Version 1.0

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 4301

Specification A

Paper 1 Foundation

Mark Scheme

2008 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.

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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)	27	B1	
1(b)	10	B1	
1(c)	16	B1	
1(d)	11	B1	
2(a)	15 380	B1	
2(b)	15 400	B1	
3(a)	3053, 3118, 3162, 3210	B2	oe eg, names given B1 If in reverse order or middle two reversed
3(b)	3210 – 3053	M1	Allow adding on methods
	157	A1 ft	ft From their highest and lowest SC1 Answer of 243 with no working
4(a)	Parallel	B1	
4(b)	Perpendicular	B1	
4(c)	Acute	B1	
5(a)	Protein at 1 g and correct shading	B1	
	Fat at 10 g and correct shading	B1	Allow blank SC1 Both heights correct with shading reversed
5(b)	Corn Flakes	B1	
5(c)	Chips **and** $2 \times 2\frac{1}{2} = 5$	B1	oe 2 and 5 must be seen or implied in working
6(a)	True	B1	
6(b)	True	B1	
6(c)	False	B1	

Q	Answer	Mark	Comments
7(a)	$2 \times 3 \times 4$	M1	oe
	24	A1	
7(b)	3	B1	
8(a)	14	B1	
8(b)	*C*	B1	
8(c)	*A* and *D*	B1	
9(a)(i)	30 and 24	B1 + B1	Allow B1 for ft from (their 30) – 6
9(a)(ii)	32 and 64	B1 + B1	Allow B1 for ft from (their 32) × 2
9(b)	Double the number and add 1 **or** the difference doubles each time	B1	oe Allow gaps double **or** gaps shown on sequence with 32 shown Do not allow $2n+1$ without a correct statement
10(a)	$\frac{1}{9}$ or 0.11(…)	B1	oe
10(b)	$\frac{4}{9}$ or 0.44(…)	B1	oe
10(c)	0	B1	Accept zero or impossible or $\frac{0}{9}$
11	5×56 or 280 (p) or (£) 2.8(0)	M1	or 7.2
	7.20	A1	SC1 For 8.20 with no working
12(a)	$\frac{30}{100} \times 80$ or 3×8	M1	oe Allow build up methods to 30%
	24	A1	SC1 56 without working
12(b)	$20 \div 5 \times 3$ or 3×4	M1	oe
	12	A1	

Q	Answer	Mark	Comments
13(a)	$a = 110$	B1	
13(b)(i)	$b = 130$	B1	
13(b)(ii)	$c = 50$	B1	
13(c)	$180 – (90 + 62)$ or $90 – 62$	M1	
	$d = 28$	A1	
14	Correct conversion factor 5 m = 8 km	M1	Allow 1 m = 1.5 – 2 km or 1 km = 0.5 – 0.66(…) m
	$\frac{8}{5} \times 30$ or $\frac{5}{8} \times 40$	M1dep	oe eg, (their 1.5 –) × 30 or (their 0.5 –) × 40
	48 (km) or 25 (m) **and** Dipak	A1	Allow answers in range 45 - 60 or 20 - 26.7
15(a)	3×9 or $3 \times 4 + 3 \times 5$ or $12 + 15$	M1	
	27	A1	
15(b)	$12 – 9$ or $12 + (–9)$	M1	
	3	A1	
16(a)	25	B1	
16(b)	10	B1	
16(c)	$4 \times 4 + 2 \times 2 \times 2$ or 16 (+) 8	M1	
	24	A1	

Q	Answer	Mark	Comments
17(a)	$\frac{8}{12}$	M1	oe
	$\frac{2}{3}$	A1	
17(b)	15	B1	
17(c)(i)	$\frac{8}{12}$ or $\frac{3}{12}$	M1	oe Denominator as a multiple of 12 Decimal version 0.66/0.67 + 0.25
	$\frac{11}{12}$	A1	oe 0.91 or 0.92
17(c)(ii)	$\frac{15}{4}$ or $\frac{7}{5}$ Allow one error in numerator	M1	or (2 +) $\frac{(15)}{20}$ (–) $\frac{(8)}{20}$
	$\frac{75}{20}$ (–) $\frac{28}{20}$	M1	or (2 +) $\frac{15}{20}$ (–) $\frac{8}{20}$ Allow one error in numerator
	$\frac{47}{20}$ or $2\frac{7}{20}$	A1	oe Decimal version 3.75 (M1) (–) 1.4 (M1) = 2.35 (A1)
18(a)	5	B1	
18(b)	$3y = 16 - 4$ or $3y = 12$ or $3 \times 4 + 4 = 16$	M1	Accept flow chart methods in both parts
	4	A1	
18(c)	$6z - 2 = 13$ or $3z - 1 = 6.5$	M1	
	$6z = 13 + 2$ or $3z = 6.5 + 1$	M1	Award this M1 for a correct ft from their first step
	2.5 or $\frac{15}{6}$	A1	oe Allow embedded answer SC2 $z = \frac{14}{6}$ oe (from $6z - 1 = 13$)

Q	Answer	Mark	Comments
19	400 ÷ 10 or 40	M1	
	400 – (their 40) or 360	M1dep	400 × 0.9 M1M1
	(Their 360) ÷ 30	M1dep	
	12	A1	
20	Different arrangement drawn including different orientation of original shape	B2	B1 If external lines missing or extra internal lines drawn Allow dotted internal lines
21	Triangle in correct position (0, 0), (4, 4) and (6, –2) (± 2 mm)	B2	B1 Correct size and orientation in wrong position B1 For triangle with two correct vertices B1 Three correct vertices not joined
22(a)	44	B1	
22(b)	33	B1	
22(c)	It's the middle value	B1	oe Accept ignores rogue value
23	200	B1	
	[600 – (their 200)] ÷ 4	M1	
	100	A1	
24(a)	128	B1	
	Corresponding (angle)	B1	Allow complete and correct alternative responses
24(b)	180 – 85	M1	360 – (128 + 52 + 85)
	95	A1	

Q	Answer	Mark	Comments
25(a)	90	B1	
25(b)	$\frac{190}{100} \times 80\,000$	M1	or $80\,000 + \frac{90}{100} \times 80\,000$ ft From (their 90) oe
	152 000	A1ft	
26	$\pi \times 8^2$	M1	
	$\pi \times (\text{their } 8)^2 \times 5$	M1	Using $\pi = 3.(14\ldots)$ can score M1M1
	320π	A1	SC2 1280π
	cm^3	B1	Units mark
27(a)	–3 and 7	B2	B1 For each
27(b)	Fully correct graph between –2 and 4 with 'good' curve (± 2 mm) Allow ft from (4, 6) or (4, 8) or (4, 9) from their table	B2	B1 For plotting 5 or 6 or 7 of their points
27(c)	Where the graph crosses the *x*-axis	B1	oe