

Mark Scheme (Results)

Summer 2012

Edexcel Level 2 Award (ANM20)
Proficiency in Number and Measure
Paper 2A + 2B

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NOTES ON MARKING PRINCIPLES

- 1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- 2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- 4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- 5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- 6 **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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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.

If there is no answer on the answer line then check the working for an obvious answer.

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 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.
- 7 **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.

8 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: e.g. incorrect canceling 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 e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

9 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.

10 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.

11 Parts of questions

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

12 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g. 3.5 – 4.2) then this is inclusive of the end points (e.g. 3.5, 4.2) and includes all numbers within the range (e.g. 4, 4.1)

Guidance on the use of codes within this mark scheme

M1 – method mark
A1 – accuracy mark
B1 – Working mark
oe – or equivalent
cao – correct answer only
ft – follow through
sc – special case
dep – dependent (on a previous mark or conclusion)
indep – independent
isw – ignore subsequent working

ANM20_2A					
Question		Working	Answer	Mark	Notes
1	(a)		3.7	1	B1 cao
	(b)		48	1	B1 cao
2		$\frac{5}{100} \times 6.4 = 32p$ $6.40 + 0.32$	6.72	3	M1 for $\frac{5}{100} \times 6.4$ or sight of 64 or 32 or 6.40×0.05 M1 for $\frac{5}{100} \times 6.4 + 6.4$ oe A1 for 6.72 SC: B2 for 0.32 or 32p
3			Correct pie chart	4	B1 for 60° in table or marked on pie chart B1 for 180° in table or on pie chart B1 ft for correct pie chart (use overlay) B1 for labelling (using types of music, largest Classical, smallest Rock if only 3 sectors)
4			1 hr 35 min OR 95 minutes	3	M1 for using 09 10 as the time shown on the clock M1 for 10 45 – “09 10” or attempt to count on from 09 10 to 10 45 A1 for 1 hr 35 min accept 95 mins SC B2 for 1:35, 1.35, 1h 35, etc.
5		Ratio	Amy 6 Beth 12 Cath 18	3	M1 for $36 \div (1 + 2 + 3)$ A2 for 6, 12, 18 (A1 for 6 or 12 or 18 in any order)

ANM20_2A				
Question	Working	Answer	Mark	Notes
6	$A = \pi r^2$ $3.14 \times 8 \times 8$	200-202	3	M1 for $A = \pi r^2$ or sight of $16 \div 2$ or 8 M1 for $\pi \times 8 \times 8$ A1 for answer in range 200-202 accept 64π SC B1 for $\pi \times 16 \times 16$
7	$20 = 3 \times 2 \times 5$ $24 = 2 \times 2 \times 2 \times 3$ LCM is $2 \times 2 \times 2 \times 3 \times 5 =$	120	3	M1 for attempt to write 20 or 24 as a product of primes using factor trees or decomposition with at least 2 factors correct or attempt to write a list of multiples of 20 or 24 with at least 3 correct for one of them M1 for writing both of the numbers correctly as a product of prime factors or for writing a list of multiples for both 20 and 24 with at least 3 correct in both A1 cao
8	$\frac{3.5}{100} \times 500 = 17.50$ $17.50 \times 2 =$	35	3	M1 for $\frac{3.5}{100} \times 500$ or (1% of £500 = £5) $\times 3.5$ oe or 17.5 M1 for “£17.50” $\times 2$ A1 cao Alternative M2 for $\frac{7}{100} \times 500$ or $\frac{3.5}{100} \times 1000$ or digits 35 (not 35) A1 cao SC B2 for 535

ANM20_2A					
Question		Working	Answer	Mark	Notes
9	(a)		1.5	1	B1 cao
	(b)(i)		42.875	1	B1 for 42.875
	(ii)		42.9	1	B1 ft for 42.9
	(c)		5	2	M1 for 9 or 16 or 9 + 16 or 25 seen A1 cao
10			126.59	4	M1 for $25 \times 5.75 (= 143.75)$ M1 for $6.20 + 10.96 (= 17.16)$ M1 for "143.75" – "17.16" A1 cao
11		$\frac{1}{2} \times 5 \times 8 = 24$ $20 \times 12 =$	240	3	M1 for $5 \times 8 \div 2$ or sight of $40 \div 2$ M1 for "20" $\times 12$ A1 for 240
12		$\frac{3}{4} \times 60 = 45$ $\frac{70}{100} \times 64 = 44.80$	$\frac{3}{4}$ of 60 by 0.2	3	M1 for $60 \div 4 \times 3$ or sight of 45 M1 for $\frac{70}{100} \times 64$ oe or sight of 44.8 or 6.4×7 A1 for $\frac{3}{4}$ of 60 indicated oe ft from their working for a comparison
13		$12 \times 8 - 9 \times 5$ $96 - 45$ Or $(12 \times 1.5 + 5 \times 1.5) \times 2$	51	4	M1 for 12×8 or 9×5 A1 for 96 or 45 seen M1 for $12 \times 8 - 9 \times 5$ or $96 - 45$ A1 cao

ANM20_2A					
Question		Working	Answer	Mark	Notes
14	(a)	350×1.35	\$472.50	2	M1 for 350×1.35 A1 cao
	(b)	$266 \div 200$	£1 = \$1.33	2	M1 for $266 \div 200$ or $200 \div 266$ A1 for £1 = \$1.33 or \$1 = 0.75(...)
15		$\frac{1}{2} \times \pi \times 12 + 12$ $18.8496 + 12$	42-43	3	M1 for attempt to find the perimeter of circle or sight of $\pi \times 12$ or $\pi \times D$ or $2\pi r$ or $6 \times \pi$ oe A1 for 30-31 A1 ft (dep on M1) for “30-31” + 12

ANM20_2B																													
Question	Working	Answer	Mark	Notes																									
1	$\begin{array}{r} 34.56 \\ 4.5 \\ \underline{123} \quad + \\ 162.06 \\ 82.79 - \end{array}$	79.27	2	M1 for either attempting to add the three numbers or subtracting 82.79 A1 cao																									
2	<p>(a)</p> $\begin{array}{r} 56 \\ 24 \times \\ \underline{224} \\ 1120 \\ \underline{1344} \end{array}$ $\begin{array}{r} 10 \times 56 = 560 \\ 10 \times 56 = 560 \\ 4 \times 56 = 224 \\ \underline{1344} \end{array}$ <table border="1" data-bbox="412 691 696 911"> <tr><td></td><td>5</td><td>6</td><td>×</td></tr> <tr><td>1</td><td>1 0</td><td>1 2</td><td>2</td></tr> <tr><td>3</td><td>2 0</td><td>2 4</td><td>4</td></tr> <tr><td></td><td>4</td><td>4</td><td></td></tr> </table> <table border="1" data-bbox="412 943 719 1062"> <tr><td>×</td><td>50</td><td>6</td></tr> <tr><td>20</td><td>1000</td><td>120</td></tr> <tr><td>4</td><td>200</td><td>24</td></tr> </table> <p>(b)</p> $\begin{array}{r} 243 \\ 9 \overline{)213827} \end{array}$		5	6	×	1	1 0	1 2	2	3	2 0	2 4	4		4	4		×	50	6	20	1000	120	4	200	24	1344	3	M1 for attempt to multiply 56 by 24 which may be from an incomplete method of multiplication M1 for sight of complete partitioning method. Condone one multiplication error final addition not necessary Or for complete grid, condone one multiplication error, addition not necessary A1 for 1344
	5	6	×																										
1	1 0	1 2	2																										
3	2 0	2 4	4																										
	4	4																											
×	50	6																											
20	1000	120																											
4	200	24																											
		243	2	M1 for attempt to divide 2187 by 9 or sight of 3 carried from division of 21 by 9 Or for method show for subtraction of at least one 900 and one 90 A1 for 243																									

ANM20_2B				
Question	Working	Answer	Mark	Notes
3	(a)	-4, -2, 0, 2, 3	1	B1 cao
	(b)	3	1	B1 cao
	(c)	-10	1	B1 cao
	(d)	20	1	B1 cao
	(e)	-4	1	B1 cao
4	$\frac{24}{80} \times 100$	30	2	$\frac{24}{80}$ or $\frac{3}{10}$ or $\frac{6}{20}$ or $\frac{12}{40}$ M1 for $\frac{24}{80}$ or $\frac{3}{10}$ or $\frac{6}{20}$ or $\frac{12}{40}$ A1 for 30
5	$\frac{5 \times 80}{20} = \frac{400}{20}$ Or 5×4	20	3	M2 for writing 2 numbers out of 5 or 80 or 20 or sight of 400, 4 or 0.25 (M1 for writing 1 number out of 5, 80 or 20) A1 cao SC B2 for digit 2
6	$360 \div 3 = 120$ $120 \times 5 =$	6	3	M1 for $360 \div 3$ or 360×5 or 120 or 180 or 1.2 or 18 etc. M1 for "120" $\times 5$ or "1800" $\div 3$ A1 for 6 or 6.00 oe SC B2 for 600

ANM20_2B					
Question	Working	Answer	Mark	Notes	
7	(a)	$3 + 1 = 4$ $\frac{3}{4} + \frac{2}{4} = 4\frac{5}{4}$	$5\frac{1}{4}$	3	<p>M1 for dealing with whole numbers or writing at least one fraction correctly with a common denominator</p> <p>M1 for writing both fractions correctly with a common denominator with at least one correct numerator or sight of $4\frac{5}{4}$ or 21/4 oe</p> <p>A1 cao for $5\frac{1}{4}$</p>
	(b)	$\frac{11}{6} \times \frac{3}{5} = \frac{33}{30} = \frac{11}{10}$	$1\frac{1}{10}$	3	<p>M1 for writing $\frac{11}{6} \times \frac{3}{5}$</p> <p>M1 ft for multiplying numerators and multiplying denominators</p> <p>A1 cao</p>
8		$8 \text{ km} = 5 \text{ miles}$ $40 \div 8 \times 5$	25	2	<p>M1 for attempt to divide by 8 or multiply by 5</p> <p>A1 for 25</p>
9		$3\text{m} = 300 \text{ cm}$	$\frac{43}{300}$	2	<p>M1 for attempt to change 3m to cm e.g. 3</p> <p>$\times 100$ or $\frac{43}{3}$</p> <p>A1 cao</p>

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