Mark Scheme (Results)

July 2013

Functional Skills Mathematics
Level 1 (FSM01)

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**Guidance for Marking Functional Mathematics Papers**

**General**

- 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 questions 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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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.

- **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 £12÷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 question**s:  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 – (e.g. bar, stick, line graph, ) | **1** **or** | 1 of<br><br>linear scale(s), labels, plotting (2mm tolerance) |
| | **2** **or** | 2 of<br><br>linear scale(s), labels, plotting (2mm tolerance) |
| | **3** | all of<br><br>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.

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.

**Section A: Saving and spending**

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q1a** | R1 | Process to find number of weeks or pay per week or amount saved | 1 or | A | e.g. $120 \div 16$ (=7.5) **OR** $120 \div 9$ (= (£)13.3….) **OR** $16 \times 9$ (=144) |
| | A4 | Finds figure to compare | 2 | AB | 7.5 (weeks) **OR** (£)13(.33) **OR** (£)144 |
| | I6 | Correct decision with rounded figures ft from their B, A must be awarded | 1 | C | e.g. No **and** 8 (weeks) **or** 7.5 (weeks) **OR** No **and** (only needs) (£)14 (a week) **or** (£)13.33 (a week) **OR** No **and** (£)144 **OR** No **and** (£)24(over) Allow ft provided mark A is awarded |
| **Q1b** | R3 | Full correct process to find 75% | 1 or | D | e.g. $0.75 \times 16$ (=12) **OR** $(16 \div 2) + (16 \div 4)$ (=12) **OR** Uses 10% and 5% method clearly shown **OR** (£)4 |
| | I6 | Finds correct answer | 2 | DE | (£)12 |
| | A5 | Uses appropriate check | 1 | F | Reverse check or different method e.g. $12 \div 0.75$(=16) |
| **Total marks for question** | | | **6** | | |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q2a** | R1 | Starts to find cost of game from one store or difference in costs | 1 or | G | 19.94 + 2.03(=21.97) **OR** <br> 19.94 – 1.40 (=18.54) **OR** <br> 21.99 – 0.6 (=21.39) **OR** <br> 21.99 – 19.94 (=2.05) **OR** <br> 1.4 – 0.6 (=0.8) |
| | A4 | Finds cost from both stores or works with differences | 2 | GH | 19.94 + 2.03 – 1.40 (=20.57) **AND** 21.99 – 0.6 (=21.39) **OR** <br> 2.05 – 0.8 + 2.03 (=0.82) |
| | I6 | Correct conclusion from correct figures | 1 | J | Buy Games **AND** (£) 20.57 **AND** (£)21.39 **OR** <br> Buy Games **AND** (£)0.82 **or** 82(p) cheaper |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q2b** | R2 | Starts to work with time or fractions of hours | 1 or | K | Starts to count up from 12:30 pm (at least 2 events) **OR** Starts to subtract from 4:30 pm (at least 2 events) **OR** 12:30 to 4:30 is 4 hours **OR** 45 (mins) or 30 (mins) or 1¼ (hours) |
| | R3 | Works with fractions of hours | 2 or | KL | correct process to count up from 12:30 pm condone 1 error **OR** correct process to subtract from 4:30 pm eg. 15 + 30 + 45 plus 1 + 1 (=3 (hours) 30 (mins) |
| | A4 | Process to find total time and elapsed time or start time or finish time | 3 | KLM | 3 (hours) 30 (mins) **AND** 4 (hours) **OR** complete correct process to count up from 12:30 pm eg. 1.30, 2.00, 2.45, 4.00 **OR** complete correct process to subtract from 4:30 pm eg 3.15, 2.30, 2.00, 1.00 **OR** 12:30 + 3 (hours) 30 (mins) (=4:00 (pm) **OR** 4:30 – 3 (hours) 30 (mins) (=1:00 (pm) |
| | I6 | Valid decision from correct process allow ft provided marks G and H are awarded | 1 | N | e.g. Yes **AND** 3 (hours) 30 (mins) **AND** 4 (hours) **OR** He's ready to leave at 4:00 (pm) **OR** Yes **AND** needs to arrive by 1:00 (pm) **OR** He will be 30 (mins) early Allow ft provided marks K and L are awarded |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q2c** | R2 | Finds a route from the bowling alley to the bus stop | 1 or | P | 70 + 50 + 40 (=160) **OR** <br> 90 + 30 + 40 (=160) **OR** <br> 70 + 100 (=170) **OR** <br> 90 + 30 + 50 + 100 (=270) **OR** <br> 90 + 50 + 200 (=340) **OR** <br> 70 + 50 + 30 + 50 + 200 (=400) **OR** <br> BA– CC–BS oe **OR** <br> Indicates a route on the diagram |
| | I6 | Correct length of one route | 2 | PQ | 160 **OR** 170 **OR** 270 **OR** 340 **OR** 400 |
| **Q2d** | A4 | Finds likelihood of catching bus | 1 | R | Impossible <br> accept unlikely |
| | | **Total marks for question** | **10** | | |

**Section B: Disability sports**

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q3a** | R1 | Starts to draw graph or chart | 1 or | A | One of: linear scale, labels, plotting ± 2 mm |
| | A4 | Improves graph or chart | 2 or | AB | Two of: linear scale, labels, plotting ± 2 mm |
| | I6 | Fully correct graph or chart | 3 | ABC | All of: linear scale, labels, plotting ± 2 mm<br>Labels must include (period)1,2,3 and 4; points |
| **Q3b** | I6 | Interprets data | 1 | D | Writes one valid comment |
| **Q3c** | R2 | Works with mean average | 1 or | E | 23 + 25 + 16 + 14 + 20 + 22 (=120) **OR**<br>22 × 6 (=132) **OR**<br>±1, ±3, ±6, ±8, ±2, 0 (=−12) |
| | A4 | Complete process for mean average or figures to compare | 2 or | EF | '120' ÷ 6(=20) **OR**<br>23 + 25 + 16 + 14 + 20 + 22 (=120) **OR**<br>22 × 6 (=132) **OR**<br>'−12' ÷ 6(= −2) |
| | I6 | Correct answer | 3 | EFG | No **and** 20 (points) **OR**<br>No **and** 132 **and** 120 **OR**<br>No **and** −2 |
| | A5 | Shows a check | 1 | H | Any reverse check or different method<br>eg.132 ÷ 6(=22) **OR**<br>120 − 23 |
| **Total marks for question** | **8** | | | | |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|----------|-----------------|---------|------|-----------|----------|
| **Q4a** | R1 | Works with ratio | 1 or | J | ÷3 **OR** <br> 1+ 2 **OR** <br> 50: 100 **OR** <br> 60: 120 **OR** <br> 2: 4, 3: 6, 4: 8 (at least 3 equivalent ratios) |
| | A4 | Finds figures to compare | 2 or | JK | 1 (hr) **or** 60 (mins) **with** 50( mins)**OR** <br> 150 (mins) **and** 180 (mins) **OR** <br> 10(mins) |
| | I6 | Correct conclusion with comparable figures and correct units | 3 | JKL | Eg. <br> No **AND** compares1 hr **or** 60 mins **with** 50( mins) **OR** <br> No **AND** 150 mins in total **and** 180 mins **OR** <br> No **AND** compares 2.5 hr in total with 3 hrs **OR** <br> No **AND** 10 mins too short **OR** <br> No **AND** 30 mins short for total training time |
| **Q4b** | I6 | Finds elapsed time | 1 | M | 1 hr 40 mins **OR** 100 mins |
| **Total marks for question** | **4** | | | | |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q5a** | R1 | Starts to substitute in formula or reverse substitute | 1 or | N | $88 \times 135$ (=11880) **OR** <br> $177 - 60$ (=117) |
| | A4 | Correct answer | 2 | NP | 178.8 (cm) **OR** <br> 86.6…(cm) |
| | I6 | Correct ft decision with supporting figures, provided mark N is awarded | 1 | Q | No **AND** [178, 179] **OR** <br> No **AND** [86,87] <br> Provided mark N is awarded |
| **Q5b** | R1 | Finds data from table | 1 | R | 1.73 (m) |
| **Total marks for question** | | | **4** | | |

**Section C: Building trades**

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q6a** | R2 | Starts to find cost | 1 or | A | Adds any 2 items (could be 2 sleeves) |
| | R3 | Process to find cost of buying individual items | 2 | AB | 3.99 + 4.99 + 4.99 + 1.79 (=15.76) (accept round values) **OR** 3.99 + 4.99 + 1.79 (=10.77) |
| | A4 | Process to find cost of buying pack + 1 sleeve | 1 or | C | 7.99 + 4.99 (=12.98) **OR** '10.77' – 7.99 (=2.78) (accept round values) **OR** 7.99 + 3 (=10.99) |
| | I6 | Process to find difference | 2 | CD | '15.76' – '12.98' (=2.78) (accept round values) **OR** '12.98' + 3 (=15.98) **OR** (£)2.78 from one sleeve only **OR** '10.99' – '10.77' (=0.22) |
| | I6 | Correct decision from correct figures | 1 | E | eg No **AND** £2.78 **or** £3 and comment on rounding **OR** No **AND** £15.98 AND £15.76 **OR** £2.78 from one sleeve only **AND** explanation such as extra sleeve is equal cost for both **OR** No **AND** £0.22 **or** 22p |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q6b** | R1<br>R2 | Process to find area of 1 wall<br>Uses two walls or paint coverage | 1<br>1or | F<br>G | $5 \times 3$ (=15) **OR** evidence of counting squares<br>'15' $\times$ 2 (=30) **OR**<br>'15' $\div$ 13 (=1.15..) **OR**<br>$3 \times 13$ (=39) **OR**<br>$1 \div 13$(=0.076..) |
| | A4 | Full process to find figures to compare | 2 or | GH | '30' $\div$ 13 (=2.3...tins) **OR**<br>'1.15' $\times$ 2 (=2.3... tins) accept rounded values **OR**<br>'39' $\div$ '15' (=2.6 walls) **OR**<br>'15' $\times$ 2 (=30) **AND** $3 \times 13$ (=39) **OR**<br>'15' $\times$ 2 $\times$ '0.076'(=2.3..tins) |
| | I6 | Correct decision and correct figures | 3 | GHJ | Yes **AND** 2.3 tins (needed) **OR**<br>Yes **AND** 30 **AND** 39 **OR**<br>Yes **AND** 2.6 walls (covered) |
| | | **Total marks for question** | 9 | | |

| Question | Skills Standard | Process | Mark | Mark Grid | Evidence |
|---|---|---|---|---|---|
| **Q7a** | R2 | Process to find perimeter | 1 | K | $(3 \times 2) + (6 \times 2)$ (=18) **OR** <br> Counts squares **OR** <br> $(30 \times 2) + (60 \times 2)$ (=180) may be seen in subsequent working |
| | A4 | Uses scale | 1 or | L | '18' $\times$ 10 (=180) **OR** <br> '3' $\times$ 10 (=30) **OR** <br> '6' $\times$ 10 (=60) **OR** <br> 180 from counting squares in 10 cm **OR** <br> $220 \div 10$ (=22) **AND** $40 \div 10$ (=4) |
| | A4 | Process to find difference | 2 | LM | $220 - 180$ (=40) **OR** <br> '18' $\times$ 10 (=180) **AND** $220 - 40$ (=180) **OR** <br> $22 - 18$ (=4) oe |
| | I6 | Correct answer, provided marks K and L are awarded | 1 | N | Yes  provided marks K and L are awarded |
| **Q7b** | R1 | Draws one line to be symmetrical about the centre line | 1 or | P | Horizontal line drawn in a suitable position |
| | I6 | Draws both lines to make the correct symmetrical shape | 2 | PQ | Both lines drawn to create symmetrical shape about the centre line |
| **Q7c** | A4 | Measures angle | 1 | R | [31($^\circ$), 36($^\circ$)] |
| **Total marks for question** | **7** | | | | |