GCSE

Edexcel GCSE

Mathematics A 1387

Paper 5521/02

Summer 2005

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Mark Scheme (Results)

NOTES ON MARKING PRINCIPLES

1   Types of mark
- M marks: method marks
- A marks: accuracy marks
- B marks: unconditional accuracy marks (independent of M marks)

2   Abbreviations
cao – correct answer only
ft – follow through
isw – ignore subsequent working
SC: special case
oe – or equivalent (and appropriate)
dep – dependent
indep - independent

3   No working
If no working is shown then correct answers normally score full marks
If no working is shown then incorrect (even though nearly correct) answers score no marks.

4   With working
If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.
If there is no answer on the answer line then check the working for an obvious answer.

5   Follow through marks
Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

6   Ignoring subsequent work
     It is appropriate to ignore subsequent work when the additional work does
     not change the answer in a way that is inappropriate for the question: eg.
     incorrect cancelling of a fraction that would otherwise be correct
     It is not appropriate to ignore subsequent work when the additional work
     essentially makes the answer incorrect eg algebra.
     Transcription errors occur when candidates present a correct answer in
     working, and write it incorrectly on the answer line; mark the correct
     answer.

7   Probability
     Probability answers must be given a fractions, percentages or decimals. If a
     candidate gives a decimal equivalent to a probability, this should be written
     to at least 2 decimal places (unless tenths).
     Incorrect notation should lose the accuracy marks, but be awarded any
     implied method marks.
     If a probability answer is given on the answer line using both incorrect and
     correct notation, award the marks.
     If a probability fraction is given then cancelled incorrectly, ignore the
     incorrectly cancelled answer.

8   Linear equations
     Full marks can be gained if the solution alone is given on the answer line, or
     otherwise unambiguously indicated in working (without contradiction
     elsewhere). Where the correct solution only is shown substituted, but not
     identified as the solution, the accuracy mark is lost but any method marks
     can be awarded.

9   Parts of questions
     Unless allowed by the mark scheme, the marks allocated to one part of the
     question CANNOT be awarded in anothe

No		Working	Answer	Mark	Notes
1	(a)	Plain llJl lll 8 Chicken lll 3 Bovril llJl 5 S & Vin llll 4		3	M1 for attempt to tally A1 for 1 frequency correct or all tallies correct A1 for all frequencies correct (accept for /20)
	(b)		4	1	B1 ft
	(c)		Plain or 8	1	B1 ft
2	(a)(i)		11	2	B1 cao
	(ii)		16		B1 cao
	(b)	See diagram	Correct lines	2	B2 cao for both lines correct (B1 for one line correct)
	(c)		12	2	B2 cao (B1 for 11 or 13)
3	(a)		580	1	B1 for 580 ($\pm$ 2) could be written on line
	(b)		7.2	1	B1 for 7.2 $\pm$ 0.02 could be written on line
	(c)		Arrow at 48	1	B1 allow $\pm$ half graduation
	(d)		Arrow at 6.7	1	B1 allow $\pm$ half graduation
4	(i)		Cylinder	2	B1 ignore spelling
	(ii)		Cuboid		B1 ignore spelling
5	(a)	£10 – (£2.15 + £2.30)	5.55	4	M1 £2.15 + £2.30 A1 for 4.45 M1 £10 – "4.45" A1 cao
	(b)	£60 ÷ £2.80 = 21.42857	21	2	M1 for £60 ÷ 2.80 or sight of digits 214… A1 for 21
	(c)	$120 \times 25 \div 100$	30	2	M1 ¼ of £120 (oe) A1 cao SC B2 for £90

	No	Working	Answer	Mark	Notes
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6	(a)(i)		143^0	2	B1 for 143 ($\pm 2^0$)
	(ii)		Obtuse		B1 for obtuse (ignore spelling)
	(b)	See diagram	Accurate drawing	1	B1 for accurate drawing ± 2mm
7	(a)(i)		5	2	B1 cao
	(ii)		23		B1 cao
	(b)	× 2 – 1		1	B1 for explaining a suitable method
	(c)	See their diagram		1	B1 for a correct diagram
	(d)		14, 17	2	B2 cao for both (B1 for one only ft from their 14)
8	(a)		90	1	B1 accept –90
	(b)		540	1	B1 accept –540
	(c)		Jupiter	1	B1 accept –150
	(d)		- 230	1	B1 cao

No	Working	Answer	Mark	Notes
9 (a)	2658 – 2430 = 228 "228" × 32	72.96	4	M1 2658 – 2430 A1 228 M1 "228" × 32 or "228" × 0.32 or digits 7296 seen A1 cao **Or** M1 for 2430 × 32 (or digits 77760 seen) 　　　or 2658 × 32 (or digits 85056 seen) A1 if 1 correct M1 for "85056" – "77760" or 7296 seen A1 cao
(b)	$\frac{2}{5}$ × 145 = 58 145 – "58"	87	3	M1 $\frac{2}{5}$ × 145 (or M1 $\frac{3}{5}$ seen) A1 58 (or M1 $\frac{3}{5}$ × 145) A1 for 87 ft
(c)(i) (ii)		80 125	2	B1 for 80 (± 1) B1 125 (± 3)

No		Working	Answer	Mark	Notes
10	(a)		1.5 – 2.0	1	B1 for height between 1.5m – 2.0m inclusive
	(b)	Height of man × "2.5"	3 – 6	3	B3 for height between 3m – 6m inclusive
					(B2 for multiplying (a) by a number between 2 and 3 inclusive)
					(B1 for multiplying (a) by a number)
11		$61 - 19 = 42$	14	2	M1 for $-$ 19 or 42 seen
		$42 \div 3 = 14$			A1 cao
12	(a)		5	1	B1
	(b)	$4+5+5+5+4+3+2+1+4+5 = 38$	3.8	2	M1 for attempt to add and $\div 10$ or 3.7 or 3.9 seen
		mean = $38 \div 10 = 3.8$			A1 for 3.8
					SC B1 for 33.5 seen
13	(a)		$3x$	1	B1 cao Accept $3 \times x$, $x3$, $x\times3$, $x + x + x$
	(b)		x - 9	1	B1 for $x - 9$ cao
14	(a)	$14.44 - 8.660254038$	5.77974(…)	2	M1 for 14.44 seen or 8.66(…) or 5.7 or 5.8 or better rounded or truncated
	(b)		6	1	A1 cao
					B1 ft
15		$15 \div 24$	62.5	2	M1 for $15 \div 24$ or $1500 \div 24$ or sight of digits 625
					A1 cao
16		2.10×450	945	2	M1 for digits 210×450 or sight of digits 945
					A1 cao
17		See diagram	$2(y + y)$	2	B1 for $2(y + y)$
			$2y + 2y$		B1 for $2y + 2y$
					(Deduct B1 for each additional tick (>2) to min 0)
18		$360^{\circ} \div 18$ (=20)	Angles drawn, labelled	4	B4 for fully correct and labelled pie chart
		Sector angles: G= 60; S= 80; B=220;			(B3 for all angles correct or for a labelled pie chart with 2 correct angles)
		Correct sectors labelled correctly			(B2 for labelled pie chart with 1 correct angle drawn)
		Use angle measurer			(B1 for $360^{\circ} \div 18$ or 20 seen or implied)

No		Working	Answer	Mark	Notes
19	(a)		Correct plane	2	B2 for a correct plane defined by showing at least 2 lines. (B1 for a line of symmetry on one face)
	(b)		Correct net	2	B2 cao (B1 for 2 equilateral triangles joined appropriately to at least one rectangle or for 1 equilateral triangle joined appropriately to one of 3 rectangles)
	(c)		Correct drawing	2	B1 for two extra sides of length 6cm (± 2mm) B1 for construction arcs 6cm from each of the ends of the given line.
20	(a)		15	1	B1 for 15 (± 1)
	(b)		15	1	B1 for 15 (± 0.4)
	(c)			2	B1 horiz. line from (2, 20) to (3, 20) B1 line from (3, 20) to (5,0) or horizontal translation of it SC B1 for any journey ending at (5,0)
21	(a)	$x+4+x+x+4+x$	$4x+8$	2	M1 for attempting to add x, $x + 4$, x, $x + 4$ may be implied by $4x + a$ $(a > 0)$ A1 for $4x + 8$ or $4(x + 2)$
	(b)	$4x + 8 = 54$ $4x = 46$ $x = 11.5$ Length = "11.5" + 4	15.5	3	M1 for "$4x + 8$" = 54 A1 cao for 11.5 seen B1 ft for "11.5" + 4
22		$0.4 + 0.15$ $1 - "0.55"$	0.45	2	M1 for 1 – sum A1 for 0.45 o.e. SC B1 for 0.81
23	(a)		3:1	1	B1 cao
	(b)	$\pi \times 2.45$	7.7	2	M1 for $\pi \times 2.45$ (accept π as 3.1 or better) A1 for 7.59 to 7.70

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No	Working	Answer	Mark	Notes
24	$7 \times 10\,000$	70 000	2	M1 for $7 \times 10\,000$ or $7 \times 100 \times 100$ A1 cao
25	$5.40 \div 3 \times 7$	12.60	3	M1 for $5.40 \div 3$ or sight of 1.8 M1 dep for "1.80" $\times$ 7 A1 for 12.6 or equivalent
26	$7.60 \times \dfrac{17.5}{100} = 1.33$ $7.60 + 1.33 = 8.93$ $1650 \times$ "8.93"	£14 734.50	4	M1 for $7.60 \times \dfrac{17.5}{100}$ or 1.33 seen or 7.60 x 1.175 (oe) (Award M1 for 10%, 5% and 2½% correctly calculated) A1 for 8.93 or 893 M1 for 1650 x "8.93" or digits 147345 seen A1 cao Accept 14734.5 **Alternative** M1 for $1650 \times 7.6(0)$ or 12540 seen M1 for "12540" $\times \dfrac{17.5}{100}$ or 2194.5 seen or "12540"$\times$ 1.175 (oe) (Award M1 for 10%, 5% and 2½% correctly calculated) M1 for "12540" + "2194.5" (dep on both previous method marks) or digits 147345 seen A1 cao accept 14 734.5