Edexcel GCSE

Mathematics B 1388
Paper 5510

November 2006

Mark Scheme (Results)

Edexcel GCSE

Mathematics B 1388

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appropriate marks, as long as it has not been replaced by alternative work.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.

5510 - Section A

No		Working	Answer	Mark	Notes
1			120 180	3	M1 for $300 \div (2 + 3)$ or 60 seen M1 for "60" $\times$ 2 or "60" $\times$ 3 A1 for 120 and 180
2	(a)		t^3	1	B1 cao
	(b)		$14 f^5 g^9$	2	B2 (B1 for f^5 or g^9)
3		$\dfrac{49}{15} \div \dfrac{21}{10}$ $= \dfrac{49}{15} \times \dfrac{10}{21}$ $= \dfrac{7}{3} \times \dfrac{2}{3}$	$\dfrac{14}{9}$ oe	3	M1 for one number written as an improper fraction correctly M1 for " $\dfrac{49}{15}$ " $\times$ " $\dfrac{10}{21}$ " oe A1 for $\dfrac{14}{9}$ or $1\dfrac{5}{9}$ oe (eg $\dfrac{490}{315}$)
4		$6x + 13 = 4x - 12$ $6x - 4x = -12 - 13$ $2x = -25$	$\dfrac{-25}{2}$ oe	3	B1 for $6x + 13 = 4x - 12$ or $\dfrac{6x}{4} + \dfrac{13}{4} = x - 3$ M1 (ft from $ax + b = cx + d$ $a,b,c,d \neq 0$) for correct method to isolate the terms in x A1 for $\dfrac{-25}{2}$ oe
5	(a)		$7.2(300) \times 10^4$	1	B1 cao
	(b)		0.0915	1	B1 cao
6			enlargement (–4, –4) (–10, –4) (–10, –8)	2	B2 for correct enlargement (B1 for enlargement of –1 or 2 or $-\dfrac{1}{2}$, centre (0,0) **or** triangle of correct size and orientation or 2 out of 3 vertices correct $\pm$ ½ sq or coordinates listed correctly) (SC : B1 for (–4, –4) (–11, –4) (–11, –8))

5510 - Section A				
No	Working	Answer	Mark	Notes
7		Heights 2, 4, 1	3	B3 for fully correct histogram (B2 for 2 bars correct) (B1 for clear use of frequency density)

5510 - Section B				
No	Working	Answer	Mark	Notes
1	8.1×20	162	2	M1 8.1×20 A1 cao
2 (a) (b)	(5), 0, (−3), −4, (−3), 0, 5	table graph	2 2	B2 (B1 for 2 or 3 correct) B1 ft for all points correctly plotted B1 (ft if at least B1 in (a)) for points joined with smooth curve
3	5 … 120 6 … 210 5.2 … 135.4 5.3 … 143.57 5.4 … 152.06 5.5 … 160.875 5.25 … 139.4	5.3	4	B2 for trial between 5 and 6 (B1 for trial at 5 or 6) B1 for different trial between 5.2 and 5.3 exclusive B1 (dep on at least one previous B1) for 5.3 NB Trials should be evaluated to at least 3 sf, truncated or rounded

4   (a)
 	
     (b)
 	
     (c)
		1.57
		
		1.4
		
		0.46
			1
			
			1
			
			1
				B1 cao
				
				B1 cao
				
				B1 cao

No	Working	Answer	Mark	Notes
5	angle $ABD = 90°$ $OB^2 = 8.7^2 - 6.8^2$ $OB = 5.426...$ $\cos CBD = \dfrac{9.5}{2 \times "5.43"}$	28.9°	6	B1 for angle $ABD = 90°$ (may be stated or marked on the diagram **or** may be implied by use of Pythagoras or trigonometry) M1 for $OB^2 + 6.8^2 = 8.7^2$ **or** $(OB^2 =) 8.7^2 - 6.8^2$ oe M1 for $\sqrt{8.7^2 - 6.8^2}$ ($\sqrt{29.45} = 5.42678542$) M1 for $\cos CBD = \dfrac{9.5}{2 \times "5.43"}$ **or** $\sin BDC = \dfrac{9.5}{2 \times "5.43"}$ M1 (dep) for $CBD = \cos^{-1}\left(\dfrac{9.5}{2x"5.43"}\right)$ $(= 0.875...)$ **or** $BDC = \sin^{-1}\left(\dfrac{9.5}{2x"5.43"}\right)$ A1 for $28.79 - 28.921$ **Alternative methods** (a combination may be seen) B1 for angle $ABD = 90°$ M1 for using trigonometry for correct method to find angle and then correct trig statement involving OB M1 for correct method to make OB the subject M1 for correct method to find CD **and** correct trig statement or statement of Cosine rule that involves angle CBD M1 for correctly rearranging so CBD is the subject A1 for $28.79 - 28.921$