

Edexcel GCSE

Mathematics B 1388

Paper 5538/18

November 2007

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Mark Scheme

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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No.	Working	Ans.	Mark	Notes
1	$\frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1\frac{5}{12}$	$6\frac{5}{12}$	3	M1 for using a common denominator M1 for either $9/12$ or $8/12$ or $\frac{33}{12}$ or $\frac{44}{12}$ oe or $\frac{17}{12}$ oe A1 for $\frac{77}{12}$ or $6\frac{5}{12}$
2	$60 \div 5 = 12$ 12×2 Alternative: Total sum = $60 \times 2 = 120$ Lillian = $\frac{2}{10}$ of 120 $= 120 \times 2 \div 10$	24	3	M1 for $60 \div 5$ M1 for “12” $\times 2$ A1 for 24 cao Alternative: M1 for 60×2 or 120 seen M1 for $120 \times 2 \div 10$ A1 cao SC: B1 for answer of 36 SC:B2 for answer of 24, 36 , 60
3	$240 = 90 + 0.5m$ $150 = 0.5m$	300	3	M1 for $240 = 90 + 0.5m$ M1 for $0.5m = '150'$ A1 for 300 Alternative: M1 for $240 - 90$ on 150 seen M1 for $'150' \times 2$ A1 for 300
4			2	B1 for appropriate question (eg .which of these vegetables do you eat ? Tick the boxes of the vegetables you eat) B1 for response boxes or list of vegetables
5		8	2	M1 for attempt at factors of 24 and 64 A1 for 8 cao
6	$3^2 + 4^2 + 12^2 = 169$ $\sqrt{169}$	13	3	M1 for $3^2 + 4^2$ or $3^2 + 12^2$ or $4^2 + 12^2$ M1 for $'3^2 + 4^2' + 12^2$ or $'3^2 + 12^2' + 4^2$ or $'4^2 + 12^2' + 3^2$ A1 for 13 cao

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No.	Working	Ans.	Mark	Notes
7(i) (ii)	80 – 65	73 15	3	B1 for 72 - 74 M1 for identifying 30 and 90 (check lines on diagram) A1 for 14 - 17
8(a)	$\frac{PQ}{2} = \frac{12}{3}$ $PQ = \frac{12 \times 2}{3}$	8	2	M1 for $\frac{12}{3}$ or 4 or $\frac{3}{12}$ or $\frac{1}{4}$ oe A1 for 8 cao
(b)	$\frac{BC}{3} = \frac{10}{12}$ $BC = \frac{10 \times 3}{12} = 2.5$	12.5	3	M1 for $\frac{10}{4}$ or $\frac{4}{10}$ or 0.4 A1 for 2.5 A1 ft for “2.5” + 10 (dep on M1 awarded)
9(a)		a^8	1	B1 for a^8 or $a^{2 \times 4}$
(b)	$2^{30} \div (2^3)^9 = 2^{30-27}$	$x = 3$	2	M1 for $(2^3)^9$ or 2^{27} or 2^3 or $2 \times 2 \times 2$ or 2×4 A1 for 3 cao
10(a)		$y = 2x + 4$	2	B2 cao [B1 for $y = 2x + c$ or $y = mx + 4$]
(b)		$y = -\frac{1}{2}x - 3$	2	B2 cao [B1 for $y = -\frac{1}{2}x + c$ or $y = mx - 3$ or $m = -\frac{1}{2}$]
11		$(2p + 3q)(2p - 3q)$	2	M1 for $(2p)^2 - (3q)^2$ or $(2p \pm 3q)(2p \pm 3q)$ A1 for $(2p + 3q)(2p - 3q)$ cao

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No.	Working	Ans.	Mark	Notes
12 (a)	$\sqrt[3]{8}$	2	2	M1 for $x^3 = 8$ A1 cao
(b)	$n = 16^{-1/4}$ Alternative: $n^{-4} = 2^{-4}$ $n = 2^{-1}$	0.5 oe	3	M1 for $n = 16^{-1/4}$ or $n^4 = 1/16$ M1 for $\frac{1}{\sqrt[4]{16}}$ or $16 = 2^4$ oe A1 for 0.5 oe Alternative: M1 for $16^{-1} = 2^{-4}$ M1 for $n = 2^{-4/4}$ A1 for 0.5 oe
13(a)		8, 6	2	B1 for 8 cao B1 for 6 cao
(b)		Bars of height 4cm, 5cm	2	B1 for height = 4cm B1 for height = 5cm
14	$n + (n+1) + (n+2) + (n+3) = 4n + 6$ $(n+3)(n+2) - (n+1)n = n^2 + 5n + 6 - n^2 - n = 4n + 6$		4	M1 for adding $n + (n + 1) + (n + 2) + (n + 3) (= 4n + 6)$ M1 for writing $(n+3)(n+2) - (n+1)n$ M1 for 4 correct terms from $n^2 + 3n + 2n + 6 - n^2 - n$ ignoring signs A1 for establishing equality between LHS and RHS
15	Volume 27 : 125 Length 3 : 5 Area 9 : 25	100 cm ²	3	M1 for recognising need for cube of 27 or 125 M1 for recognising need to square their scale factor A1 cao
16	$\frac{50}{500} \times 50$	5	2	M1 for $\frac{50}{500} \times 50$ oe A1 for 5

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No.	Working	Ans.	Mark	Notes
17	$x = y + 8$ $(y + 8)^2 + y^2 = 34$ $2y^2 + 16y + 30 = 0$ $y^2 + 8y + 15 = 0$ $(y + 3)(y + 5) = 0$	$x = 5, y = -3$ $x = 3, y = -5$	7	M1 for $x = y + 8$ or $y = x - 8$ M1 for substitution of $x = y + 8$ or $x = y - 8$ M1 for 3 out of 4 terms correct $x^2 - 8y - 8y + 64$ OR $y^2 + 8y + 8y + 64$ M1 for $2y^2 + 8y + 15$ or $2x^2 - 16x + 30$ or $x^2 - 8x + 15$ M1 for attempt to factorise or use formula SC: If no working then B1 either $x = 5, y = -3$ or $x = 3, y = -5$
18		C D A F B E	4	B4 for all correct (B3 for 4 or 5 correct) (B2 for 2 or 3 correct) (B1 for 1 correct)