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Mark Scheme (Results)

November 2015

Pearson Edexcel Functional Skills Mathematics Level 2 (FSM02)

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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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 mark the working leading to the answer given in the answer box or working box. If there is no definitive answer then marks should be awarded for the 'lowest' scoring method shown.
- 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 indicates 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 £2.40£
  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 Appropriate graph or chart – (e.g. bar, stick, line graph)	1 or	**Evidence** 1 of: linear scale(s), labels, plotting (2 mm tolerance)
	2 or	2 of: linear scale(s), labels, plotting (2 mm tolerance)
	3	all of: linear scale(s), labels, plotting (2 mm 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: School run

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(a)	R1	Starts to work with costs	1 or	A	4.8 × 190 (=912 miles per year) **OR** 4.8 × 13.12 (=62.976p per day) oe **OR** 190 × 13.12 (=2492.8p per year for one mile per day) oe **OR** 400 ÷ '0.1312' (=3048.7… miles) oe
	A4	Full process to find cost for a year	2 or	AB	'912' × 13.12 (=11965.44) **OR** '62.976' × 190 (=11965.44) **OR** '2492.8' × 4.8 (=11965.44) **OR** '3048.7..' ÷ 190 (=16.04…)
	I6	Accurate figures	3	ABC	[11965, 11966] **OR** [119, 120] **OR** [16, 17] (miles each day)
	I7	Valid conclusion with correct figures to compare	1	D	E.g. No **AND (**£)[119, 120] **OR** No **AND** [11965, 11966](p) **OR** No **AND** [11965, 11966](p) **AND** 40 000(p) **OR** Need to walk more than 16 miles **or** 4 miles each way (each day to school to save £400)
	A5	Shows a valid check	1	E	Valid reverse or alternative calculation or estimation

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1(b)	R2	Full process to find what percentage	1 or	F	1830 ÷ 3000 × 100 (=61) oe
	A4	Correct answer	2	FG	61(%)
	I7	Completes graph	1	H	Draws missing bar on graph (±1% tolerance) Allow ft provided F awarded
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R3	Considers waiting times	1	J	Adds a minimum of 2 waiting times (minimum 3 mins)
	A4	Considers road crossing times	1	K	Adds a minimum of 2 road crossings times (minimum 2 multiples of 2)
	I6	Works with all walking times for total journey	1 or	L	5 + 6 + 5 + 7 (=23) **AND** either at least one waiting time (1 min) **or** at least one road crossing time (2 mins) **OR** starts to produce a timetable for complete journey E.g. 15:30, 15:36, 15:41, 15:48
	A5	Correct checked solution	2	LM	Fully correct checked bus timetable
Q2(b)	I6	Correct answer	1	N	3 (adults)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(c)	R1	Begins to produce rota	1 or	P	Spaces for names **AND h**eadings for at least 2 of: day (of the week), time of day, adult 1, adult 2, extra adults **OR** Spaces for names **AND** at least 2 of: Mon, Tues, Wed, Thurs and Fri; morning (am), afternoon (pm), adult 1, adult 2, extra adults
	R2	Improves rota	2 or	PQ	Spaces for names **AND** all of: Mon, Tues, Wed, Thurs and Fri; morning (am), afternoon (pm), adult 1, adult 2, three extra adults but not an efficient rota **OR** Spaces for names **AND** 2 of: Mon, Tues, Wed, Thurs and Fri; morning (am), afternoon (pm), adult 1, adult 2, at least one extra adult in an efficient rota
	I6	Fully correct and efficient rota	3	PQR	Efficient rota sheet with Mon, Tues, Wed, Thurs, Fri, morning, afternoon, adult 1, adult 2 and space for three extra adults
Total marks for question			**8**		

Section B: Skateboarding

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R1	Works with % discount	1	A	E.g. 0.27 × 54.99 (=14.84..) oe **OR** (1 − 0.27) × 54.99 (=40.1427) oe
	R2	Full process to find price of skateboard or starts to find difference in prices	1 or	B	'40.14' + 31.99 + 25.99 + 6.95 (=105.07) **OR** 54.99 – '14.84' + 31.99 + 25.99 + 6.95 (=105.07) **OR** 134.95 − 31.99 − 25.99 − 6.95 (=70.02)
	A4	Full process to find saving	2 or	BC	134.95 – '105.07'(=29.88) **OR** '70.02' – '40.14'(=29.88)
	I7	Correct saving with affirmative statement	3	BCD	Yes **and** (£)[29.87, 29.88] Award A if D given
Q3(b)	R2	Converts between $ and £	1 or	E	49.95 × 0.6 (=29.97) **OR** 39.95 ÷ 0.6 (=66.58…)
	A4	Correct answer	2	EF	£29.97 **or** $66.58
	I7	Justification	1	G	E.g. USA as it is cheaper **OR** England as delivery quicker or delivery cost may be less or he can try it on.
	A5	Valid check of their calculation	1	H	Reverse or alternative method for any of their calculations
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4	A4	Full process to convert to common units	1	J	E.g. 2440 × 0.33 ÷ 100 (=8.052) (feet) **OR** 16 ÷ 0.33 × 100 (=4848.4..) (mm) May be seen in subsequent calculation
	R2	Starts to substitute in formula or reverse substitution	1 or	K	E.g. 1 ÷ 4 × 3.14 (=0.785) **OR** 3.14 × 16 (=50.24) **OR** 3.14 × '4848.4..' (=15224.2..) **OR** '8.052' × 4 (=32.208) **OR** 2440 × 4 (=9760)
	A4	Completes substitution	2 or	KL	E.g. '0.785' × 16(=12.56) **OR** '50.24' ÷ 4(=12.56) **OR** '15224.2..' ÷ 4 (=3806.06..) **OR** '32.208' ÷ 3.14 (=10.2..) **OR** '9760' ÷ 3.14 (=3108.2..) Note: Some evaluation plus full substitution required for K mark
	I6	Accurate answer	3	KLM	12.56 (ft) **OR** [3806, 3807] (mm) **OR** [10.2, 10.3] (ft) **OR** [3108, 3109] (mm)
	I7	Correct comparison with correct figures.	1	N	E.g. No **AND** 12(.56) **AND** 8(.052) (feet) **OR** No **AND** 3806(.06..) **AND** 4848(.4..) (mm) Allow FT provided K scored
Total marks for question			**5**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R3	Starts to work with perimeter or distance between screws	1 or	P	240 × 4 (=960) oe **OR** 240 ÷ 30 (=8) **OR** Counting up 30 + 30 + ….. at least 8 seen Working may be seen on diagram
	A4	Full process to find number of screws	2 or	PQ	'960' ÷ '30' (=32) **OR** '8' × 4 (=32) oe **OR** Working may be seen on diagram **OR** 9 + 8 + 8 + 7 (=32) Accept 28 **or** 36 (screws)
	I7	Correct answer	3	PQR	32 (screws)
Total marks for question			**3**		

Section C: New office

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(a)	R2	Starts to work with % or monthly payments	1 or	A	96 × 24(=2304) **OR** 15 ÷ 100 × 2000 (=300) oe
	A4	Process to find figures to compare	2 or	AB	('2304' – 2000) ÷ 2000 (=0.152) oe **OR** '2304' ÷ 2000 (=1.152) oe **OR** 96 × 24(=2304) **and** 15 ÷ 100 × 2000 (=300) oe **OR** (2000 + '300') ÷ 24 (=95.75) **OR** '2300' ÷ 24(=95.75) **OR** '2300' ÷ 96 (=23.95…)
	I7	Conclusion with correct supporting figures and correct notation	3	ABC	E.g. Yes/No **and** 15.2% **OR** Yes/No **and £**300 **and £**304 **OR** Yes/No **and** £2300 **and** £2304 **OR** Yes/No **and** £95.75 (per month) **OR** Yes/No **and** [23.95, 23.96] months (Correct money notation/%/ months required as indicated)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6(b)	R3	Start to work with average	1 or	D	648 + 593 + 499 + 603 + 482 (=2825) **OR** 500 × 6 (=3000)
	A4	Uses mean to find missing data quantity	2 or	DE	'3000' – '2825' (=175) **OR** '3000' – 648 – 593 –499 – 603 – 482 (=175) **OR** Full correct process that leads to 175
	I6	Correct answer	3	DEF	175 (MB)
	A5	Valid check of their calculation	1	G	Reverse or alternative method for any of their calculations
Q6(c)	R1	Identifies correct tablet computer	1	H	SP (may be indicated on table) Accept £188
Total marks for question			**8**		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(a)	R1	Starts process to find supplies needed or available	1 or	J	Two of: 2 × 30 (=60), 30 × 7 (=210), 53 × 30 (=1590), 6 × 250 (=1500), 100 ÷ 2 (=50), 200 ÷ 7 (=28.5..), 215 ÷ 7 (=30.7..)
	A4	Full process to find figures to compare for pages and dividers	2 or	JK	E.g. 200 ÷ 7 (=28.5..) **or** 30 × 7 (=210) (dividers) **AND** 53 × 30 (=1590) **and** 6 × 250 (=1500) (pages) **OR** 215 ÷ 7 (=30.7..) **or** 30 × 7 (=210) (dividers) **AND** 53 × 30 (=1590) **and** 6 × 250 + 100 (=1600) (pages)
	R2	Process to check quantities available and find extra supplies needed	3	JKL	E.g. 60 (sheets of card) **and** 210 − 200 (=10 dividers needed) **and** 1590 − 1500 (=90 sheets needed) **OR** 60 (sheets of card) **and** 210 − 215 (=−5 dividers) **and** 1590 − 1600 (=−10 sheets)
	I6	Correct conclusion with valid figures	1	M	E.g. No (she only needs) 10 dividers **and** 90 (more sheets of) paper from calculations **OR** Yes (but would have) 5 dividers **and** 10 (sheets of) paper too many

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7(b)	R1	Total of items and correct value for chocolate biscuits	1 or	N	Proper fraction with numerator 8 **or** denominator 24 **OR** 1:3 **OR** 1 in 3
	A4	Correct answer	2	NP	$\frac{1}{3}$ **OR** 8/24 **OR** 33.3(…)% **OR** 0.33(…)
Q7(c)	I7	Writes a comparative comment about any feature	1 or	Q	E.g. Most people agreed that they improved on Day 1
	I7	Writes a comparative comment comparing Day 1 with Day 2	2	QR	E.g. For both Day 1 and Day 2 most people agreed they had improved their skills
Total marks for question			**8**		

Example answer for Q2a with alternatives for different understanding of road crossing.

Leave school 15:25

Arrive A 15:32 or 15:34
Leave A 15:33 or 15:35

Arrive B 15:43 or 15:45
Leave B 15:44 or 15:46

Arrive C 15:51 or 15:53
Leave B 15:52 or 15:54

Arrive D 16:01 or 16:02 or 16:05 or 16:06

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