



General Certificate of Secondary Education

Mathematics 4307

Specification B

Module 1 Tier H 43051H

Mark Scheme

2009 examination - November 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.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2009 AQA and its licensors. All rights reserved.

COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
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.
M dep	A method mark which is dependent on a previous method mark being awarded.
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.
eeoo	Each error or omission.

MODULE 1 HIGHER TIER

43051H

Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.

1	$(0 \times 8) + (1 \times 17) + (2 \times 14) + (3 \times 9) + (4 \times 2)$ or $(0) + 17 + 28 + 27 + 8$	M1	Intention to multiply the products and add them 0 not needed Allow $8 + 17 + 28 + 27 + 8$ for M1
	their $80 \div 50$	M1 dep	$88 \div 50$ implies M2
	1.6	A1	1.76 with no working is SC2

2	$1 - (0.2 + 0.1)$ or 0.7	M1	Alternative method 0.2×500 or 0.1×500
	their $0.7 \div 2$ or 0.35	M1 dep	$500 - (\text{their } 100 + \text{their } 50)$ or 350 Note: 0.7×500 gains first M2
	their 0.35×500	M1	their $350 \div 2$
	175	A1	Do not accept $\frac{175}{500}$

3(a)	$\frac{4}{10}$ or 0.4	M1	
	(10, 0.4) plotted correctly	A1	
3(b)	0.35	B1	
	Highest number of trials Uses 60 trials	B1	oe
3(c)	their 0.35×200	M1	their 0.35 must be < 1
	70	A1 ft	ft or correct must be integer $\frac{70}{200}$ is M1A0

4(a)	82	B1	
4(b)	19.5	B1	
4(c)	$23 - 16$	M1	Accept ± 0.25 for each reading
	7	A1	
4(d)(i)	No girls median = 15 (so boys threw further on average) ($19.5 > 15$)	B1	No can be implied
4(d)(ii)	Yes Girls IQR = 4, (boys is 7 so girls more consistent) ($4 < 7$) OR Yes girls as range is 21 and boys is 24	B1	Yes can be implied If use range must have both ranges quoted

5(a)	$\frac{1430}{6000} \times 100$ or $1430 \div 60$	M1	23.8 seen implies M1
	24	A1	Accept 23 with working
5(b)	$\frac{1192+1285+960+758}{6000} \times 100$ or $\frac{6000-(1430+375)}{6000} \times 100$ or $\frac{4195}{6000} \times 100$ or 69.9...	M1	Alternative methods $\frac{1430+375}{6000} \times 100$ or $\frac{1805}{6000} \times 100$ Calculating each item separately: 19.8, 21.4, 16 and 12.6 seen or 20, 21 or 22, 16 and 12 or 13 for this method accept 71 with working
	70	A1	Accept 69 with working

6(a)	$16 + 27 - 9$ or $16 + 18$	M1	
	34	A1	
6(b)	$32 - (15 - 6)$ or $32 - 9$	M1	
	23	A1	

7(a)	Girls basketball = 9	B1	
	$100 - (4 + \text{their } 9 + 10 + 17)$	M1	or $100 - (4 + 21 + \text{their } 9 + 10 + 3 + 17)$
	$\frac{(60 - \text{their } 24)}{3}$ or $\frac{\text{their } 36}{3}$	M1 dep	
	Football 24 and Hockey 12	A1	
7(b)	$3 + 17$ or 20	M1	
	$\frac{20}{100}$	A1	oe 20 out of 100 M1A0

8	A-3 B-1 C-2	B2	B2 for all 3 correct B1 for 1 or 2 correct
---	-------------	----	---

9(a)	Because all the batteries would be used up	B1	oe Allow too expensive or too time consuming
9(b)	Carl: reference to quicker, easier, more efficient	B1	
	Lynn: reference to testing at a variety of times and days to ensure continued consistency	B1	

10(a)	20×1.2 or 20×0.9 or 24 or 18	M1	or two 12's or two 9's in correct blocks on graph
	$(20 \times 1.2) + (10 \times 4.4) +$ $(10 \times 2.9) + (20 \times 0.9)$ or $24 + 44 + 29 + 18$	M1	oe Allow one misread of height
	115	A1	
10(b)	Bar of height 0.4 drawn from 120 to 130	B1	$\pm \frac{1}{2}$ square

11	$\frac{1}{3} \times \frac{5}{8}$ or $\frac{1}{6} \times \frac{3}{4}$ or $\frac{1}{2} \times \frac{7}{12}$	M1	Any one correct product
	$\frac{1}{3} \times \frac{5}{8}$ and $\frac{1}{6} \times \frac{3}{4}$ and $\frac{1}{2} \times \frac{7}{12}$ or $\frac{5}{24}$ and $\frac{3}{24}$ and $\frac{7}{24}$	M1 dep	All three correct products
	$\frac{5}{24} + \frac{3}{24} + \frac{7}{24}$	M1 dep	Adding answers to their correct products
	$\frac{15}{24}$	A1	
	Alternative method (Find $1 - p$ (even))		
	$\frac{1}{3} \times \frac{3}{8}$ and $\frac{1}{6} \times \frac{1}{4}$ and $\frac{1}{2} \times \frac{5}{12}$ or $\frac{3}{24}$ and $\frac{1}{24}$ and $\frac{5}{24}$	M1	
	$\frac{3}{24} + \frac{1}{24} + \frac{5}{24}$ or $\frac{9}{24}$	M1 dep	
	$1 - \frac{9}{24}$	M1 dep	
$\frac{15}{24}$	A1		