General Certificate Secondary of Education January 2011

Applications of Mathematics (Pilot)   9370

Unit 1 Foundation Tier 93701F

Mark Scheme

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.

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
Q	Marks awarded for quality of written communication. (QWC)
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$

A1 Foundation Tier

Q	Answer	Mark	Comments
1(a)	2.25 + (0.)90	M1	
	3.15	A1	
1(b)	2 × 2.75 + 2 × 1.25 or 2 × (2.75 + 1.25) or 8.(00)	M1	Allow one error (either price or quantity)
	10 − their 8	M1 Dep	
	2.(00)	A1	
1(c)	Soup and tea or soup and juice	B2	B1 Any pairing of one food and one drink with an attempt to find cost
1(d)	1.95 + 2.75 + 1.10 (= 5.80)	M1	
	80 or 0.8(0)	A1	
	80 p or £0.80	Q1	Correct money notation QWC strand (i) Must show some attempt at method.

Q	Answer	Mark	Comments
2(a)	344	B1	
2(b)	381	B1 ft	ft Their answer to (a)
2(c)	÷ 1.6	B1	or × 0.625 or × $\frac{5}{8}$

Q	Answer	Mark	Comments
3(a)	Sponsored walk	B1	
3(b)	175	B1	
3(c)	200	B1	
3(d)	13.5 × 50 or 675	M1	or 12 × 50 + 3 × 25 or 150 + 275 + 175 + 75
	1200 − their 675	M1 Dep	
	Their 525 ÷ 42	M1 Dep	
	£12.50	A1	1200 ÷ 42 = £28.(...) or 29 or 30 SC2

4

Q	Answer	Mark	Comments
4	4874 − 3692 or 1182	M1	
	Their 1182 × 6.5	M1 Dep	Condone incorrect conversion of 6.5 p to pounds here
	Their 7683 ÷ 100 or their 1182 x 6.5 ÷ 100	M1 Dep	
	Yes (>) and £76.83 or yes and £3.17 (less)	A1	
Alt 1 **4**	4874 − 3692 or 1182	M1	
	8000 ÷ 6.5 or 80 ÷ 0.065	M1	
	1231 or 1230	A1	
	Yes 1182 < 1231 or 1230	A1	
Alt 2 **4**	3692 × 6.5 (= 23 998) 4874 × 6.5 (= 31 681	M1	Both products
	31681 − 23 998 (= 7683)	M1 Dep	May do division by 100 first
	7683 ÷ 100	M1 Dep	
	Yes and £76.83	A1	

Q	Answer	Mark	Comments
5(a)	3	B1	
5(b)	(0 × 3) + (1 × 1) + (2 × 5) + (3 × 4) + (4 × 7) or 1 + 10 + 12 + 28	M1	Condone 1 error or omission
	51	A1	
5(c)	4	B1	
5(d)	Use bar chart or vertical line graph	B1	Either horizontal or vertical
	Correct labelling on 'variable' axis	B1	
	Heights correct (3, 1, 5, 4, 7)	B1	
	Fully labelled suitable diagram with linear scale from zero, though zero need not be marked.	Q1	Strand (ii) - Must have first two B marks

Q	Answer	Mark	Comments
6(a)	250 + 190 × 2	M1	
	630	A1	
6(b)	1580 − 250 or 1330	M1	
	1330 ÷ 190 (= 7)	M1	
	8	A1	Use of build up method to 5 => M1 Use of build up method to 7 or more =>M2 Use of build up method to 8 => M2 A1
6(c)	66 seen	B1	
	Their 66 × 6 or 396	M1	Allow their 66 × 3 or their 66 × 2
	66 × 1, 2, 3, 6, × 40p	M1	
	500 + their 158.40	M1 Dep	
	658.40 and Khaled	A1	
	An organised response with a conclusion	Q1	Strand (iii) - 2nd and 3rd method marks must be gained plus a comparison for their working

Q	Answer	Mark	Comments
7(a)	$\dfrac{80}{100} \times 50$	M1	oe
	40	A1	
	Ahmed (42 > 40)	A1ft	
Alt 1 7(a)	$\dfrac{42}{50} \times 100$	M1	
	84%	A1	
	Ahmed (84% > 80%)	A1 ft	
Alt 2 7(a)	$\dfrac{20}{100} \times 50$	M1	
	10 and 8	A1	
	Ahmed (10 > 8)	A1 ft	
Alt 3 7(a)	$\dfrac{8}{50} \times 100$	M1	
	16% and 20%	A1	
	Ahmed (20% > 16%)	A1 ft	
7(b)(i)	6	B1	
7(b)(ii)	22	B1	
7(c)	Mr Bell's class median = 19	M1	Allow two correct mean values if used (18.86 and 18.6)
	No as Mrs Simpson's class median / average was higher (22 > 19)	A1 ft	Allow correct comparison of two correct mean values ft Their (b)(ii) SC2 If totals (283 and 279) used and 'No', reason: Mrs Simpson's class higher total and classes have same number of students.

Q	Answer	Mark	Comments
8(a)	£5 − £1.49 (= 3.51)	M1	
	Their 3.51 ÷ 3	M1	Must come from subtraction
	1.17	A1	
8(b)	2 small Milko and 4 small Chunky Choc	B3	Small must be clearly identified. Could be by price B2 For any combination giving a total between £1.90 and £2.10 B1 For an attempt at a combination of 4 or more. Must be an attempt at adding.

Q	Answer	Mark	Comments
9(a)	36 × 158	M1	Implied by 10688 or 688
	5688	A1	
9(b)	5000 + 1120 or 6120	M1	
	6120 ÷ 60 or 6120 ÷ 5 ÷ 12	M1 Dep	
	102	A1	
9(c)	Either A because you will pay back less in total or B because your monthly payments will be smaller	B1ft	ft Conclusion based on their answers to parts (a) and (b) Accept A: pay back quicker, interest is less, cheaper Accept B: more time to pay it off.

Q	Answer	Mark	Comments
10(a)	$\frac{93}{775} \times 100$	M1	Must be 775 or clear total of households.
	12	A1	
10(b)	Similarity; suitable comparison	B1	eg, the smallest proportion own 4 or more cars in each area, Mode is 1 for both.
	Difference; suitable comparison	B1	eg, a much larger proportion have no car in the town
10(c)	Leading question because of 'Do you agree'	B1	oe
	No box for neutral/don't know 'Definitely' not required	B1	oe

Q	Answer	Mark	Comments
11	$(176\,000 - 142\,000) \div 7$	M1	155714 =>M1
	4857. (...)	A1	
	4855	B1 ft	SC2 4860 with no incorrect work SC1 4250

Q	Answer	Mark	Comments
12(a)(i)	Midpoints used	B1	At least 4 correct
	$(1 \times 5) + (3 \times 7) + (5 \times 4) + (7 \times 3) + (9 \times 1)$ or $5 + 21 + 20 + 21 + 9$	M1	Attempt at Σfx using values on or between class boundaries. Condone 1 error.
	Their 76 ÷ 20	M1 Dep	
	3.8(0) or 3 hrs 48 mins	A1	Allow 4 or 3 hrs 50 mins if supported by correct method
12(a)(ii)	Suitable reason eg, Raw data not known Midpoints used to represent class Data is grouped not individual values	B1	oe
12(b)	130 ÷ 5	M1	or 5 × their (a) M1
	26 (hours)	A1	19 A1 ft
	Their 26 ÷ their (a)	M1 Dep	130 ÷ their 19 M1 Dep
	7 weeks	A1 ft	ft From their mean in part (a) with rounded up integer answer