



General Certificate of Secondary Education

Mathematics 4307

Specification B

Module 1 Tier F 43051F

Mark Scheme

2010 examination - March series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

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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.
E	Marks awarded for an explanation.
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.

MODULE 1 FOUNDATION TIER**43051F****Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.**

1(a)	25	B1	
1(b)	$31 - 2$	M1	Allow $2 - 31$
	29	A1	
1(c)	$12 + 20 + 25 + 26 + 30 + 31$	M1	Condone 1 error in reading value Must be 6 values
	144	A1	Allow M1 for $25 + 18 + 15 + 8 + 5 + 2$ or 73
1(d)	$\frac{\text{their } 144}{6}$	M1	Allow M1 for $\frac{\text{their } 73}{6}$
	24	A1 ft	ft their answer to 1(c) $\div 6$ or correct Answers to 2 sf or better
1(e)	As the number of houses sold decreases the number of houses rented increases or 144 are renting and 73 are buying The 144 can be implied if 73 seen with a correct comment	E2	E1 for partially correct answer eg the number of houses rented is going up or more people rented than bought over the past 6 months

2(a)	1	B1	
2(b)	$0 + 1250 + 2 \times 960 + 3 \times 131 + 4 \times 63 + 5 \times 7$ or $0 + 1250 + 1920 + 393 + 252 + 35$	M1	Summing at least 4 correct products seen or 4 correct totals
	3850	A1	Note 4239 with no working implies M1A0

3(a)(i)	5 (white), 10 (black), 11 (yellow) and yellow chosen	B2	B1 for yellow with no working shown or yellow with clear incorrect working eg 5, 9 and 11 or 11, 5 and 10 seen
3(a)(ii)	5 as numerator or 26 as denominator	M1	Correct numerator or correct denominator
	$\frac{5}{26}$	A1	oe eg 0.19 or better (from 0.19230...)
3(a)(iii)	$\frac{21}{26}$	B1 ft	ft 1 – their (a)(ii) or correct oe eg 0.81 or better from (0.80769...)
3(b)	$25 \times \frac{1}{3}$ ($= 8.\dot{3}$) is not a whole number or cannot work out $\frac{1}{3}$ of 25 or 25 does not divide by 3 or cannot have $0.\dot{3}$ of a bead or half bead or fraction of a bead	E1	Not ‘3 cannot be divided by 25’ oe Allow ‘25 doesn’t divide into 3’

4(a)	Throw the coin a large number (≥ 30) of times (or repeat the experiment) and count the number of heads or see, list, record results	E2	oe E1 throw a coin 10 (or < 30) times or throw a coin a large number of times or throw a coin and count heads or tails								
4(b)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Heads</td> <td>Tails</td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	Heads	Tails			B1	Ignore superfluous work eg cum freq oe <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Number of Throws</td> <td>Heads</td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	Number of Throws	Heads		
Heads	Tails										
Number of Throws	Heads										
4(c)	If there are a lot more heads than tails [$\text{Pr}(H) > 0.6$ if numbers given] Work out the probability of heads and if $\text{Pr}(H) > 0.6$ or significantly greater than $\frac{1}{2}$	E2	E1 more heads than tails or look at how many heads there are or count up the totals of each								

5(a)	10	B1										
5(b)	25	B1 ft	If answer is not 25 check their key Accept 12.5 or $12\frac{1}{2}$ if key is 5 Accept 10 if key is 4 Accept 5 if key is 2									
5(c)	20	B1 ft	If answer is not 20 check their key Accept 10 if key is 5 Accept 8 if key is 4 Accept 4 if key is 2									
5(d)	1 whole symbol	B1 ft	Accept: 3 whole symbols if key is 5 B2 $7\frac{1}{2}$ symbols if key is 2 B2									
	1 half symbol	B1 ft										
5(e)	Two-way table 2 by 2 or 2 by 3 Ignoring totals columns	M1	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr> <th>Under 18</th> <td></td> <td></td> </tr> <tr> <th>18 or Older</th> <td></td> <td></td> </tr> </tbody> </table>		Male	Female	Under 18			18 or Older		
		Male		Female								
	Under 18											
18 or Older												
Gender labels - male and female	A1											
Age labels – under 18, 18 or over oe Allow under 18, over 18 or under 18, 18, over 18	A1											

6(a)(i)	Ordering	M1	Ordering correctly (at least) 6 values from either end
	152 and 154 identified	A1	or 153 written between 152 and 154 Penalise incorrect use of 152 and 154
6(a)(ii)	163 – 147	B1	Allow 147 – 163 oe Do not accept incorrect answer eg $163 - 147 = 24$ B0
6(b)(i)	149	B1	
6(b)(ii)	32	B1	
6(c)	The girls are taller than the boys	B1	oe
	The boys' heights are more spread out than the girls' heights	B1	oe

7(a)	Bathing	B1	
7(b)	$100 - (46 + 4 + 3 + 27) (= 20)$	M1	$\frac{72}{360}$ Accept $72 \pm 2^\circ$
	$150 \times \frac{\text{their "20"}}{100}$	M1 dep	$150 \times \frac{72}{360}$
	30	A1	For angles $\pm 2^\circ$ accept answers in range $29\frac{1}{6}$ to $30\frac{5}{6}$

8	$1 - 0.6 (= 0.4)$	M1	$\frac{150}{0.6}$
	0.2 or 20% seen	A1	250 seen
	$\frac{1}{3}$ of 150	M1	$\frac{\text{their } (250 - 150)}{2}$
	50	A1	$\frac{150}{3} = 50$ scores 4 marks but clear incorrect method eg 3 shapes and $\frac{150}{3} = 50$ scores no marks