AQA

General Certificate of Secondary Education
November 2010

Mathematics   4306

Specification A

Paper 1 Foundation

Final

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.
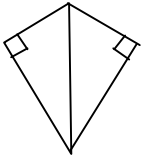
Glossary for Mark Schemes

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.
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 $\frac{1}{2}$

Q	Answers	Mark	Comment
1 (a) (i)	1367	B1	
1 (a) (ii)	7316	B2	B1 for any even number
1 (b)	7 + 6 = 13	B1	or 6 + 7 = 13
1 (c)	8	B1	accept 78 in box
2 (a)	£1 50p 20p 10p	B1	or any other correct combination
2 (b)	£1 £1 20p 10p 10p 10p **and** £1 50p 50p 50p **and** £1 £1 50p	B3	any order B2 for 2 correct B1 for 1 correct
2 (c)	(£)4.1(0) or (£)2.05 or (£)2 **and** (£)2.1(0)	M1	or 2 correct lists for £2 **and** £2.10 with or without totals or 10(p) left over or no 5(p)s
	No ticked	A1	
3	33.5(0) – 2 × 8.5(0) (= 16.5(0))	M1	
	their 16.5(0) ÷ 5.5(0)	M1dep	oe eg 5.5(0) × 3
	3	A1	
4 (a)	24	B1	
4 (b)	7	B1	
4 (c)	18	B1	
5 (a)	24	B1	
5 (b)	12	B1	
5 (c)	difficult to show a number that is not a multiple of 4 (or 2)	B1	oe eg difficult to show 3 or an odd number
6 (a)	line drawn through *B* and parallel to *x*-axis	B1	minimum length 2 cm through *B* need not be ruled
6 (b)	line drawn through *D* and parallel to *y*-axis	B1	minimum length 2 cm through *D* need not be ruled
6 (c)	*E* correct	B1	

Q	Answers	Mark	Comment
7 (a)	10	B1	
7 (b)	subtract 5	B1	oe
7 (c)	40 – 5n circled	B1	
8 (a) (i)	cylinder	B1	do not accept prism
8 (a) (ii)	cone	B1	
8 (b)	6	B1	
8 (c)	5	B1	
8 (d)	3	B1	
9 (a)	680	B1	
9 (b)	$\frac{20}{100} \times 800$ or 2×80 or 160	M1	oe eg $\frac{120}{800} \times 100$ or $\frac{120}{8}$ or 15(%)
	160 **and** No ticked	A1	or 15% **and** No ticked
10	Profit per pen = 20(p)	B1	or (£)0.2(0)
	700 ÷ 20	M1	oe eg (£)7 ÷ 20 or 7 ÷ 0.2 or 7 × 5
	35	A1	
11 (a)	49	B1	if nothing in table, check working
	8	B1	
	$x + 5$	B1	do not accept +5
11 (b)	16 + 12 + 5	M1	or 16 + their 8 + 9
	33	A1	
12 (a) (i)	6.5	B1	
12 (a) (ii)	6.52	B1	
12 (b)	100	B1	

Q	Answers	Mark	Comment
12 (c)	12	B1	accept −12
12 (d)	$2^3 = 8$ or $2 \times 2 \times 2 = 8$	B1	accept 'he did 2×3 instead of 2^3' or 'he did $2 + 2 + 2$ instead of $2 \times 2 \times 2$'
13 (a)	50	B1	
13 (b)	105	B1	
13 (c)	(150 min) = 2 hr and 30 min	M1	oe eg $2\frac{1}{2}$ hours or 2.30
	No **and** it finishes at 10 (pm)	A1	oe eg No **and** he will be 15 mins late
14 (a)	6	B1	
14 (b) (i)	B	B1	
14 (b) (ii)	D	B1	
14 (b) (iii)	E	B1	
15 (a)	5	B1	
15 (b)	$4x = 10 + 2$ or $4x = 12$	M1	
	3	A1	
15 (c)	− 6	B1	
15 (d)	$(5t + 12 =) 3t + 15$	B1	
	$5t - 3t = 15 - 12$	M1	ft from their 4 term equation allow 1 sign error from their equation
	1.5	A1ft	oe eg $\frac{3}{2}$
16 (a)	8 or 4 or 5 seen	M1	on diagram or in working
	18	A1	
16 (b)	$\frac{1}{2} \times$ their 8 $\times$ their 3	M1	oe
	12	A1ft	
	cm^2	B1	independent units mark

Q	Answers	Mark	Comment
16 (c)	sketch of kite showing two right angles	B1	
17	4×60 or 240	M1	or $30(°) = 20$ or $90° \div 60$ or $1\frac{1}{2}°$ or $\frac{60}{90}$
	their $240 \div 3$	M1dep	or 20×4 or $120 \div$ their $1\frac{1}{2}$ or $\frac{60}{90} \times 120$ or $60 + 20$
	80	A1	
18 (a)	difference of two squares with a non-prime answer	B1	eg $6^2 - 2^2 = 32$
18 (b)	difference of two squares with a prime answer	B1	eg $6^2 - 5^2 = 11$
19 (a) (i)	0.9	B1	oe
19 (a) (ii)	120×0.1	M1	oe
	12	A1	
19 (b)	$P(6) = \frac{1}{6}$	M1	oe or 20
	$\frac{1}{6} > 0.1$ **and** Yes ticked	A1	$20 > 12$ **and** Yes ticked
20	$\frac{50 \times 100}{20}$ or $\frac{52 \times 100}{20}$	M1	allow one error in numerator
	250 or 260	A1	
21 (a)	7 points correctly plotted	B2	B1 for 5 or 6 points correctly plotted
21 (b)	strong	B1	
	negative	B1ft	ft from (a)
21 (c)	line of best fit drawn	B1ft	
21 (d)	eg 76	B1ft	ft from their line
21 (e)	no data around this point	B1	oe eg the trend may not continue
22 (a)	c	B1	

Q	Answers	Mark	Comment
22 (b)	*d*	B1	

Q	Answers	Mark	Comment
22 (c)	*g*	B1	

Q	Answers	Mark	Comment
23 (a)	14	B1	

Q	Answers	Mark	Comment
23 (b)	12	B1	

Q	Answers	Mark	Comment
23 (c) (i)	line drawn from (1036, 50) to (1110, 50) **and** line drawn from (1110, 50) to (1150, 0)	B1	line need not be ruled allow curve

Q	Answers	Mark	Comment
23 (c) (ii)	$50 \div 40 \ (\times 60)$	M1	oe eg $50 \div 2 \times 3$ or 25×3
	75	A1	SC1 for 1.25 (km/min)

Q	Answers	Mark	Comment
24	$30000 \times 5 \ (\div 100)$ or $30000 \div 20$ or 300×5 or 1500	M1	allow place value errors and failure to divide by 100
	their $1500 \times 1.2(0)$ or 1800	M1	
	their 1800×3 or 5400 or 450×3 or 1350	M1	
	their 5400 + their 1350 + 500	M1dep	complete correct method
	7250	A1	

Q	Answers	Mark	Comment
24 alt	30000×3 or 90000 or 450×3 or 1350	M1	allow place value errors and failure to divide by 100
	$90000 \times 5 \ (\div 100)$ or $90000 \div 20$ or 900×5 or 4500	M1	
	their $4500 \times 1.2(0)$ or 5400	M1	
	their 5400 + their 1350 + 500	M1dep	complete correct method
	7250	A1	