

Mark Scheme (Results)

January 2013

Functional Skills Mathematics Level 1 (FSM01)

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#### **Guidance for Marking Functional Mathematics Papers**

### General

- StudentBounty.com All candidates must receive the same treatment. You must mark the first candidate in exactly the same way as you mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. You should always award full marks if deserved, i.e. if the answer matches the mark scheme. You should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

### Applying the Mark Scheme

- The mark scheme has a column for **Process** and a column for **Evidence**. In most guestions the majority of marks are awarded for the process the candidate uses to reach an answer. The evidence column shows the most likely examples you will see: if the candidate gives different evidence for the process, you should award the mark(s).
- Finding 'the answer': in written papers, the demand (question) box should always be checked as candidates often write their 'final' answer or decision there. Some questions require the candidate to give a clear statement of the answer or make a decision, in addition to working. These are always clear in the mark scheme.
- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.
- If there is a **choice of methods** shown, then marks should be awarded for the 'best' answer.
- A suspected **misread** may still gain process marks.
- It may be appropriate to **ignore subsequent work** (isw) when the candidate's additional work does not change the meaning of their answer. You are less likely to see instances of this in functional mathematics.
- You will often see correct working followed by an incorrect decision, showing that the candidate can calculate but does not understand the demand of the functional question. The mark scheme will make clear how to mark these questions.

- Transcription errors occur when the candidate presents a correct answer in working, and writes it incorrectly on the answer line mark the better answer.
- StudentBounty.com Follow through marks must only be awarded when explicitly allowed in the mark scheme. Where the process uses the candidate's answer from a previous step, this is clearly shown. Speech marks are used to show that previously incorrect numerical work is being followed through, for example '240' means their 240.
- Marks can usually be awarded where **units** are not shown. Where units, including money, are required this will be stated explicitly. For example, 5(m) or (£)256.4 indicate that the units do not have to be stated for the mark to be awarded.
  - **Correct money notation** indicates that the answer, in money, must have correct notation to gain the mark. This means that money should be shown as £ or p, with the decimal point correct and 2 decimal places if appropriate.

e.g. if the question working led to  $\pounds 12 \div 5$ , Mark as correct: £2.40 240p £2.40p Mark as incorrect: £2.4 2.40p £240p 2.4 2.40 240

- Candidates may present their answers or working in many equivalent ways. This is denoted o.e. in the mark scheme. Repeated addition for multiplication and repeated subtraction for division are common alternative approaches. The mark scheme will specify the minimum required to award these marks.
- A **range** of answers is often allowed :
  - [12.5,105] is the inclusive closed interval
  - (12.5,105) is the exclusive open interval
- **Parts of questions:** because most FS questions are unstructured and open, you should be prepared to award marks for answers seen in later parts of a question, even if not explicit in the expected part.
- Discuss any queries with your Team Leader

## Graphs

The mark schemes for most graph questions have this structure:

| Process                         |    | Evidence  |
|---------------------------------|----|---|
| Appropriate graph or chart –    | 1  | 1 of  |
| (e.g. bar, stick, line graph, ) | or | linear scale(s), labels, plotting (2mm tolerance) |
|                                 | 2  | 2 of  |
|                                 | or | linear scale(s), labels, plotting (2mm tolerance) |
|                                 | 3  | all of  |
|                                 |    | linear scale(s), labels, plotting (2mm tolerance) |

The mark scheme will explain what is appropriate for the data being plotted.

A linear scale must be linear in the range where data is plotted, whether or not it is broken, whether or not 0 is shown, whether or not the scale is shown as broken. Thus a graph that is 'fit for purpose' in that the data is displayed clearly and values can be read, will gain credit.

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The minimum requirements for **labels** will be given, but you should give credit if a title is given which makes the label obvious.

Plotting must be correct for the candidate's scale. Award the mark for plotting if you can read the values clearly, even if the scale itself is not linear.

The mark schemes for **Data Collection Sheets** refer to **input opportunities** and to **efficient input opportunities**. When a candidate gives an input opportunity, it is likely to be an empty cell in a table, it may be an instruction to 'circle your choice', or it may require writing in the data in words. These become efficient, for example, if there is a well-structured 2-way table, or the input is a tick or a tally rather than a written list.

| Question       Standard       Process       Mark       Grid       Evolutive         Q1a       R2       Uses one of the criteria successfully       1 or       A       At least one correct month based on sea temperatures – Juinclusive AND evidence for choices shown either in state figures or indicating entries in the data table         Q1a       R2       Uses one of the criteria successfully       1 or       A       At least one correct month based on sea temperatures – Juinclusive AND evidence for choices shown either in state figures or indicating entries in the data table         Q1b       I6       Uses both criteria successfully       2       AB       June or September (or both) AND evidence for choices she either in statement or figures or indicating entries in the data table.         Q1b       R1       Works with prices       1 or       C       Any hotel price + any scuba price         Q1b       R4       Process to find holiday cost       2 or       CD       625 + 128 (= 753) OR 639 + 128(=767) OR 695 + 128(=767) OR 695 + 128(=823) OR 800 - 625 - 128(=-23)         I6       Valid decision and accurate figures       3       CDE       Yes AND (£)753 or (£)767 OR Yes AND (£)47 or (£)33 | Section A: | Scuba divin        | g holiday<br>Process                   | Mork | Monk | Evidence  |
|--|------------|--------------------|--|------|------|---|
| Q1a       R2       Uses one of the criteria successfully       1 or       A       At least one correct month based on sea temperatures – Junclusive AND evidence for choices shown either in state figures or indicating entries in the data table OR At least one correct month based on daytime land temperatures – May, June, September, October AND evidence for choice either in statement or figures or indicating entries in the data table         I6       Uses both criteria successfully       2       AB       June or September (or both) AND evidence for choices she either in statement or figures or indicating entries in the data table.         Q1b       R1       Works with prices       1 or       C       Any hotel price + any scuba price         A4       Process to find holiday cost       2 or       CD       625 + 128 (= 753) OR 639 + 128(=767) OR 695 + 128(=823) OR 800 - 625 - 128(=47) OR 800 - 639 - 128(=33) OR 800 - 695 - 128(=-23)         I6       Valid decision and accurate figures       3       CDE       Yes AND (£)753 or (£)767 OR Yes AND (£)47 or (£)33   | Question   | Skills<br>Standard | Process                                | Магк | Grid | Evidence  |
| I6Uses both criteria successfully2ABJune or September (or both) AND evidence for choices sl<br>either in statement or figures or indicating entries in the d<br>table.Q1bR1Works with prices1 orCAny hotel price + any scuba priceA4Process to find holiday cost2 orCD625 + 128 (= 753) OR 639 + 128(=767) OR<br>695 + 128(=823) OR 800 - 625 - 128(=47) OR<br>800 - 639 - 128(=33) OR 800 - 695 - 128(=-23)I6Valid decision and accurate figures3CDEYes AND (£)753 or (£)767 OR<br>Yes AND (£)47 or (£)33   | Q1a        | R2                 | Uses one of the criteria successfully  | 1 or | A    | At least one correct month based on sea temperatures – June-Nov<br>inclusive <b>AND</b> evidence for choices shown either in statement or<br>figures or indicating entries in the data table<br><b>OR</b><br>At least one correct month based on daytime land temperatures<br>May, June, September, October <b>AND</b> evidence for choices shown<br>either in statement or figures or indicating entries in the data table |
| Q1bR1Works with prices1 orCAny hotel price + any scuba priceA4Process to find holiday cost2 orCD $625 + 128 (= 753)$ OR $639 + 128 (= 767)$ OR<br>$695 + 128 (= 823)$ OR $800 - 625 - 128 (= 47)$ OR<br>$800 - 639 - 128 (= 33)$ OR $800 - 695 - 128 (= -23)$ I6Valid decision and accurate figures3CDEYes AND (£)753 or (£)767 OR<br>Yes AND (£)47 or (£)33   |            | I6                 | Uses both criteria successfully        | 2    | AB   | June or September (or both) AND evidence for choices shown<br>either in statement or figures or indicating entries in the data<br>table.  |
| A4       Process to find holiday cost       2 or       CD $625 + 128 (= 753)$ OR $639 + 128 (= 767)$ OR       OR $695 + 128 (= 823)$ OR $800 - 625 - 128 (= 47)$ OR $800 - 639 - 128 (= 33)$ OR $800 - 695 - 128 (= -23)$ $695 + 128 (= 33)$ OR $800 - 695 - 128 (= -23)$ I6       Valid decision and accurate figures       3       CDE       Yes AND (£)753 or (£)767 OR         Yes AND (£)47 or (£)33       Yes AND (£)47 or (£)33       Yes AND (£)47 or (£)33  | Q1b        | R1                 | Works with prices                      | 1 or | C    | Any hotel price + any scuba price   |
| I6       Valid decision and accurate figures       3       CDE       Yes AND (£)753 or (£)767 OR         Yes       Yes       AND (£)47 or (£)33  |            | A4                 | Process to find holiday cost           | 2 or | CD   | 625 + 128 (= 753) <b>OR</b> 639 + 128(=767) <b>OR</b><br>695 + 128(=823) <b>OR</b> 800 - 625 - 128(=47) <b>OR</b><br>800 - 639 - 128(=33) <b>OR</b> 800 - 695 - 128(= -23)  |
|  |            | I6                 | Valid decision and accurate figures    | 3    | CDE  | Yes AND (£)753 or (£)767 OR<br>Yes AND (£)47 or (£)33   |
| A5 Appropriate check of their 1 F Reverse of any of their calculations <b>OR</b> check that their a calculation <800 e.g. 800-753=47 <b>OR</b> valid alternate calculation   |            | A5                 | Appropriate check of their calculation | 1    | F    | Reverse of any of their calculations <b>OR</b> check that their answer is < 800 e.g. 800-753=47 <b>OR</b> valid alternate calculation   |

| Question | Skills | Process  | Mark | Mark | Evidence  |
|----------|--------|--|------|------|---|
| 02       | R1     | Uses consistent units  | 1    | Gria | 0.76 seen <b>OR</b> converts any weight in kg to g  |
|          | R2     | Begins to calculate total weight of diving kit   | 1 or | Н    | Adds at least 3 weights <b>OR</b> subtracts at least 3 weights from 22<br><b>OR</b> subtracts at least 3 weights from 19 (may be g or kg or<br>accept incorrect conversions)  |
|          | A4     | Full process to calculate total weight<br>of diving kit (need not include bag)           | 2 or | HJ   | 2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4 + 3(=20.61) <b>OR</b><br>2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4(=17.61) <b>OR</b><br>22 - (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4 + 3)(=1.39) <b>OR</b><br>19 - (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4)(=1.39) <b>OR</b><br>22 - (2.8 + 1.6 + 3.3 + '0.76' + 1.75 + 7.4)(=4.39)<br>(may be g or kg or accept incorrect conversions) |
|          | I6     | Correct total weight   | 3    | HJK  | 20.61 or 1.39 or 20610 or 1390  |
|          | 16     | Valid decision from valid working,<br>allow follow through provided mark<br>J is awarded | 1    | L    | E.g. Yes and 20.61(kg) OR<br>Yes and 20610(g) OR<br>Yes and 1.39(kg) OR<br>Yes and 1390 (g) and 3000 (g) OR<br>allow follow through provided mark J is awarded  |
|          |        | Total marks for question   | 5    |      |   |

|          | <b>a m</b>         |  |      |              | StudentBo  |
|----------|--------------------|--|------|--------------|--|
| Question | Skills<br>Standard | Process  | Mark | Mark<br>Grid | Evidence   |
| Q3a      | R2                 | Process to calculate with time                                       | 1 or | М            | E.g. 2 hours + 2 hours 30 minutes <b>OR</b> 13:50 – 2 hours <b>OR</b> 13:<br>– 2 hours 30 minutes <b>OR</b> shows calculation using at least one<br>step         |
|          | A4                 | Completes process <b>OR</b> one time calculation correctly completed | 2    | MN           | E.g. 4 hours 30 minutes seen <b>OR</b> 4.5 hours seen <b>OR</b> 11:50 seen <b>OR</b> 11:20 seen <b>OR</b> 9:20 seen <b>OR</b> correct arrival with any bus time. |
|          | A5                 | Correctly considers all timings and chooses appropriate bus          | 1    | Р            | 07:15 <b>OR</b> 08:25 <b>OR</b> 08:45  |
| Q3b      | A4                 | Process to find 10%  | 1 or | Q            | $22 \div 10 (= 2.2)$ oe <b>OR</b><br>19.8(0) seen  |
|          | I6                 | Correctly finds 10%  | 2    | QR           | £2.20 in correct money notation  |
|          |                    | Total marks for question   | 5    |              |  |

# Section B: School leaver's party

| Question | Skills<br>Standard | Process                                     | Mark | Mark<br>Grid | Evidence   |
|----------|--------------------|---|------|--------------|--|
| Q4a      | R3                 | Processes sales or number of people         | 1 or | A            | 562.50÷37.50(=15) <b>OR</b> 262.50÷37.50(=7) <b>OR</b><br>1050.00÷37.50(=28) <b>OR</b> 187.50÷37.50(=5) <b>OR</b><br>112.50÷37.50(=3) <b>OR</b><br>562.50+262.50+1050.00+187.50+112.50(=2175)<br><b>OR</b> 37.50 × 60(=2250)                           |
|          | A4                 | Complete process to find figures to compare | 2 or | AB           | $562.50 \div 37.50(=15) + 262.50 \div 37.50(=7) + 1050.00 \div 37.50(=28) + 187.50 \div 37.50(=5) + 112.50 \div 37.50(=3)$<br>OR<br>562.50 + 262.50 + 1050.00 + 187.50 + 112.50(=2175) AND<br>$37.50 \times 60(=2250)$ OR<br>$`2175' \div 60 (=36.25)$ |
|          | I6                 | Correct answers                             | 3    | ABC          | 58 (people) <b>OR</b><br>2175 <b>AND</b> 2250 <b>OR</b><br>36.25   |
|          | I6                 | Valid decision from correct answers         | 1    | D            | Yes and 58 OR<br>Yes and good explanation with 2175 and 2250 OR 36.25  |
| Q4b      | R2                 | Process to calculate time                   | 1    | E            | 8pm to $1am = 5$ hours oe <b>OR</b><br>Identifies 1 extra hour required e.g adds 55  |
|          | A4                 | Process to calculate total cost             | 1 or | F            | 345 + '1' × 55(=400)   |
|          | I6                 | Correct total cost                          | 2    | FG           | (£)400   |
|          |                    | Total marks for question                    | 7    | <u> </u>     |  |

| Question | Skills<br>Standard | Process                                | Mark | Mark<br>Grid | Evidence  |
|----------|--------------------|--|------|--------------|---|
| Q5a      | R3                 | Process to calculate tables needed     | 1 or | Н            | 107 $\div$ 8(=13.375) <b>OR</b> repeat addition 8 + 8 + 8(=112) <b>OR</b><br>107 - 8 - 8 oe   |
|          | A4                 | Correct answer                         | 2    | HJ           | 14  |
| Q5b      | R1                 | Begins data collection sheet           | 1 or | K            | 2 of: Input opportunities, heading of courses <b>or</b> names of dishes<br>heading for people <b>or</b> names of people   |
|          | R2                 | Improves sheet                         | 2 or | KL           | Heading for names or input opportunities for 8 people <b>AND</b> heading of courses <b>or</b> names of dishes   |
|          | I6                 | Efficient complete sheet               | 3    | KLM          | All of: Efficient input opportunities for 8 people <b>AND</b><br>heading for people <b>or</b> names of people, <b>AND</b> names of dishes.<br>A tally chart is not efficient. |
|          |                    | Total marks for question               | 5    |              |   |
| Q6       | I6                 | Begins to produce sequential time plan | 1    | Ν            | Sequential plan with at least 3 activities.   |
|          | R2                 | Identifies information                 | 1 or | Р            | 1 of:<br>Drinks at 7:30,<br>awards starts 9:30 or meal ends at 9:30,<br>dancing starts at 10:15 or awards last for 45 (mins) or (ft from<br>9:30)                             |
|          | A4                 | Calculates with time                   | 2 or | PQ           | 2 of:<br>Drinks at 7:30,<br>awards starts 9:30 or meal ends at 9:30,<br>dancing starts at 10:15 or awards last for 45 (mins) or (ft from<br>9:30)                             |
|          | A5                 | Complete checked sequential time       | 3    | PQR          | Fully correct time plan showing start times for photos, drinks,<br>meal_awards and dancing  |
|          |                    | Piun                                   |      |              | mear, awards and dancing  |

# Section C: Garden improvements

| Section C: | Section C: Garden improvements |   |      |              |  |  |  |
|------------|--------------------------------|---|------|--------------|--|--|--|
| Question   | Skills<br>Standard             | Process   | Mark | Mark<br>Grid | Evidence   |  |  |
| Q7         | R1                             | Process to find number of bulk bags needed      | 1 or | A            | $2000 \div 500 (=4)$ <b>OR</b> build up method <b>OR</b> $4 \times 500(=2000)$   |  |  |
|            | I6                             | Process to find cost of bulk bags               | 2    | AB           | 265 + 109 ( =374 )   |  |  |
|            | R2                             | Process to find number of 50 kg<br>packs needed | 1    | C            | $2000 \div 50 (=40)$ <b>OR</b> build up method <b>OR</b> $40 \times 50 (=2000)$ May be implied by subsequent use of 30   |  |  |
|            | A4                             | Works with fractions or cost                    | 1 or | D            | '40' ÷ 4 × 3(=30) <b>OR</b> '40' ÷ 4(=10) <b>OR</b> 11.75 × '40'(=470) <b>OR</b> 35.25   |  |  |
|            | A4                             | Works with fraction and cost                    | 2 or | DE           | <sup>'30'</sup> × 11.75(=352.5) <b>OR</b><br><sup>'470'</sup> ÷ 4 × 3(=352.5) <b>OR</b><br><sup>'470 - 117.5(=352.5) <b>OR</b><br/>265+ '117.50'(=382.5) <b>OR</b></sup> |  |  |
|            | I6                             | Finds correct lowest cost of gravel             | 3    | DEF          | (£)352.5(0)  |  |  |
|            |                                | Total marks for question                        | 6    | <u> </u>     | 1  |  |  |

|     |    |  |      |     | Studente  |
|-----|----|--|------|-----|---|
| Q8a | R1 | Considers a constraint for the vegetable patch   | 1 or | G   | 9 adjoining squares indicated <b>OR</b><br>allows at least 1 m from fence and house<br>(does not need to be a rectangle)  |
|     | A4 | Considers all constraints for the vegetable patch  | 2    | GH  | 9 adjoining squares indicated <b>AND</b><br>allows at least 1 m from fence and house<br>(does not need to be a rectangle)   |
|     | R2 | Considers a constraint for pond  | 1 or | J   | Rectangle $2 \text{ m} \times 1 \text{ m}$ <b>OR</b><br>at least $3 \text{ m}$ from house   |
|     | I6 | Correctly positions pond   | 2    | JK  | Rectangle $2 \text{ m} \times 1 \text{ m}$ AND<br>at least $3 \text{ m}$ from house   |
| Q8b | R3 | Begins to substitute or reverse calculate  | 1 or | L   | $65 \times 2(=130)$ OR $323 - 128(=195)$ OR $65 \times 3(=195)$   |
|     | A4 | Completes full process   | 2 or | LM  | $128 + 65 + 65(=258) \text{ OR } 65 \times 2(=130) + 128(=258) \text{ OR}$<br>(195' + 128(=323)  OR<br>$323 - 128(=195) \text{ AND } 195 \div 2(=97.5)$   |
|     | I6 | Finds correct charge or difference   | 3    | LMN | (£)258 OR (£)97.5 OR 4(days)  |
|     |    | Total marks for question   | 7    |     |   |
| Q9  | R3 | Uses table   | 1    | Р   | Identifies at least 1 bucket of green and 1 bucket of brown waste<br>(may be seen on diagram or table)  |
|     | A4 | Uses ratio<br>Begins to use unitary method <b>OR</b><br>Works with buckets in correct ratio. | 1 or | Q   | <ul> <li>6 brown buckets and 2 green buckets OR</li> <li>9 brown buckets and 3 green buckets OR</li> <li>12 brown buckets and 4 green buckets OR</li> <li>Identifies 4 buckets of green nitrogen waste OR</li> <li>2 brown buckets spare</li> </ul> |
|     | I6 | Communicates answer meeting all constraints  | 2    | QR  | Identifies contents of 12 brown buckets and 4 green buckets <b>OR</b> clear identification of what is not used.   |
|     |    | Total marks for question   | 3    |     |   |

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