
GCSE

Methods in Mathematics

(Linked Pair Pilot)

9365F

Unit 1: Foundation Tier

Mark scheme – Additional Guidance

9365

June 2014

V1.0 Final

General Points.

1 **Completely crossed out responses**

Examiners should mark a candidate's final attempt even if crossed out.

2 **Answers not written on answer line**

If answer line is blank, mark working space for up to full marks.

If fully correct working seen or answer seen followed by a transcription error onto the answer line, award full marks.

3 **Candidate indicates they have completed a solution on an additional sheet**

If the candidate has written that they have continued or replaced the response on an additional sheet you should **still mark what you see** (A senior examiner will record any additional marks seen on the additional sheet at a later stage.)

Do NOT escalate these clips.

4 **Candidate seems to have continued a solution outside the area you can see**

If a candidate indicates that they have written further work somewhere else on the paper e.g. an arrow going below your clip or 'see back page'.

Senior examiners are able to view these other areas and pages **so please DO escalate in this situation.**

5 **Mark scheme notation**

Please note that an alternative way of scoring a mark may be indicated throughout the scheme by a correct value.

For example:

$(600 - \text{their } 210) \div 5$ or 78 M1 means accept either $(600 - \text{their } 210) \div 5$ or just 78 for M1

6 **Marking Using Alternate Schemes**

Choose the scheme that gives the candidate the most marks.

Do **not** combine marks from different schemes.

7 **Special Cases (SC)**

Special Case (SC) marks are **not** added to any other marks awarded but replace them where it would benefit the candidate.

- a response is worthy of no marks from scheme but gets SC1 the final mark is SC1.
- a response is worthy of M1 and SC1 the final mark for this response is M1.
- a response is worthy of M2 and SC1 the final mark for this response is M2.
- a response is worthy of M1 and SC2 the final mark for this response is SC2

8 Percentage Build-up methods

The general rule is that build-up methods must be complete and either correct method must be shown or values used must be correct (without truncation or rounding).

For example: 35% of 600

- (a) 10% = 60 *Value correct so method not needed*
3.5 × 60 = 220 Value incorrect but correct method shown so M mark gained
1% = 6 *Value correct so method not needed*
35 × 6 = 220 Value incorrect but correct method shown so M mark gained
- (b) **10% = 50 Value incorrect and no method shown so M mark lost here**
10% = 60 *Value correct so method not needed*
1% = 5 Value incorrect and no method shown so M mark lost here
- (c) 10% = 600 ÷ 10 = 50 *Value incorrect but method shown*
20% = 100 *Value correct for their 10% so method not needed*
5% = 25 *Value correct for their 10% so method not needed*
35% = 175 Value correct for their 10% so M mark gained
3.5 × 50 = 175 Value correct for their 10% so M mark gained
1% = 5 *Value correct for their 10% so no method needed*
35 × 5 = 175 Value wrong but correct method shown so M mark gained

9 Money notation

Where an answer line showspence
Accept 20p or £0.20 on answer line but do not accept 0.20 on answer line
Accept £0.20p on answer line (except on QWC question) unless otherwise instructed.

Where an answer line shows £.....
Accept 525p on answer line with £ sign crossed out
Accept £5.25p on answer line (except on QWC question) unless otherwise instructed.

On a QWC question, where an answer line showspence
Do **NOT** accept £0.20p on answer line for Q mark

On a QWC question, where an answer line shows £.....
Do **NOT** accept £5.25p on answer line for Q mark

Q	Additional Guidance
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2	<p>Yes and 103 840 more scores M2 Q1</p> <p>Any number (other than 1461) $\times 24 \times 60$ scores M1</p> <p>If the candidate uses $365 \times 4 (= 1460)$ days, this can score M1 (if $\times 24 \times 60$ but answer is wrong) or SC1 or SC2</p> <p>If the candidate tries to work in weeks there are no marks for either division or multiplication by 7, as these should eventually cancel out</p> <p>For example,</p> <p>$1461 \div 7 = 209$ (rounded)</p> <p>$209 \times 24 \times 60 = 300\,960$ M1 (for $\times 24 \times 60$)</p> <p>$300\,960 \times 7 = 2\,106\,720$ scores the second M1 (but Q0)</p> <p>If the candidate tries to work in months, follow the guidance for weeks, but condone assumptions about number of weeks or days in a month.</p> <p>For example,</p> <p>$1461 \div 7 \div 4 = 52.2$</p> <p>$30 \times 24 \times 60 = 43\,200$ M1 (for $\times 24 \times 60$)</p> <p>$43\,200 \times 52.2 = 2\,255\,040$ scores the second M1 (but Q0)</p> <p>If a candidate does $2m \div 1461 = [1368, 1369]$ and then compared with 1440 can score M2 if there is no fw and Q1 if accompanied with Yes</p>
3a	The point does not need to be identified with letter <i>B</i> .
3b	<p>If (1, 5) has been plotted in (a) the correct ft points are at (1, 3) and (3, 5)</p> <p>If a different point has been plotted in (a) you will have to judge the accuracy of their ft points.</p> <p>If more than 2 unlabelled points are plotted for C and D choose the ones which are joined or implied by the answer to part (c); otherwise mark as choice</p>
3c	<p>If (1, 5) has been plotted in (a) the correct ft point is at (2, 4) or (4, 2) scores B1</p> <p>For the ft on incorrect points in (b) judge the accuracy of decimal answers to within $\frac{1}{2}$ square</p> <p>If the points are incorrectly plotted and not labelled, mark the connected pair of points</p> <p>Candidates do not need to connect C and D with a line to be awarded B1</p>

Q	Additional Guidance
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4	61 is assumed to be a factor of 122 unless there is evidence to the contrary Ignore commas, dots, gaps etc
5a	Usual build-up rules for percentages apply.
6b	If the solution is found by drawing a line allow [3.4, 3.6] Candidates can score M1 A1 or M1 A1ft without drawing a line If they have selected the wrong point in (a) their answer to (b) should be: (1, 5) selected, 4, 0 (3, 1) selected, [2.55, 2.75], 0
7	17 or 22 or 11 automatically guarantee M1 17 and 11 guarantees M2 If Alt 2 method is used 13 – 8 on its own is not a trial unless 17 (– 0) is seen
8	Accept $-4x$ etc written underneath, above or beside the appropriate expression. Likely simplified equations which merit M1 are $2x = -4$ and $10x = 18$. These equations can then gain A1 ft. Note, however, that $10x = -4$ is two errors and therefore cannot qualify for any marks. If the unknowns are collected onto one side and the numbers onto the other, with or without the method being seen, award M1 if one side is correct. This can then lead to A1ft. For example, $(6x - 4x = 11 - 7)$, $2x = 4$, $x = 2$ gets M1M0A1ft with or without the bracketed equation. A rearrangement error consisting of a multiplication or division of one the unknown terms by the other or one of the numbers by the other cannot lead to A1ft. Award 2 marks for embedded answers such as $6 \times 9 - 11 = 4 \times 9 + 7$
9a	36 : 144 or 144 : 36 on the answer line scores M1A0 unless 144 is clearly identified with red in the working
9b	If their answer to (a) is incorrect, accept a correct answer in (b) or a follow through. The likeliest example of this may be 135 in (a) and 75% in (b), which scores 0 in (a) but 2 in (b). If their value in (a) does not give an integer percentage in (b) accept the answer truncated or rounded up to the nearest integer or within that range. For example, if their answer to (a) is 150 accept [83, 84] If the candidate gives a ratio in (a) award: <ul style="list-style-type: none"> • full ft for the higher number • full ft the correct percentage for both numbers • 1 mark for a correct percentage for the lower number

Q	Additional Guidance
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<p>11b</p>	<p>Allow repeated numbers Allow zero, negatives, decimals, fractions</p>				
<p>12a</p>	<p>Correct sets include: $3 + 5 + 11 = 19$ $3 + 5 + 23 = 31$ $3 + 7 + 13 = 23$ $3 + 7 + 19 = 29$ $5 + 7 + 11 = 23$ $5 + 7 + 17 = 29$</p> <p>Examples of B1: $2 + 2 + 7 = 11$ four primes, calculation correct, but 2 repeated $3 + 5 + 7 = 15$ three primes and calculation correct $3 + 5 + 9 = 17$ three primes and calculation correct $7 + 11 + 23 = 43$ all four are prime, but calculation is incorrect 2, 3, 5, 7 listed with no answer given 2, 3, 5, 7, 9, 11 listed with no answer given</p> <p>Other than the fourth example, the calculation must be correct to score any marks</p>				
<p>12b</p>	<p>Ignore incorrect examples when the wording scores 1 or 2 marks Expressing the result of the addition as a product loses the mark based on the sum being even Other ways of indicating that 2 is the only even prime number are:</p> <ul style="list-style-type: none"> • if the sum is an even number larger than 2 it must be a multiple of 2 and therefore not prime • the other two numbers must be odd 				
<p>13d</p>	<p>The 2 method marks are independent For the first method mark, when using Napier's bones, allow 1 error in the calculation, but not an incorrect way of entering the correct numbers into the grid 5421 from $90 \times 60 + 3 \times 7$ scores 0 The second method mark is independent of the first, but to gain it the addition must consist of all the relevant parts to complete the calculation 93×67</p> <p>Examples:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; padding-right: 20px;">$\begin{array}{r} 93 \\ 67 \times \\ \hline 651 \\ 4680 \\ \hline 5331 \end{array}$</td> <td style="text-align: right;">$\begin{array}{r} 68 \\ 27 \times \\ \hline 651 \\ 558 \\ \hline 1209 \end{array}$</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">M1 M1 A0</td> <td style="text-align: right;">M0 M1 A0</td> </tr> </table> <p>$90 \times 60 = 4500$ $90 \times 7 = 610$ $60 \times 3 = 160$ $3 \times 7 = 21$ scores M1 M0 (only 1 value correct) A0</p> <p>$90 \times 60 = 5400$ $7 \times 93 = 651$ $5400 + 651 = 6051$ scores M0 M0 (since only 3 of the calculations have been done)</p>	$\begin{array}{r} 93 \\ 67 \times \\ \hline 651 \\ 4680 \\ \hline 5331 \end{array}$	$\begin{array}{r} 68 \\ 27 \times \\ \hline 651 \\ 558 \\ \hline 1209 \end{array}$	M1 M1 A0	M0 M1 A0
$\begin{array}{r} 93 \\ 67 \times \\ \hline 651 \\ 4680 \\ \hline 5331 \end{array}$	$\begin{array}{r} 68 \\ 27 \times \\ \hline 651 \\ 558 \\ \hline 1209 \end{array}$				
M1 M1 A0	M0 M1 A0				

Q	Additional Guidance
15	<p>19 with no working scores 3 marks</p> <p>10, 12 and 3 (from 2×5, 3×4 and $6 \times \frac{1}{2}$) will score M2 even if the scores are then added or 3 is processed further to get (eg) $1\frac{1}{2}$</p> <p>The three initial values must be seen before awarding M1 A0 A1ft</p> <p>$10l + 12w - 3y$ is M0 (unless recovered)</p>
16	<p>Ignore brackets put into the correct calculations only if they do not affect the outcome</p> <p>For example, accept $1 + (2 \times 3 \times 4)$ but do not accept $(1 + 2) \times 3 \times 4$</p> <p>If brackets are used in other calculations mark the outcome</p> <p>For example, $(1 \times 2 + 3) \times 4 = 20$, which is correct, so award the mark</p> <p>If other signs are used the calculation cannot score; there are no correct answers which use $-$ or \div</p> <p>Penalise an incorrect total given for their calculations</p> <p>Be careful of repeats</p>
19	<p>For the third mark allow repeated digits. Markers will have to check addition.</p> <p>Be careful of 1056, which is $987 + 65 + 4$ and scores B1B0B1</p> <p>$999 + 99 + 9 = 1107$ scores B0B0B1</p>
20	<p>Sight of $\frac{1}{4}$ gets the first M1 but not sight of 20</p> <p>20 is implied by 45</p> <p>An incorrect starting or fraction loses the first mark, but the other three marks can still be scored. For example, $\frac{1}{5} = 5\%$, $5\% + 25\% = 30\%$, $100\% - 30\% = 70\%$, $70\% = \frac{7}{10}$ gets B0M1M1A1ft</p> <p>If the alt2 scheme is used, follow through their fraction but not if 25% is stated to be $\frac{1}{5}$</p> <p>If their $\frac{55}{100}$ will not simplify, the A1ft cannot be scored</p>
21	<p>For M1 accept 9^{12} without a denominator if it comes from $9^5 \times 9^7$</p>
22	<p>Accept 4 and 10 written in the box or just outside as evidence of the values of a and b</p> <p>12 in the box for $2c$ will similarly score the third M mark</p> <p>6 in the box for $2c$ will not score the third M mark although there may be other working elsewhere which scores the mark, eg $2c = 12$ written as working or the sum of the middle column is 30 – their a</p>

Q	Additional Guidance
23a	<p>Do not accept eg 3 in 8</p> <p>Ignore descriptive words such as 'likely', 'impossible', etc</p> <p>Ratio scores 0</p> <p>Ignore incorrect attempts to cancel or convert to a decimal</p> <p>$\frac{3}{8}$ and <u>anything else</u> (eg $\frac{3}{8}$ and $\frac{5}{8}$) scores 0</p>
23b	<p>To gain M1 purely for the conversion of $\frac{5}{8}$ to decimal or percentage form the conversion must be correct.</p> <p>For the A mark, however, if 0.6 is given, sufficient calculation for comparison is all that is required. For example, dividing 5 by 8 and showing a remainder after 0.6</p> <p>Accept $\frac{4.5}{8}$ and $\frac{5}{8}$ as a comparison</p>