

GCSE

Edexcel GCSE

Mathematics B 1388

Paper 5536/17

Summer 2005

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Mark Scheme (Results)

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Mathematics A 1388
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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 an

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No	Working	Answer	Mark	Notes	
1	(a)	2.10×450	945	2	M1 for digits 210×450 or sight of digits 945 A1 cao
	(b)	$63 \div 2.10$	30	2	M1 for $63 \div$ digits 210 A1 cao
2	See diagram	$2(y + y)$ $2y + 2y$	2	B1 for $2(y + y)$ B1 for $2y + 2y$ (Deduct B1 for each additional tick (>2) to min 0)	
3	(a)		15	1	B1 cao for $15(\pm 1)$
	(b)			2	B1 horiz. line from (2,20) to (3,20) B1 line from (3,20) to (5,0) or horiz. translation of it SC: B1 for any journey ending at (5,0)
4	(a)		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 the three rectangles)
	(b)		Correct drawing	2	B1 for two extra sides of length 6 cm (± 2 mm) B1 for construction arcs 6cm from each of the ends of the given line
5	(a)	$x+4+x+x+4+x$	$4x+8$	2	M1 for attempting to add $x + 4, x, x + 4, x$ 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

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6	$0.4 + 0.15$ $1 - 0.55$	0.45	2	M1 for 1 – sum A1 for 0.45 oe SC: B1 for 0.81
7	7×10000	70000	2	M1 for 7×10000 or $7 \times 100 \times 100$ A1 cao
8	$5.40 \div 3 \times 7$	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
9	(a) $36 \div (7+3+2)$ “3” $\times 7$	21	3	M1 for $36 \div (7+3+2)$ M1 (dep) for “3” $\times 7$ or 3 or 2 A1 cao
	(b) $51.5 \times \frac{8.5}{100} = 4.3775$ $51.5 - 4.3775 = 47.1225$	47 or 47.1 or 47.12	4	M1 for $51.5 \times \frac{8.5}{100}$ or 4.37(75) seen M1 (dep) for $51.5 - “4.37(75)”$ A1 for 47 or better B1 (indep) for rounding their answer correctly to the nearest whole number or 1 or 2 d.p OR M1 for $51.5 \times \frac{100 - 8.5}{100}$ M1 for $51.5 \times “0.915”$ or $0.515 \times “91.5”$ A1 for 47 or better B1 (indep) for rounding their answer correct to the nearest whole number or 1 or 2 d.p

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No	Working	Answer	Mark	Notes
10	$1 \times 10) + (3 \times 15) + (5 \times 30) + (7 \times 35) +$ $(9 \times 25) + (11 \times 5) = 730$ $"730" \div 120 = 6.08333$	6.08	4	M1 for use of fx with x consistent within intervals (including end points) M1 (dep) for use of midpoints M1 (dep on 1 st M1) for use of $\frac{\sum fx}{\sum f}$ A1 6.08 to 6.085
11	(a)	Angle in a semicircle	1	B1 oe
	(b)	20	3	M1 for $12^2 + 16^2$ M1 for $\sqrt{144 + 256}$ A1 cao
	(c)	314	3	M1 for $\pi \times \left(\frac{"20"}{2}\right)^2$ M1 (indep) for correct order of evaluation of $\pi \times r^2$ for any r A1 for 314 – 315 inclusive

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No	Working	Answer	Mark	Notes
12	$1500 - 870 = 630$ $630/1500 \times 340475 = 142999.5$	143 000	3	M1 for $1500 - 870$ or 630 seen M1 for "630"/1500 x 340475 A1 for 142999 to 143000 [SC: B2 for 197475 to 197476 with or without working] Alternative: If no M's awarded because of premature estimation, B2 can be awarded for an answer in the range 136000 to 145000 For an answer outside of the range, B1 for $\frac{1500 - "870"}{1500} \times "340475"$ [SC:B1 for males in the range 195000 to 204000]
13				
(a)		a^7	1	B1 accept a^{4+3}
(b)		$15x^3y^4$	2	B2 cao (B1 for two of $15, x^3, y^4$ in a product)
(c)		$x - 1$	1	B1 cao
(d)		$(x + 3)(x - 3)$	1	B1 cao
14	$80\% = 220$ $220 \div 80 \times 100$	275	3	M1 for recognising that 80% is equivalent to 220 M1 for $220 \div 80 \times 100$ oe A1 cao

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No	Working	Answer	Mark	Notes
15		$x = 3$ $y = 0.5$	3	M1 for coefficients of x or y the same followed by correct operation, condone one arithmetical error M1 (dep) for substituting found value in one equation A1 cao SC: B1 for one correct answer only if M's not awarded
16		1.4×10^{10}	2	B2 for 1.4×10^{10} or 1.44×10^{10} (B1 for 14.4×10^9 or 14400,000,000 or 14000,000,000 or 14×10^9)
17	$\tan x = \frac{1.9}{3.2}$ $x = \tan^{-1}\left(\frac{1.9}{3.2}\right) = 30.7$	30.7	3	M1 for $\tan x = \frac{1.9}{3.2}$ or $\tan \frac{1.9}{3.2}$ M1 for $\tan^{-1}\left(\frac{1.9}{3.2}\right)$ A1 for 30.6 – 30.7

