

Edexcel GCSE

Mathematics B 2544

Paper 5543H/11

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

5543H - Section A																	
No	Working	Answer	Mark	Notes													
1		(4, 6)	2	B2 for (4, 6)  (B1 for (4, y) or (x, 6))													
2	$60 \div 1\text{h } 30\text{ mins}$ or $60 \div 1.5$  or $60 \div 90 \times 60$ or $60 \div 90$ or $60 \div 1.3$	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	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>y</td> <td>-7</td> <td>-5</td> <td>-3</td> <td>-1</td> <td>1</td> </tr> </table>	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	
x	-2	-1	0	1	2												
y	-7	-5	-3	-1	1												
4	(a)	12	1	B1 accept $2^2 \times 3$ oe													
	(b)	$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$	2	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 $2 \times 2 \times 2 \times 2 \times 2 \times 3$ 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	$\frac{1}{2} \times 6 \times 4.5 = 13.5$  $13.5 \times 10$	135	3	M1 for $\frac{1}{2} \times 6 \times 4.5$ oe (or 13.5 seen)  M1 for “ $\frac{1}{2} \times 6 \times 4.5$ ” $\times 10$  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	$\begin{array}{r} 256 \\ 50 \ 6 \\ \times \ 16 \\ \hline 500 \ 60 \\ 15 \ 36 \\ 300 \ 36 \\ \hline 25 \ 60 \\ 40 \ 96 \end{array}$ <table style="display: inline-table; vertical-align: middle; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; border-bottom: 1px solid black; padding: 2px 5px;"> </td> <td style="border-bottom: 1px solid black; padding: 2px 5px;">200</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">10</td> <td style="padding: 2px 5px;">2000</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">6</td> <td style="padding: 2px 5px;">1200</td> </tr> </table> 2000, 1200, 500, 300, 60, 36 added		200	10	2000	6	1200	40.96	3	M1 for complete method for multiplying the digits 256 by 16, condone one <u>arithmetic</u> error A1 for digits 4096 seen A1 cao
	200									
10	2000									
6	1200									
4	(i)	22.5	2	B1 for 22.5 or 22.4999...						
	(ii)	21.5		B1 cao						
5		$4.5 \times 10^5$	1	B1 cao						



5543H - Section B				
No	Working	Answer	Mark	Notes
6	(a)	$15p - 6$	1	B1 for $15p - 6$
	(b)	$12x + 1$	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 $20^\circ$ or $360 - 90 - 90 - 40$  A1 for $140^\circ$  SC: Award B1 for an answer or 220
	(c)		2	B1 for <u>Angle between tangent and radius = <math>90^\circ</math></u> or <u>Tangents from a point to a circle are equal</u>  B1 for <u>Isosceles triangle POQ so angle <math>OQP = 20^\circ</math></u> or <u>Angles in a triangle add up to <math>180^\circ</math></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	<p>M1 for common denominator <math>x(x-2)</math> oe  or common denominator <math>x(x-2)(x-2)</math> oe</p> <p>A1 for <math>\frac{x^2 - 3}{x(x-2)}</math> or <math>\frac{x^2 - 3}{x^2 - 2x}</math></p>