Edexcel GCSE

Mathematics B 2544

Paper 5543H/ 11

June 2007

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Mark Scheme (Results)

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

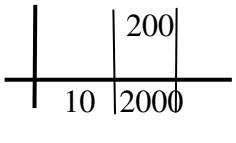
9 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

5543H - Section A				
No	**Working**	**Answer**	**Mark**	**Notes**
1		(4, 6)	2	B2 for (4, 6) (B1 for (4, y) or (x, 6))
2	60 ÷ 1h 30 mins or 60 ÷ 1.5 or 60 ÷ 90 × 60 or 60 ÷ 90 or 60 ÷ 1.3	40	2	M1 for attempt to divide 60 by "1h 30m" oe (accept 1.5 or 1.3(0) or 90 as "time") A1 cao SC: Award B1 for an answer of 46 (.15)
3	x: −2, −1, 0, 1, 2 y: −7, −5, −3, −1, 1	Straight line	3	M1 for one point correctly plotted or calculated or a straight line through one correct point M1 for 2 points correctly plotted or calculated A1 for correct line between −2 and 2
4 (a) (b)	 96 = 2 × 2 × 2 × 2 × 2 × 3	12 $2^5 \times 3$	1 2	B1 accept $2^2 \times 3$ oe M1 for attempting to split 96 into a product of at least 2 correct factors or listing at least 3 correct factors or a factor tree with at least 2 correct factors or 2^5 with 3 or 2, 2, 2, 2, 2, 3 A1 for $2^5 \times 3$ or 2 × 2 × 2 × 2 × 2 × 3 oe
5		0.3104(07623)	2	B2 for 0.3104(07623) (B1 for 2.52(98.....) or 2.53 or 0.31 seen) SC: B1 for 0.886…

5543H - Section A				
No	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		$2(4p - 3)$	1	B1 cao
(b)		$y^2(y - 1)$	2	B2 for $y^2(y - 1)$ or $(y^2 + 0)(y - 1)$ (B1 for $y(y^2 - y)$ or $(y + 0)(y^2 - y)$) SC: Award B1 for $y^2(y - 0)$ or $y^2(y + 1)$
(c)		$e^2 + 7e + 12$	2	M1 for 3 out of the 4 terms e^2, $4e$, $3e$, 12 correct or $e^2 + 7e + k$ A1 cao
7	½ × 6 × 4.5 = 13.5 13.5 × 10	135	3	M1 for ½ × 6 × 4.5 oe (or 13.5 seen) M1 for "½ × 6 × 4.5" × 10 A1 cao SC: Award B1 for an answer of 270
8	$\frac{(x+2)(x+3)}{x+2}$	$x + 3$	3	M1 for attempting to factorise the quadratic by seeing $(x \pm 2)(x \pm 3)$ or $(x \pm 6)(x \pm 1)$ A1 for $(x + 2)(x + 3)$ A1 cao (accept $\frac{x+3}{1}$)

5543H - Section A				
No	**Working**	**Answer**	**Mark**	**Notes**
9	$n^2 + 4n + 4 - (n^2 - 4n + 4)$ $= n^2 + 4n + 4 - n^2 + 4n - 4$	$8n$	2	M1 for either $n^2 + 2n + 2n + 4$ or $n^2 - 2n - 2n + 4$ oe A1 for showing that terms reduce to $8n$

5543H - Section B				
No	**Working**	**Answer**	**Mark**	**Notes**
1	$6 \times 5 + \frac{1}{2} \times 4 \times 5 = 30 + 10$ or $\frac{1}{2}(6 + 10) \times 5$ or $(10 \times 5) - \frac{1}{2} \times 4 \times 5 = 50 - 10$	40	2	M1 for a complete correct method A1 cao
2		$3n + 1$	2	B2 for $3n + 1$ oe (B1 for $3n \pm k$) SC: Award B1 for $n = 3n + 1$
3	256 50 6 × 16 500 60 15 36 300 36 25 60 40 96 2000, 1200, 500, 300, 60, 36 added 	40.96	3	M1 for complete method for multiplying the digits 256 by 16, condone one arithmetic error A1 for digits 4096 seen A1 cao
4 (i) (ii)		22.5 21.5	2	B1 for 22.5 or 22.4999… B1 cao
5		4.5×10^5	1	B1 cao

5543H - Section B				
No	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		$15p - 6$	1	B1 for $15p - 6$
(b)	$6x + 3 + 6x - 2$	$12x + 1$	2	B2 for $12x + 1$ (B1 for $12x$ or $+1$ or $6x + 3$ or $6x - 2$)
(c)		$(a - 8)(a - 8)$	2	B2 for $(a - 8)(a - 8)$ or $(a - 8)^2$ (B1 for a in both brackets and two numbers multiplying to 64 or -64) Condone the missing trailing bracket.
7 (a)		3^4	1	B1 accept 81
(b)		6	1	B1
(c)		-2	1	B1 accept 3^{-2}
8 (a)		90	1	B1 cao
(b)		140	2	M1 for sight of 20º or $360 - 90 - 90 - 40$ A1 for 140º SC: Award B1 for an answer or 220
(c)			2	B1 for Angle between <u>tangent</u> and <u>radius</u> = <u>90°</u> or <u>Tangents</u> from a <u>point</u> to a circle are <u>equal</u> B1 for <u>Isosceles</u> triangle POQ so angle OQP = 20° or Angles in a <u>triangle</u> add up to <u>180°</u>

5543H - Section B				
No	**Working**	**Answer**	**Mark**	**Notes**
9	$\frac{x^2-3}{x(x-2)}$	$\frac{x^2-3}{x(x-2)}$	2	M1 for common denominator $x(x-2)$ oe or common denominator $x(x-2)(x-2)$ oe A1 for $\frac{x^2-3}{x(x-2)}$ or $\frac{x^2-3}{x^2-2x}$