



**General Certificate of Secondary Education  
March 2012**

**Mathematics**

**43601F**

**Foundation**

**Unit 1**

**Final**

***Mark Scheme***

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**The following abbreviations are used on the mark scheme:**

<b>M</b>	Method marks awarded for a correct method.
<b>M dep</b>	A method mark which is dependent on a previous method mark being awarded.
<b>A</b>	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
<b>B</b>	Marks awarded independent of method.
<b>Q</b>	Marks awarded for quality of written communication.
<b>ft</b>	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
<b>SC</b>	Special Case. Marks awarded for a common misinterpretation which has some mathematical worth.
<b>oe</b>	Or equivalent.
<b>[<i>a</i>, <i>b</i>]</b>	Accept values between <i>a</i> and <i>b</i> inclusive.

**UNIT 1 FOUNDATION TIER**

**43601F**

1a	(Medium bar =) 20	B1	
	(Large bar =) 6	B1	If structure incorrect (incorrect gaps/unequal widths) award B1 max
1b	24 or 10	B1	Seen (or implied by later work)
	their 24 + their 10 (= 34)	M1 dep	dep on B1
	their 34 × 2	M1	oe M2 for their 24 × 2 + their 10 × 2
	68	A1	SC3 digits 68 (but not answer = 68) SC3 64 SC2 32
	<b>Alternative method</b>		
	24 or 10	B1	Seen (or implied by later work)
	their 24 × 2 or their 10 × 2	M1	
	their 48 + their 20	M1 dep	dep on B1
	68	A1	SC3 digits 68 (but not answer = 68) SC3 64 SC2 32

2a	Symbol represents 10 members	B1	
	Correct number of symbols for one row Basketball (1) Netball $\left(1\frac{1}{2}\right)$	M1	Follow through from their key (not symbol = 1)
	Two correct rows	A1 ft	ft wrong key (not symbol = 1)
2b	Suitable headline reflecting data	B1	Condone any valid statement about results eg Most people do football More do football than all the others in total 70 people go to sports clubs
2c	$40 \div 5 (= 8)$ or $40 \div 2 (= 20)$ or $2 \times 5 (= 10)$	M1	oe
	4	A1	

3a	120 – 97 or 89 – 70 + 31 – 27	M1	oe or 19 or 4 seen
	23	A1	SC1 answer 46
3b	15	B1	for Wednesday
	24	B1	for Thursday
3c	$\frac{30}{120}$ seen	M1	oe fraction, decimal, percentage
	$\frac{1}{4}$	A1	SC1 $\frac{15}{43}$ SC1 any seen fraction correctly cancelled to simplest form
3d	$\frac{50}{150}$ or attempts to make a comparison	M1	Seen or implied
	$\frac{1}{3}$ or $\left(\frac{1}{4} = \frac{50}{200}\right)$ or both values correct in appropriate comparison	A1	Fraction/decimal/percentage
	Their yes with fractions with either same numerator (oe) or same denominator or with both values as decimals or both values as percentages or appropriate diagrams	Q1	Strand (iii) Supporting answers with explanations and evidence ft their $\frac{1}{4}$ from 3c and their $\frac{1}{3}$
	<b>Alternative method</b>		
	$\frac{150}{4}$	M1	May be implied by diagram
	37.5	A1	
	Yes (50 > 37.5)	Q1	

4a	Germany, UK, France	B2	B1 for one correct: Germany first or UK second or France third B1 30, 28, 8
4b	9	B1	
4c	(Germany =) 30 + 10 + 6 + 32 (= 78) or (UK =) 28 + 13 + 12 + 23 (= 76) or (France =) 8 + 15 + 9 + 11 (= 43)	M1	Method for one country seen or implied by correct answer Allow one error per country
	(Germany =) 30 + 10 + 6 + 32 (= 78) <b>and</b> (UK =) 28 + 13 + 12 + 23 (= 76) (and (France =) 8 + 15 + 9 + 11 (= 43))	M1	Method for at least Germany <b>and</b> UK seen or implied by correct answer Allow one error per country
	Germany = 78 <b>and</b> UK = 76 (and France = 43) and chooses Germany	A1	

5a	$\frac{1}{15}$	B1	oe [0.06, 0.07] or [6%, 7%]
5b	$\frac{2}{15}$	B1	oe [0.13, 0.14] or [13%, 14%]
5c	$\frac{13}{15}$	B1 ft	oe ft 1 – their $\frac{2}{15}$ [0.86, 0.87] or [86%, 87%]

6a	5	B1	
6b	3	B2	B1 one correct trial seen (increasing red and decreasing yellow by same number) or B1 10 red or 9 yellow seen or B1 $(12 \pm 7) \div 2$ or 2.5 or 9.5

7a	$10.03 + 9.78 + 10.61 + 12.9(0) + 10.08 (= 53.4)$	M1	Allow one error
	$\frac{\text{their } 53.4}{5} (= 10.68)$	M1	
	10.68 and Erik	A1	
	<b>Alternative method</b>		
	$10.03 + 9.78 + 10.61 + 12.9(0) + 10.08 (= 53.4)$	M1	Allow one error
	$10.31 \times 5 (= 51.55)$	M1	
	51.55 and 53.4 and Erik	A1	
7b	$10.31 + 0.34 (= 10.65)$	M1	$\frac{10.03 + 10.61 + 10.08}{3} (= 10.24)$
	Oscar and 10.65 or Oscar and 10.24	A1	

8a	Stem 4, 5, 6, (7) and suitable key	B1	
	Leaves 6 8 9 1 2 3 3 5 7 9 0 1 4 5 2	B2	B1 one error Unordered is one error
	Stem, leaves and aligned correctly to show distribution	Q1	Strand (ii) Logical organised working
8b	55	B1 ft	ft their stem-and-leaf
8c	$0.05 \times \text{their } 55 (= 2.75)$	M1	oe their 55 must be < 59
	their 55 + their 2.75 (= 57.75) or $59 - \text{their } 2.75 (= 56.25)$	M1 dep	
	Yes and 57.75 or Yes and 56.25	A1 ft	ft their 55 only
	<b>Alternative method 1</b>		
	$59 - \text{their } 55 (= 4)$	M1	their 55 must be < 59
	$\frac{\text{their } 4}{\text{their } 55} \times 100 (= 7.(...))$	M1 dep	oe
	Yes and 7.(...)	A1 ft	ft their 55 only
	<b>Alternative method 2</b>		
	$0.05 \times \text{their } 55 (= 2.75)$ or $59 - \text{their } 55 (= 4)$	M1	oe their 55 must be < 59
	$0.05 \times \text{their } 55 (= 2.75)$ and $59 - \text{their } 55 (= 4)$	M1 dep	oe their 55 must be < 59
	Yes and 2.75 and 4	A1 ft	ft their 55 only
	<b>Alternative method 3</b>		
	$\frac{59}{\text{their } 55} (\times 100) \text{ or } 1.07(...)$ or 107.(...)	M1	oe their 55 must be < 59
	their 1.07(...) – 1 or their 107.(...) – 100	M1 dep	May be implied by correct final answer
	Yes and 7.(...)	A1 ft	ft their 55 only
	<b>Alternative method 4</b>		
	1.05 seen	M1	
their 55 $\times$ 1.05 or $59 \div 1.05$	M1 dep	oe their 55 must be < 59	
Yes and 57.75 or Yes and 56.(...)	A1 ft	ft their 55 only	

9	162 or 108 or 36 or 18	B1	±2
	$\frac{\text{their } 162}{360} \times 100 (= [44, 46])$	M1	oe
	[44, 46] and Yes	A1	
	<b>Alternative method 1</b>		
	198 (±2)	B1	198 (±2)
	$\frac{\text{their } 198}{360} \times 100 (= [54, 56])$	M1	oe $\frac{\text{their } 198}{360} \times 100 (= [54, 56])$
	[54, 56] and 60 and Yes	A1	[54, 56] and 45 and Yes
	<b>Alternative method 2</b>		
	162 or 108 or 36 or 18	B1	±2
	$0.4 \times 360 (= 144)$	M1	oe
	144 and [160, 164] and Yes	A1	
	<b>Alternative method 3</b>		
	198	B1	±2
	$0.6 \times 360 (= 216)$	M1	oe
	216 and [196, 200] and Yes	A1	
	<b>Alternative method 4</b>		
	30% or 10% or 5%	B1	±1%
	their 30% + their 10% + their 5%	M1 dep	oe At least one percentage must be in tolerance
[44, 46] and Yes	A1		

10	Total girls = 90	B1						
	Girls can whistle = 36	B1 ft	ft $\frac{40}{100} \times \text{their } 90$					
	Girls cannot whistle = 54	B1 ft	ft their 90 – their 36					
	Boys can whistle = 24	B1 ft	ft their 36 ÷ 3 × 2					
	Boys cannot whistle = 6	B1 ft	ft 30 – their 24					
			Note: if all correct B5:					
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>24</td> <td>36</td> </tr> <tr> <td>6</td> <td>54</td> </tr> <tr> <td>30</td> <td>90</td> </tr> </table>	24	36	6	54	30	90
24	36							
6	54							
30	90							