



**General Certificate of Secondary Education
June 2011**

Mathematics

43601F

Foundation

Unit 1

Final

Mark Scheme

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The following abbreviations are used on the mark scheme:

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

UNIT 1 FOUNDATION TIER

43601F

1ai	4, 3, 12, 9	B2	B1 three correct
	28	B1 ft	ft frequencies or correct from tallies
1aii	$\frac{\text{their 4}}{\text{their 28}}$	B1 ft	oe
	$\frac{1}{7}$	B1 ft	ft correct cancelling of any fraction
1b	Symbol represents 2 birds	B1	
	Correct number of symbols for blackbird (3) starling $\left(2\frac{1}{2}\right)$ sparrow $\left(1\frac{1}{2}\right)$	B2 ft	ft their key or correct (not symbol = 1 unless 2 more symbols added in robin row) B1 ft for one or two rows correct Allow half bird cut anywhere
	Their completed pictogram, symbols aligned	Q1	Strand (ii) Logical organised working
1c	8 000 000	B1	
	8 million \div 500 000 or their 8 000 000 \div 500 000	M1	oe eg 8 \div 0.5 Digits 16 implies M1
	16	A1 ft	ft their 8 000 000 in digits SC1 $\frac{1}{16}$ or 0.0625
1d	blackbird (flies away)	B1	Accept any clear indication eg B, R
	robin (arrives)	B1	SC1 answers wrong way round SC1 Robin 4, Blackbird 3

2	10	B2	B1 92(p) or 82(p) or 72(p) or 20(p) seen SC1 5p, 5p or $2 \times 5p$
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3a	8 (-) 3	M1	
	5	A1	
3b	8 (+) 4 (+) 5 (+) 3	M1	Allow one error or omission
	20	A1	
3c	Fully correct bar chart (heights 10, 2, 5)	B3	B2 2 criteria met B1 1 criteria met ie bars add up to their 20 – 3 Banana (bar) = $2 \times$ orange (bar) Apple bar has height 2

4a	B marked at three parts	B1	0 – – B 1
	C marked at 0	B1	
4b	60(°) or $\frac{1}{6}$ seen	B1	±2 or 60 walk or 50 cycle or 90 bus
	$\frac{360}{\text{their } 60} \times 40$	M1	oe their 6×40 or $5 \times 40 + 40$
	240	A1 ft	Accept integer answer in range [232, 249] SC2 Non-integer in range [232, 249]
4c	$\frac{90}{360} (\times 252)$ or $\frac{1}{4} (\times 252)$	M1	oe
	63	A1	
	Alternative method		
	$40 \times \frac{90}{\text{their } 60} + \frac{252 - \text{their } 240}{4}$	M1	
	63	A1	

5a	$(1 + 1 + 10 + 2 + 10 + 1 + 3) \div 7$ or $1 + 1 + 10 + 2 + 10 + 1 + 3$	M1	oe Allow one error or omission
	4 or 28 and 35	A1	
	(range =) 9	B1	Range
	Ed's scores are higher on average or Danni's scores are more varied	Q1	oe ft their values for mean or totals or range Strand (iii) Supporting answers with explanation and evidence
	Ed's scores are higher on average (or in total) and Danni's scores have bigger range	B1 ft	oe ft their values for mean or totals and range
5b	Danni and valid reason or Ed and valid reason	B1 ft	eg (Danni) only one that scored 10 (Ed) more consistent

6	$1 - \frac{1}{4} \left(= \frac{3}{4} \right)$	B1	$24 \div 3 (= 8)$ or $1 : 3$
	$24 \div 3 \times 4$	M1	oe their $8 + 24$ or $(1 \times) 8 + 3 \times 8$ or 4×8
	32	A1	SC2 $\frac{8}{32}$ or $\frac{24}{32}$

7	$\frac{6}{100} \times 23.5(0) (= 1.41)$	M1	oe
	their $1.41 + 23.5(0) (= 24.91)$	M1 dep	oe $1.06 \times 23.5(0)$ M2
	their $24.91 \times 4 (= 99.64)$ or $100 \div \text{their } 24.91 (= 4.(...))$	M1	$100 \div 4 (= 25)$
	Yes and 99.64 or Yes and 4.(...)	A1	Yes and $24.91 (<) 25$
	Alternative method 1		
	$4 \times 23.5(0) (= 94)$	M1	
	$\frac{6}{100} \times \text{their } 94 (= 5.64)$ or $100 - \text{their } 94 (= 6)$	M1	oe
	their $94 + \text{their } 5.64 (= 99.64)$ or $\frac{\text{their } 6}{\text{their } 94} \times 100 (= 6.(...))$	M1 dep	oe 1.06×94 M3 dep on second M1
	Yes and 99.64 or Yes and 6.(...)	A1	
	Alternative method 2		
	$100 \div 4 (= 25)$	M1	
	their $25 - 23.5(0) (= 1.5(0))$	M1	
	$\frac{\text{their } 1.5(0)}{23.5(0)} \times 100 (= 6.(...))$	M1	
	Yes and 6.(...)	A1	

8a	$80(\%) : 20(\%) (= 4 : 1)$ or $\frac{4}{5}$ seen	B1	oe 80 to 20
8b	Rows/columns for History and not History	B1	oe
	Columns/rows for think real and not think real	B1	oe Allow extra column/row for don't know
8c	$17 : 3 = 5.(...) : 1$ or $17 \div 3 (= 5.(...))$	M1	oe $(4 : 1 =) 12 : 3$
	Yes and 5.(...)	A1	Yes and $12 : 3$
	Alternative method		
	$\frac{17}{20} (= 85(\%))$ or $85 : 15$	M1	$80\% = \frac{16}{20}$ or $\frac{17}{20}$ seen
	Yes and 85% or Yes and 85 and 80	A1	Yes and $\frac{17}{20} (>) \frac{16}{20}$

9a	$2 \times 0.4 (+) 3 \times 0.6 (+) 7 \times 0.8 (+)$ $4 \times 1.0 (+) 3 \times 1.2 (+) 1 \times 1.4$ (= 17.2) or $0.8(+)$ $1.8(+)$ $5.6(+)$ $4(+)$ $3.6(+)$ $1.4 (= 17.2)$	M1	Attempt at $f\bar{x}$ - at least one product seen
	their $17.2 \div$ their $(2 + 3 + 7 + 4 + 3 + 1)$ or their $17.2 \div 20$	M1 dep	Condone one error or omission in frequencies
	0.86	A1	Ignore further working SC2 [15.8, 15.9] or 0.76 or 0.96 SC1 [2.8, 2.9]
9b	Mention of collecting data about heights of ball bounce on concrete	B1	eg do an experiment dropping (same) balls (from same height) onto concrete and collect data
	Mention of summary statistics, a suitable graph or other calculation for comparison	B1	eg calculate the average heights of the bounces for concrete or plot a frequency polygon of heights on concrete
	Mention of interpreting results or link to given hypothesis	B1	eg compare the averages or compare the graphs