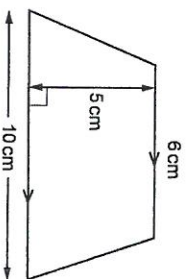
[1]

The data shows how many people were at the festival and how many bought ice cream.

61.

16. The area of the trapezium is equal to the area of the right-angled triangle.

Examiner only



Diagrams not drawn to scale

Calculate the value of x .

[4]

$$\text{Area of trapezium} = \frac{1}{2} \times (6+10) \times 5$$

M1

$$= \frac{1}{2} \times 16 \times 5$$

$$= 8 \times 5$$

$$= 40 \text{ cm}^2$$

A1

$$\text{Area of triangle} = \frac{1}{2} \times x \times 10 = 5x$$

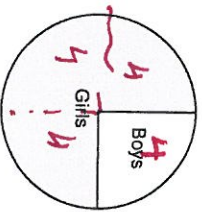
$$5x = 40$$

M1

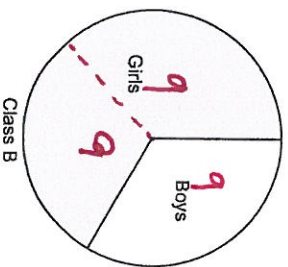
$$x = \frac{40}{5} = 8 \text{ cm}$$

A1

17. The pie charts show the proportion of boys to girls in class A and class B.



Class A



Class B

There are more pupils in class B than in class A.

There are 4 boys in class A.

There are $1\frac{1}{2}$ times as many girls in class B than in class A.

How many boys are there in class B?

[4]

No of girls in A = 12

No of girls in B = $12 + 6 = 18$

No of boys in B = 9

Examiner only

18. (a) Solve $\frac{x}{2} + 18 = 26$.

[2]

$$\frac{x}{2} = 26 - 18$$

$$\frac{x}{2} = 8 \quad x = 8 \times 2$$

$$= 16$$

(b) Expand $y(y^2 + 4)$.

[2]

$$y^3 + 4y$$

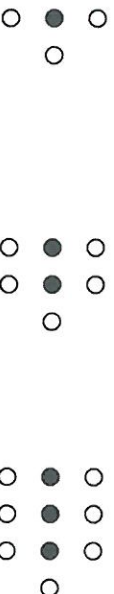
Examiner only

19. Patterns made with black and white circles are shown below.

Pattern 1

Pattern 2

Pattern 3



Complete the following statements, in terms of n .

'There will be n black circles in Pattern n .'

'There will be $2n + 1$ white circles in Pattern n .'

[3]

20. In the diagram, angles a , b and c are measured in degrees.

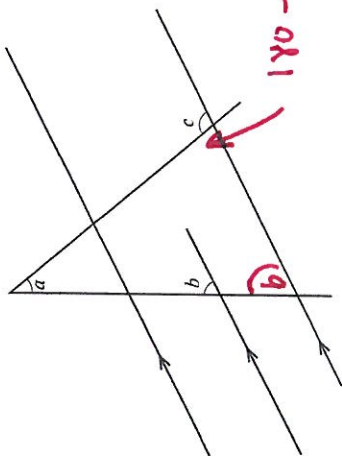


Diagram not drawn to scale

- Find the size of angle c in terms of a and b .
You must show all your working, which may be indicated on the diagram.

$$\begin{aligned} C &= 180 - (180 - (a+b)) \\ &= 180 - 180 + (a+b) \\ &= a+b \end{aligned}$$

B1

M1

A1

[3]

Examiner only

21. Maggie has lots of tiles.
All of her tiles are in the shape of regular polygons.
The edges of all the tiles have the same length.

She places two 12-sided tiles to meet edge-to-edge.
Maggie places a different-shaped tile with these two tiles.
She finds that the 3 tiles tessellate.

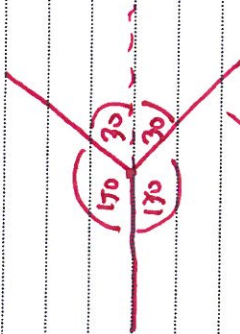
By calculation, find the number of sides of this third tile.
You must show all your working.

[5]

12 sided polygon
exterior angles add up to 360°

So each exterior angle = $360 \div 12 = 30^\circ$

B1



B1

So interior angle of third tile = 60° M1

equilateral triangle has angles of 60° A1



So third tile has 3 sides. A1

END OF PAPER



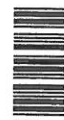
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2 4

Examiner only

Question number	
	Additional page, if required. Write the question number(s) in the left-hand margin.



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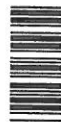
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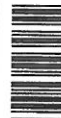
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2 8

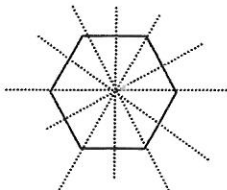
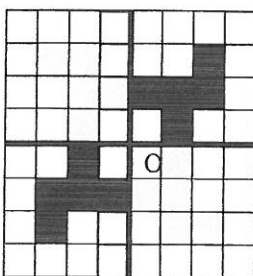
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PAPER 1 - FOUNDATION TIER

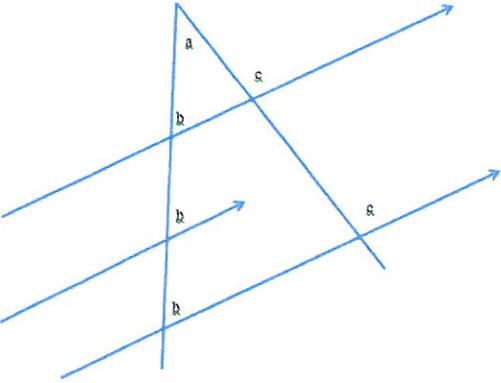
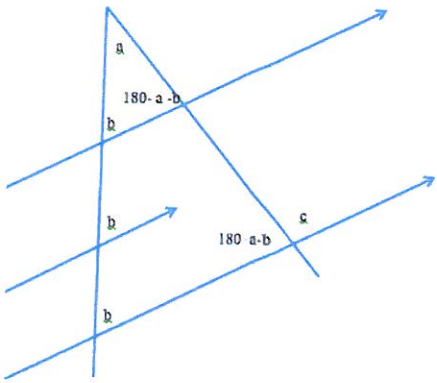
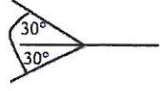
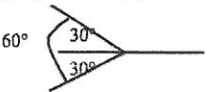
Summer 2014 Paper 1 (Non calculator) Foundation Tier	Marks	Comments
1. (a) (i) 3 411 002	B1	
1. (a) (ii) seventy two thousand <u>(no hundreds) (and)</u> sixty five	B1	
1. (b) (i) 17 and 63	B1	B0 for 40+40.
1. (b) (ii) 39	B1	
1. (b) (iii) 63	B1	
1. (b) (iv) 6	B1	Allow $48/8 = 6$, $6 \times 8 = 48$ but B0 for $48/6 = 8$
1. (b) (v) 81	B1	
1. (c) 12 or 16	B1	For 12, 16 or both. Allow 12×8 OR 16×6 <u>As always, B0 for a choice of answers with at least one answer incorrect</u>
1. (d) (i) 6570	B1	
1. (d) (ii) 6600	B1	
2. (a) (i) 7652	B1	
2. (a) (ii) 2576	B1	
2. (b) (i) <u>(0)</u> ·06	B1	
2. (b) (ii) 2·92	B1	
2. (c) $2 \cdot 9 \times 100$ OR 3×98 OR 3×100 = 290 OR 294 OR 300	M1 A1	Only these three estimates. <u>M1,A1 for unsupported answers of 290, 294 OR 300</u>
3. Hours = 20×15 (minutes) $20 \times \frac{1}{4}$ (hours) = 300 (minutes) = 5 (hours) Payment = $8 \times 5 + 12$ = (£) 52 Look for • spelling • clarity of text explanations, • the use of £s, hours and minutes QWC2: Candidates will be expected to • present work clearly, with words explaining process or steps AND • make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps OR • make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer	✓ M1 A1 M1 A1 QWC 2	<u>Special cases</u> Candidates who do $8 \times 20 + 12$ get SC1 for the (£)172 <u>Similarly SC1 for (£)132 from $8 \times 15 + 12$</u> 'hours' not required at this stage F.T. 'their time' (must be an attempt to convert to hours). QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar. OR Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar. QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling

Summer 2014 Paper 1 (Non calculator) Foundation Tier	Marks	Comments
4. (a) certain	B1	<u>(Welsh is sicr)</u>
4. (b) unlikely	B1	<u>(Welsh is annhebygol)</u>
4. (c) even chance	B1	Do not accept 'even' but B1 for 'evens'. <u>(Welsh is siawns deg)</u>
5. (a) (i) 39 (ii) 44	B1 B1	B0 for $6n+9$
5. (b) Divide the previous term by 4	B1	Accept $\div 4$. Accept $\times \frac{1}{4}$. <u>Accept quarterly.</u> <u>Accept 'halve and halve again'</u> <u>B0 for dividing into quarters</u> B0 for $n/4$
5. (c) ($p = 3 \times 2 + 4 \times 3 - 6 \times -1 =$) $6+12+6 = 24$	M1 A1	Award only when a correct substitution is assured Unsupported 24 gets M1,A1. Any other unsupported answer gets M0,A0. SC1 for seeing $6+12-6 = 12$
5. (d) $4x$ <u>ISW</u>	B1	
<u>All parts (a) – (b) marked at the same time</u> <u>To be viewed with diagram</u> 6. (a) Missing inside segment = 2 Perimeter = $9+9+8 \times 3+2 \times 2$ = 46 (cm) <u>To be viewed with diagram</u> (b) Area = $8 \times 3+4 \times 3 \times 3$ OR $8 \times 9 - 2 \times 3 \times 2$ (= $24 + 36$) (= $72 - 12$) = 60 cm^2	✓ S1 M1 A1 M1 A1 U1	<u>You must also check the diagram for any working.</u> <u>Must be seen in part (a).</u> Attempt to <u>add all sides</u> of the shape. <u>Use $42+2x$ for M1 where x stands for 'their 2'</u> <u>S1, M1 for methods that imply the '2', e.g. $9 \times 2+8 \times 2+4 \times 3$</u> C.A.O. Attempt to add all areas of the shape OR difference of areas C.A.O. Independent of all other marks.
7. A(-4, 2), B(-1, -5) and C(4, 3) plotted.	B3	B1 for each. Reversed coordinates get B0. <u>Condone missing letters or A, B and C used instead of dots, as long as the points are identifiable.</u> <u>Ignore triangles joining the points.</u>
8. (a) <u>Use overlay</u> $\hat{X}\hat{Y}\hat{Z} = 62^\circ (\pm 2^\circ)$ $\hat{X}\hat{Z}\hat{Y} = 47^\circ (\pm 2^\circ)$ Completed triangle.	M1 M1 A1	Dependent on at least one M1. SC2 for a 'reversed' triangle (see overlay).
8. (b) Obtuse (Aflern)	B1	Accept misspellings.
<u>To be viewed with diagram</u> 9. Volume = $20 \times 15 \times 10 (\times \frac{1}{2})$ = $1500 (\text{cm}^3)$ = $1500/1000$ = 1.5 litres	✓ M1 A1 M1 A1	No need for the $\frac{1}{2}$ for the M1. CAO FT 'their 1500/1000' 'litres' not required but A0 for incorrect units.
<u>To be viewed with table</u> 10. (a) (£) 8.40 and 10:35 <u>(a.m.)</u>	B2	B1 for each B0 for 10 minutes
<u>To be viewed with table</u> 10. (b) Taxi fare is (£)17 - (£)27 Tube tickets cost (£)20 Compares (£)17 with (£)20 Compares (£)27 with (£)20	✓ B1 B1 B1 B1	Per person solutions <u>Taxi fare is (£)17 - (£)27</u> <u>B1</u> <u>Divides any taxi fare by 5</u> <u>B1</u> <u>Compares (£)3.40 with (£)4</u> <u>B1</u> <u>Compares (£)5.40 with (£)4</u> <u>B1</u> F.T. their figures <u>2 taxis (Maximum 3 marks available)</u> <u>Taxi fare is (£)34 - (£)54</u> <u>B1</u> <u>Tube tickets cost (£)20</u> <u>B1</u> <u>Taxi (always) more than tube</u> <u>B1</u>

Summer 2014 Paper 1 (Non calculator) Foundation Tier	Marks	Comments	
11. (a) 	B2	B1 for 3 or more correct lines drawn AND no incorrect lines.	
11. (b) 	B2	B1 for each of 1st and 3rd quadrants	
12. $(3/8) = 8)3.000$ <u>(0).375 ISW</u>	M1 A1	Any valid method. Must show a division method being implemented <u>M0, A0 for unsupported (0).38</u>	
<u>All parts (a) – (b) marked at the same time</u>			
13. (a) (62) <u>62</u> (63) <u>64</u> (52) <u>52</u> <u>53</u> (54) (42) (42) <u>43</u> (44) (32) (32) (33) <u>34</u>	B2	B1 for at least 3 correct entries	
(b) (i) $\frac{6}{16}$ I.S.W.	B2	F.T. their table B1 for a numerator of 6 in a fraction less than 1. B1 for a denominator of 16 in a fraction less than 1. <u>Penalise -1 once only for wrong notation, e.g. 6 out of 16 OR 6:16</u>	
(ii) $\frac{6}{16}$ of 400 = 150	M1 A1	F.T. their (b)(i) if a fraction less than 1. ($\neq 1/2$) M1,A0 for 8/16 of 400 if it is F.T. from their table 150 out of 400 gets the M1, A1 but 150/400 gets M1, A0. A0 if using an incorrect reduction of the fraction from (b)(i)	
<u>To be viewed with diagram</u>			
14. (a) $(x =) 180 - 53 - 53$ $= 74(^{\circ})$	M1 A1		
<u>To be viewed with diagram</u>			
14. (b) $360 - (112 + 67 + 78)$ OR $360 - 257$ $103(^{\circ})$ $(y =) 77(^{\circ})$	M1 A1 B1	$y=103(^{\circ})$ as final answer gets M1,A1,B0 FT 180 – ‘their 103’	<u>General principle</u> <u>257 – 360 = 103 gets M1,A1</u> <u>257 – 360 $\neq$ 103 gets M0,A0</u>

Questions 15 – 21 except 19(a) are common with the Higher Tier.
This Mark Scheme will be amended to match the Higher Tier throughout the conference.

Summer 2014 Paper 1 (Non calculator) Foundation Tier	Marks	Comments
All parts (a) – (e) marked at the same time 15.(a) All points plotted correctly (b) Positive To be viewed with graph (c) Line of best fit with points above and below To be viewed with graph (d) Their estimate, from use of their line of best fit, or an answer in inclusive interval $390 \leq \text{'their estimate'} \leq 410$ (e) Explanation, that it doesn't tell you, e.g. 'only know how many attend, not how many spent money on ice cream', or 'don't know how many ice creams were sold'	B2 B1 B1 B1 E1	Intention: closer to the correct intersection than to any others B1 for indication of at least 3 correct points <i>Penalise joining point to point -1</i> Do not accept descriptions The line must be fit for purpose, it should not pass through the intersection of the axes <i>Ignore also joining point to point</i> Accuracy to the nearest £10 FT for their incorrect line of best fit with accuracy to the nearest £10 Ignore incorrect statements given with a correct response. Accept answers that state or imply, don't know: • how many ice cream sold, or • how many people bought ice cream Allow answers that state or imply, don't know: • different costs of ice cream (days or ice creams) e.g. accept 'different ice creams cost different amounts', 'don't know who bought what', 'sellers change prices on different days'
To be viewed with diagram 16. Area trapezium = $\frac{1}{2} \times 5 \times (6 + 10)$ = 40 (cm²) Triangle: $\frac{1}{2} \times 10 \times x = 40$ (x =) 8 (cm)	✓ M1 A1 M1 A1	For equating 'their 40' (any value) with $\frac{1}{2} \times 10 \times x$ FT correct evaluation from 'their 40' (their value) <i>SC2 for an answer 8(cm) from <u>area of trapezium</u> = $5 \times (6 + 10) = 80$ followed by <u>area of triangle</u> = $10 \times x = 80$, or</i> <i>SC1 for a 2 stage method equating $10 \times x$ with $5 \times (6 + 10)$ with error in calculating x</i> <i>A full one stage method $10 \times x = 5 \times (6 + 10)$ <u>or equivalent</u> is correct for 3 marks.</i>
To be viewed with diagram 17. Class A has 12 girls Class B has 18 girls There are twice as many girls as boys in class B, or $\frac{1}{3}$ of class B boys, or $\frac{2}{3}$ of class B girls Class B has 9 boys	✓ B1 B1 B1 B1	FT $1\frac{1}{2} \times \text{'their 12'}$ correctly evaluated (but NOT $1\frac{1}{2} \times 4$) <i>Sight of 18 implies first B1, B1</i> OR Class B: Angle girls $240^\circ \pm 2^\circ$ and angle boys $120^\circ \pm 2^\circ$ This may be implied from their numbers of girls and boys in class B. <i>Note: $\frac{1}{3}$ of 18 does not imply $\frac{1}{3}$ of class B boys, hence B0 '18 is $\frac{2}{3}$', implies B1</i> CAO
18.(a) $x/2 = 26 - 18$ OR $x + 18 \times 2 = 26 \times 2$ x = 16	M1 A1	OR alternative full correct method Mark final answer. <i>Accept embedded answer, e.g. $16/2 + 18 = 26$</i>
18. (b) $y^3 + 4y$	B2	B1 for a correct term. Mark final answer for B2.
19. n (black) 2n + 1 or equivalent (white)	B1 B2	Accept use of N B1 for 2n or equivalent <i>Penalise use of other letters -1 only</i>

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To be viewed with diagram 20. An appropriate angle $180 - a - b$ or $180 - (a+b)$, or an appropriate b or c angle indicated on the diagram  <u>(c =)</u> $180 - (180 - a - b)$ <u>(c =)</u> $a + b$	B1 M1 A1	Must be shown or stated OR  Or equivalent rearrangement, e.g. $a + b + 180 - c = 180$ For answer only (c =) $a + b$ <u>without</u> working or indication of any appropriate b or c angles award B0, M1 and A1. For answer (c =) $a + b$ <u>with</u> working or indication of any appropriate b or c angles award B1, M1 and A1.
21. 12 sided shape: exterior angle $360/12 (= 30^\circ)$ interior angle ($180^\circ - 30^\circ =$) 150° OR sketch showing one 30° exterior angles, e.g.  Gap is $360 - 150 - 150$ OR sketch implying the sum of the 2 angles of 30° is the remaining exterior angle, e.g.  Appropriate 60° or sketch showing 60° e.g.  Third shape: 3 (sides)	B1 B1 M1 A1 A1	OR M1 Interior $10 \times 180 \div 12$ A1 $= 150^\circ$ OR B2 for interior angle found to be 150° FT for use of 'their 150' CAO. Allow (equilateral) triangle <u>If correct answer with sight of angles:</u> <u>Sight of 150° or 30° AND 60° followed by an answer 3 (sides) or triangle is awarded 5 marks</u> or <u>Sight of 150° or 30° followed by an answer 3 (sides) or triangle is awarded 4 marks only (as working is incomplete)</u> or <u>Sight of $360^\circ/12$ followed by an answer 3 (sides) or triangle is awarded 3 marks only (as working is incomplete)</u> <u>OR if no working or errors in calculations:</u> <u>Award SC2 for an answer of 3 sides or (equilateral) triangle.</u> <u>OR</u> <u>Award SC2 for a diagram of a tessellation of a number of sides of two 12-sided polygons showing a triangle.</u> <u>Award SC1 for a diagram of an attempt at a tessellation of a number of sides of two 12-sided polygons showing a triangle.</u>