AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Secondary Education

Mathematics 4306
Specification A

Paper 1 Foundation

Mark Scheme

2009 examination - June 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.

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.

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 $\frac{1}{2}$

Paper 1F

Q	Answer	Mark	Comments
1(a)	2:45 (pm) or 14:45 or 1445	B1	oe eg, (0)245 or 2-45 or 2.45 Accept in words
1(b)(i)	Time shown at 3:30	B1	Allow hands to be same length
1(b)(ii)	15:30 or 1530	B1 ft	Ignore am or pm ft From their clock

Q	Answer	Mark	Comments
2(a)(i)	2004	B1	
2(a)(ii)	4200	B1	
2(a)(iii)	2400	B1	
2(b)(i)	72 000	B1	oe eg, 72,000 or 72.000 or 72'000
2(b)(ii)	72	B1	oe eg, 72.0 or 72.00

Q	Answer	Mark	Comments
3(a)	30	B1	
3(b)	$180 - 60$ or $360 - (180 + 60)$ or 120	M1	oe eg, $\frac{6}{360} \times 60$ or $\frac{60}{180} \times 30$ or 10
	$\frac{120}{360} \times 60$ or $60 \div 3$	M1	oe eg, $30 - 10$ or $60 - 30 - 10$ or $60 - 40$
	20	A1	SC1 Hockey (=) 8 or Rugby (=) 12 on answer line

Q	Answer	Mark	Comments
4(a)	A and E	B1	Any order
4(b)	C and D	B1	Any order
4(c)	8	B1	
	cm^2	B1	Units mark

Q	Answer	Mark	Comments
5(a)	False	B1	For false accept ☐ ✔ or ☐ ✘
5(b)	True	B1	For true accept ✔ ☐ or ✘ ☐
5(c)	False	B1	
5(d)	True	B1	

Q	Answer	Mark	Comments
6(a)	(2, 6) plotted	B1	
	(12, 6) plotted	B1	SC1 (6, 2) and (6, 12) plotted
6(b)	(7, 6)	B1	ft From SC only ie, (6, 7)
6(c)	Circle drawn	B1	(± 2 mm) ft From SC only
7(a)	17	B1	
7(b)	Numbers in order	M1	Allow one error or omission
	16	A1	
7(c)	10	B1	
7(d)	$\frac{75}{100} \times 20$ or $\frac{3}{4} \times 20$ or 15	M1	oe eg, $20 \div 4 \times 3$
	6	A1	
8(a)	4 correct flags drawn	B3	B2 For 3 correct flags drawn B1 For 2 correct flags drawn
8(b)	$5 \times 4 \times 3 \times 2 \ (\times 1)$	M1	oe eg, 5×24
	120	A1	

Q	Answer	Mark	Comments	
9(a)(i)	$\dfrac{1}{2}$	B1	Accept (0).5 or 50% or half	
9(a)(ii)	$\dfrac{3}{10}$	B1	Do not allow $30\% = \dfrac{30}{100} = \dfrac{3}{10} = \dfrac{3}{5}$ Do not allow (0),3	
9(a)(iii)	(0).15	B1		
9(b)	$\dfrac{3}{4} = 75(\%)$	M1	$\dfrac{3}{4} = 0.75$	or $\dfrac{3}{4} = \dfrac{15}{20}$ oe
	$0.8 = 80(\%)$	M1	$70(\%) = 0.7(0)$	or $0.8 = \dfrac{16}{20}$ **and** $70(\%) = \dfrac{14}{20}$ oe
	$70(\%) \quad \dfrac{3}{4} \quad 0.8$	A1	oe	
9(c)	$60 \div 3 \times 2$ or $(\frac{1}{3} =) \; 20$ or $120 \div 3$	M1	oe eg, $20 \times 3 = 60$	
	40	A1	oe eg, 40.00 or 40.0	
9(d)	$\dfrac{8}{15}$	B1	oe eg, (0).53(....) or 53.(....)%	

Q	Answer	Mark	Comments
10(a)	5×6 or 30	M1	
	3025	A1	
10(b)	6×7 seen	M1	
	65	A1	

Q	Answer	Mark	Comments
11	10×4.8 or 48	M1	oe eg, $10 \times 5 - 10 \times (0).2$
	$1\frac{1}{2} \times 4.8$ or $4.8 + 2.4$ or 7.2	M1	or $1\frac{1}{2} \times 2$ or 3
	Their $48 + 2 \times$ their 7.2	M1 dep	Dep on both M1s or their $48 + 3 \times 4.8$
	62.40	A1	Do not accept 62.4

Q	Answer	Mark	Comments
12(a)	Table correct	B2	B1 For both middle rows correct
12(b)	$\dfrac{5}{36}$	B1 ft	ft From their table
12(c)	6	B1ft	ft From their table
	$\dfrac{6}{36}$	B1ft	oe

Q	Answer	Mark	Comments
13(a)	$x - 3$	B1	Allow $1x - 3$
13(b)	$2x$	B1	Allow $2 \times x$ or $x \times 2$ or $x + x$ but not $x2$
13(c)	$x +$ their $(x - 3) +$ their $2x = 25$	M1	ft Their answers from (a) and (b) Must be an equation with expression for each person
	$(x =)$ 7	A1 ft	SC1 For $(x) = 7$ with no equation or wrong equation SC1 For correct solution of an equation of the form $ax + b = 25$

Q	Answer	Mark	Comments
14(a)	–2 and 5	B1	Any order must only use the cards given
14(b)	–2 and –4	B1	Any order must only use the cards given
14(c)	–4 and 4	B1	Any order must only use the cards given

Q	Answer	Mark	Comments
15	Correct reflection	B2	B1 For reflected shape 1 square to the left or to the right

Q	Answer	Mark	Comments
16(a)	2	B1	
16(b)	4	B1	
16(c)	$60 \div 2$	M1	oe
	30	A1	
16(d)	Slower because gradient less	E1	oe eg, less steep Accept took longer

Q	Answer	Mark	Comments
17(a)	−3	B1	
17(b)	Correct line **and** ruled	B2	B1 For correct line but **not** ruled B1 For no line but points plotted Allow ft from their table with 1 error or omission
17(c)	−1.5	B1	oe
	Intersection on *x*-axis	E1	oe eg, when *y* = 0
18	$\frac{40}{100} \times 480$ or 192	M1	oe eg, finding 10% (= 48), then × 4 to find 40%
	480 – their 192 or 288	M1 dep	$\frac{60}{100} \times 480$ scores M2
	420 ÷ 3 or $\frac{1}{3} \times 420$ or 140 or 0.33 × 420	M1	oe Not $\frac{1}{3}$ **of** 420 or use of 30% for $\frac{1}{3}$
	420 – their 140 or 280	M1 dep	$\frac{2}{3} \times 420$ or 0.66 × 420 or 0.67 × 420 scores M2
	288 **and** 280 **and** SuperSave	A1	
19	90 ÷ 2 × 3 or 135	M1	oe eg, 90 ÷ 2 × 5 or 225
	400 – 90 – their 135	M1 dep	oe eg, 400 – their 225
	175	A1	SC1 124 or 186 or 124:186
20(a)	Rotation	B1	Accept turn
	90º clockwise	B1	oe
	Centre the origin	B1	oe
20(b)	$\begin{pmatrix} -5 \\ -4 \end{pmatrix}$	B1	Do not accept $\begin{pmatrix} -4 \\ -5 \end{pmatrix}$ or $\begin{pmatrix} 5 \\ 4 \end{pmatrix}$

Q	Answer	Mark	Comments
21(a)	$3x \leq 8 - 2$ or $3x \leq 6$	M1	Condone = sign for M1
	$x \leq 2$	A1	$x = 2$ or $x \geq 2$ or $x < 2$ or $x > 2$ scores M1A0
21(b)	$-2, -1, 0, 1$	B2	-1 eeoo

Q	Answer	Mark	Comments
22	Correct mid-points × correct or correctly rounded frequencies	M1	2×11, 6×23, 10×36, 14×20, 18×10 or 22, 138, 360, 280, 180 Correctly rounded frequencies are 10, 20, 40, 20, 10 so 2×10, 6×20, 10×40, 14×20, 18×10 Allow 1 error for this first M mark
	Σ their mid-point × frequency	M1	Must be consistent eg, all lcb or ucb
	Their $980 \div 100$	M1 dep	Dep on 2nd M mark
	9.8	A1	

Q	Answer	Mark	Comments
23(a)	Statement 1	B1	Allow 1 ringed or statement underlined
23b(i)	108	B1	
23(b)(ii)	$180 - 2 \times$ their 72 or $108 -$ their 72	M1	Their 72 must be acute $360 - 3 \times 108$ (using quadrilateral *BCDF*)
	36	A1 ft	