

Edexcel GCSE

Mathematics B 1388

Paper 5538/18

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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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	Answer	Mark	Notes
1	(a) $1 - (0.2 + 0.3 + 0.1)$	0.4	2	M1 for $1 - (0.2 + 0.3 + 0.1)$ A1 for 0.4 oe, accept $\frac{0.4}{1}$
	(b) 0.2×200	40	2	M1 for 0.2×200 A1 cao NB : $\frac{40}{200}$ is m1a0; 40 out of 200 is m1a1
2	$650 - 430 = 220$ 1 choc ice costs 110p $650 - 5 \times 110 = 100\text{p}$	50	3	M1 for $650 - 430$ or 220 or 110 oe seen M1 for $650 - 5 \times \frac{220}{2}$ or $430 - 3 \times \frac{220}{2}$ oe A1 for 50p or £0.50 or £0.5 <i>Alternative scheme</i> $2x + 5y = 650$ $2x + 3y = 430$ oe M1 for subtracting two simultaneous equations to eliminate x (lollies), 2 or 3 terms correct M1 for $650 - 5 \times 'y'$ or $430 - 3 \times 'y'$ oe A1 for 50p or £0.50 or £0.5 <i>Alternative scheme</i> M1 for $3 \times (2x + 5y = 650)$ evaluated and $5 \times (2x + 3y = 430)$ evaluated oe, 5 or 6 terms correct M1 ft for subtraction of equations to eliminate y (choc ices), 2 or 3 terms correct A1 for 50p or £0.50 or £0.5

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No	Working	Answer	Mark	Notes
3		question + response boxes oe	2	1 st aspect: One question (eg 'how long does it take you to travel to school?'); ignore other questions. 2 nd aspect: Response list (at least two), not overlapping. 3 rd aspect: Some mention of units (eg minutes) in either question or responses B2 for all three aspects, or B1 for just one aspect.
4		Box plot	2	B2 for a fully correct box plot (B1 for one aspect) 1 st aspect : Vertical line for median 2 nd aspect : Box using correct upper and lower quartiles 3 rd aspect : Whiskers (could be a single line) drawn with correct end points
5	(i) $2x \geq 7$ (ii)	$x \geq 7/2$ $x = 4$	3	M1 for $2x \geq 7$ (condone use of = sign or wrong inequality) A1 for $x \geq 7/2$ oe as final answer SC : If M0 then B1 for sight of 3.5 or $7/2$ B1 ft from $x \geq "7/2"$
6		$\pi a^2 + ab$ $a(3d + b)$ $\frac{\pi ab^2}{3d}$	3	B3 all correct (B2 for 2 correct) (B1 for 1 correct) Subtract one mark to a minimum of zero for each of 4 th , 5 th , 6 th tick
7	8×1000000	8000000	2	M1 for 1000000 or $(100)^3$ oe or $(200)^3$ oe A1 cao

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No	Working	Answer	Mark	Notes
8	$\begin{array}{r l} 2 & 126 \\ \hline 3 & 63 \\ 3 & 21 \\ & 7 \end{array}$	$2 \times 3 \times 3 \times 7$	2	M1 for a systematic method of at least 2 correct divisions by a prime number or factor trees, can be implied by the digits 2, 3, 3, 7 on answer line A1 for $2 \times 3 \times 3 \times 7$ or $2 \times 3^2 \times 7$
9	(i) (ii)	7^5 7^4	3	B1 cao B2 cao (B1 for sight of 7^5 or 7^{2+3} or 7×7^3 or $7^2 \times 7^2$ or 7×7^3 or $7^1 \times 7^3$ or 7^{2+3-1})
10		$y = \frac{1}{2}x + 3$	2	B2 for $y = \frac{1}{2}x + 3$ oe (B1 for $y = \frac{1}{2}x + c$, $c \neq 7$ or $y = mx + 3$, $m \neq \frac{1}{2}$ oe or $\frac{1}{2}x + 3$ or $M = \frac{1}{2}x + 3$)
11	$\frac{8}{3} \times \frac{5}{4} = \frac{8 \times 5}{3 \times 4} = \frac{40}{12}$	$3\frac{1}{3}$	3	B1 for $\frac{8}{3}$ oe improper fraction or $\frac{5}{4}$ oe improper fraction M1 (dep) for multiplying numerator and denominator of “ $\frac{8}{3}$ ” and “ $\frac{5}{4}$ ” A1 for $\frac{10}{3}$ or $3\frac{1}{3}$ oe mixed number <i>Alternative method</i> B1 for 1.25 and 2.66(6...) or 2.67 M1 (dep) for correct method of multiplication A1 for $3.\dot{3}$

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12 (a)	$\frac{96}{24}$ or 4 $\sqrt{4}$ or 2	8	3	M1 for $\frac{96}{24}$ or $\frac{24}{96}$ or 4 or $\frac{1}{4}$ accept ratios or division oe M1 for $\sqrt{\frac{96}{24}}$ or $\sqrt{\frac{24}{96}}$ or $\sqrt{4}$ or $\frac{1}{\sqrt{4}}$ or 2 or $\frac{1}{2}$ oe A1 cao
12 (b)	12×2^3	96	2	M1 for '2' ³ or 8 A1 cao
13 (a)(i)		90°	2	B1 cao
13 (a)(ii)		50°	2	B1 cao
13 (b)	$90 - 49 (= 41)$ $180 - 2 \times "41"$	98°	3	M1 for $90 - 49 (=41)$ A1 cao B1 for Angle between tangent and radius is 90° and Isosceles triangle
14 (a)	$x \times 3 - x \times 2x^2$	$3x - 2x^3$	2	B2 cao (B1 for a two term expression with either $3x$ or $2x^3$)
14 (b)		$4x(3y + x)$	2	M1 for taking out a factor of x , $2x$, $4x$, 2 or 4 A1 cao
14 (c)	$\frac{\cancel{x} - 3}{(\cancel{x} - 3)(x + 3)}$	$\frac{1}{x + 3}$	2	B2 M1 for $(x - 3)(x + 3)$ seen A1 cao

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No	Working	Answer	Mark	Notes
15	(i) $n^2 + (n+1)^2 = 2(n^2 + n) + 1$ (ii)	$2n^2 + 2n + 1$ $2(n^2 + n)$ is always even so $2(n^2 + n) + 1$ is always odd	4	M1 for at least 3 terms correct from $n^2 + n + n + 1$ A1 for $2n^2 + 2n + 1$ oe M1 for recognizing $2n^2$ is always even A1ft complete proof for their quadratic <i>Alternative method</i> M1 for recognizing that if n^2 is odd then $(n + 1)^2$ is even or vice versa A1 for complete proof
16	$\frac{\sqrt{12} + 15}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$	2, 5	2	M1 for $\sqrt{12} = \sqrt{4 \times 3}$ or $\sqrt{12} = 2\sqrt{3}$ or $\sqrt{12} = \sqrt{4} \times \sqrt{3}$ for $\frac{\sqrt{12} + 15}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$ A1 for $p = 2$ and $q = 5$
17		42 318	2	B1 for answer in range 36 – 48 B1 for answer in range 312 – 324
18	(a) Graph translated 2 units upwards through points $(-4, 2), (-2, 4), (0, 2)$ (b) Graph reflected in x -axis through points $(-4, 0), (-2, -2), (0, 0)$	Sketch Sketch	2 2	M1 for a vertical translation A1 curve through points $(-4, 2), (-2, 4)$ and $(0, 2)$ and $(3, 5) \pm \frac{1}{2}$ square M1 for reflection in x -axis or y -axis A1 curve through points $(-4, 0), (-2, -2), (0, 0)$ and $(3, -3) \pm \frac{1}{2}$ square

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No	Working	Answer	Mark	Notes
19	$5x^2 = 3 - 14x$ $5x^2 + 14x - 3 = 0$ $(5x - 1)(x + 3) = 0$ $x = \frac{1}{5}, -3$ $y = \frac{1}{5}, 45$	$x = \frac{1}{5}, y = \frac{1}{5}$ $x = -3, y = 45$	5	<p>M1 for $5x^2 = 3 - 14x$ A1 for $5x^2 + 14x - 3 = 0$</p> <p>M1 for $(5x \pm 1)(x \pm 3)$ or $\frac{-14 \pm \sqrt{196 + 60}}{10}$, ignore signs</p> <p>A1 for $x = \frac{1}{5}, -3$ A1 for $y = \frac{1}{5}, 45$</p> <p>SC : If no marks earned then award</p> <p>B1 for $x = \frac{1}{5} \ y = \frac{1}{5}$ B1 for $x = -3, y = 45$</p>