GCSE

Edexcel GCSE

Mathematics B 1388

Summer 2006

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

No	Working	Answer	Mark	Notes
1	$x^2 = \dfrac{108}{3}$	6	2	M1 $(x^2 =)\dfrac{108}{3}$ (=36) or 36 seen A1 cao 6 or -6 or both. Also accept $\sqrt{36}$
2	9.3×10	93 cm^3	3	M1 for 9.3×10 A1 for 93 B1 (indep.) for cm^3
3		overlay	4	M1 quarter "circle" drawn centre A inside rectangle (ignore lines outside the rectangle) A1 radius 4 cm$\pm$2mm B1 line drawn 1 cm $\pm$2mm from *DC*. B1 ft (dep on two loci attempts drawn) region shaded
4		$(x+2)(x+4)$	2	M1 ($x \pm 2)(x \pm 4)$ A1 cao
5	$57\,000\,000 \div 100 \div 100 \div 100$	57	2	M1 for 100^3 oe seen or used A1 cao
6	How many pizzas have you eaten in the last week? <table><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>More than 3</td></tr></table>	Include a time period Proper response boxes	2	B1 Include a time period B1 At least 3 numeric response boxes
7	vertices at $(-1, -2)$, $(-1, -6)$, $(-7, -2)$	Enlargement	2	B2 correct enlargement $\pm$ ½ square (B1 for enlargement of -1 or ½, centre (0, 0) **or** triangle of correct size and orientation **or** 2 out of 3 vertices correct $\pm$½ square)
8		(4,2), (5,1) (5,2), (5,3)	3	B3 all correct and none incorrect (B2 at least 2 correct and not more than 4 points). (B1 line $x = 6$ drawn **or** one point correct)

Paper 5538_18

No		Working	Answer	Mark	Notes
9	(a)		12, 33, 69, 92, 100	1	B1 cao
	(b)			2	B1 ft for 4 or 5 points plotted correctly ± 1 full 2 mm square at the end of interval dep on sensible table (condone one addition error) B1 dep for points joined by curve or line segments provided no gradient is negative. Ignore any point of graph outside range of their points. SC B1 if 4 or 5 points plotted not at end but consistent within each interval and joined .
	(c)		62- 64	1	B1 62-64 otherwise ft from cumulative freq graph
10	(a)	90	90°	2	B1 cao B1 angle in semi circle ($= 90^{\circ}$)
	(b)	$70 \div 2$	35°	2	B1 35^{0} or 325^{0} B1 angle at centre = twice angle at circumference **OR** B1 angle on a straight line *with* isosceles triangle
11	(a)	$T = kM$ $k = \dfrac{600}{250}$ $T = \dfrac{600}{250} \times 400$	960	3	M1 for $T = km$ or $\dfrac{600}{250} = \dfrac{T}{400}$ oe (600) M1 for $(k =) \dfrac{600}{250}$ (=2.4) or $(T =)400 \times \dfrac{600}{250}$ A1 cao
	(b)	$T = \dfrac{K}{P}$ $T = \dfrac{1400 \times 360}{900}$	560	3	M1 for $T = \dfrac{K}{P}$ or $\dfrac{T}{1400} = \dfrac{360}{900}$ M1 for $(K =)1400 \times 360$ or $360 = \dfrac{K}{1400}$ or (K =) 504000 or $(T =) \dfrac{360 \times 1400}{900}$ oe A1 cao

No		Working	Answer	Mark	Notes
12			$\begin{pmatrix} 4 \\ 3 \end{pmatrix}$	2	M1 subtraction of coordinates or position vectors or $\begin{pmatrix} 4 \\ y \end{pmatrix}$ or $\begin{pmatrix} x \\ 3 \end{pmatrix}$ where x and y are intergers A1 cao SC: B1 for $\begin{pmatrix} -4 \\ -3 \end{pmatrix}$ or $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$
13	(a)		Heights 24,32	2	B1 cao for bar from 15 – 17.5, height 24 ×2mm squares B1 cao for bar from 17.5 – 20, height 32 × 2mm square
	(b)		Freqs 40, 20, 15	2	B2 cao for all 3 correct (B1 for any 1 or 2 correct)
14	(a)		2	1	B1 cao
	(b)		1.5 oe	1	B1 oe
	(c)	$8 \times \sqrt{4} \times \sqrt{2}$	$16\sqrt{2}$	2	M1 ($\sqrt{8}$ =) $\sqrt{4 \times 2}$ or $\sqrt{2} \times \sqrt{2} \times \sqrt{2}$ or $\left(2^3\right)^{"\frac{3}{2}"}$ A1 for $16\sqrt{2}$ (accept $m = 16$)
	(d)	$\dfrac{1}{8\sqrt{8}} \times \dfrac{\sqrt{8}}{\sqrt{8}}$ $= \dfrac{\sqrt{8}}{64} = \dfrac{\sqrt{2}}{32}$	$\dfrac{\sqrt{2}}{32}$	2	M1 $\dfrac{1}{8\sqrt{8}} \times \dfrac{\sqrt{8}}{\sqrt{8}}$ or $\dfrac{1}{8\sqrt{8}} \times \dfrac{8\sqrt{8}}{8\sqrt{8}}$ or $\dfrac{1}{"16\sqrt{2}"} \times \dfrac{\sqrt{2}}{\sqrt{2}}$ or $\dfrac{1}{8\sqrt{8}} \times \dfrac{\sqrt{2}}{\sqrt{2}}$ A1 for $\dfrac{\sqrt{2}}{32}$ (accept $p = 32$)

No	Working	Answer	Mark	Notes
15	$(n+a)P = n^2 + a$ $nP + aP = n^2 + a$ $a(P-1) = n^2 - nP$	$a = \dfrac{n^2 - nP}{P-1}$	4	M1 $(n+a)P = n^2 + a$ M1 $nP + aP = n^2 + a$ M1 $a(P-1) = n^2 - nP$ or $a(1-P) = nP - n^2$ A1 for $a = \dfrac{n^2 - nP}{P-1}$ oe
16 (a)(i) (ii) (iii) (b) (c)		$(0,-1)$ $(2, -3)$ $(1,-1)$ $y = f(-x)$ Translation by + 2 parallel to the y axis	3 1 1	B1 cao B1 cao B1 cao B1 cao B1 for translation by $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$
17	$y = 3 + 2x$ $x^2 + (3 + 2x)^2 = 18$ $x^2 + 9 + 12x + 4x^2 - 18 = 0$ $5x^2 + 12x - 9 = 0$ $(5x - 3)(x + 3) = 0$	$x = -3 \quad y = -3$ $x = \dfrac{3}{5}$ oe $\quad y = $ $4\dfrac{1}{5}$ oe	7	M1 for $y = 3 + 2x$ or $x = (y-3) \div 2$ M1 for "correct" substitution M1 for "correct" expansion, 3 out of 4 terms correct A1 for $5x^2 + 12x - 9 = 0$ or $5y^2 - 6y - 63 = 0$ M1 for correct attempt to solve a 3 term quadratic equation A1 for both x (or y) values A1 for both correct solutions [SC: If no marks earnt then B1 for $x = -3$ and $y = -3$ **OR** $x = \dfrac{3}{5}$ and $y = 4\dfrac{1}{5}$]