

Mark Scheme (Results)

March 2018

Functional Skills Mathematics Level 2

FSM02

Functional Skills Qualifications from Pearson

Functional Skills qualifications from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications website at qualifications.pearson.com. Alternatively, you can get in touch with us using the details on our contact us page.

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

March 2018

Publications Code FSM02_01_1803_MS

All the material in this publication is copyright

© Pearson Education Ltd 2018

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Guidance for Marking Functional Skills Maths 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 his or her answer.
- You will often see correct working followed by an incorrect decision, showing that the candidate can calculate but does not understand the functional demand of the 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 in a written paper); mark the better answer.
- **Incorrect method** 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 for your Team Leader to check.
- **Follow through marks (ft)** 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.

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

- **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 $£12 \div 5$,
 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 **oe** 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
- **Parts of questions:** because most FS questions are unstructured and open, you should be prepared to award marks for answers seen in other parts of a question, even if not explicit in the expected part. E.g. checks in on earlier answer box.
- **Graphs**
 The mark schemes for most graph questions have this structure:

Process	Mark	Evidence
Appropriate graph or chart – (e.g. bar, stick, line graph)	1 or	1 of: linear scale(s), labels, accurate plotting (2 mm tolerance)
	2 or	2 of: linear scale(s), labels, accurate plotting (2 mm tolerance)
	3	all of: linear scale(s), labels, accurate 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**, and use consistent intervals. The scale may not start at 0 and not all intervals must be labelled. Thus a graph that is 'fit for purpose' is one where 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. Candidate's scale must be in numerical order. Award the mark for plotting if you can read the values, even if the scale is not linear.

The mark schemes for **Data Collection and/ or summary 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.

Discuss any queries with your Team Leader.

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Section A: Fitness club

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1	I6	Identifies values from the graph	1	A	3 of 166, 158, 148, 146 and 144 seen
	A4	Process to work with mean	1 or	B	(‘166’ + ‘158’ + ‘148’ + ‘146’ + ‘144’) ÷ 5 (= 152.4) OR ‘166’ + ‘158’ + ‘148’ + ‘146’ + ‘144’ (=762) and 150 × 5 (=750)
	I7	Valid decision with accurate figures	2	BC	Yes AND 152.4 OR Yes AND 762 and 750 Accept Yes AND 152 with no error seen.
	A5	Valid check	1	D	Valid check, e.g. reverse calculation or alternative method
Total marks for question			4		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(a)	R1	Begins process to work with fraction or percentage	1 or	E	$499 \div 8 (= 62.375)$ oe OR $369.59 \div 100 \times 20 (= 73.918)$ oe
	R3	Full process to find one cost after decrease or increase or engages with both fraction and percentage	2 or	EF	$499 \div 8 \times 7 (= 436.625)$ oe OR $369.59 \div 100 \times 120 (= 443.508)$ oe OR $499 \div 8 (= 62.375)$ oe and $369.59 \div 100 \times 20 (= 73.918)$ oe
	A4	Full process to find figures to compare	3 or	EFG	$499 \div 8 \times 7 (=436.625)$ oe and $369.59 \div 100 \times 120 (=443.508)$ oe
	I7	Valid decision with accurate figures	4	EFGH	Best Bikes AND (£)[436, 437] and (£)[443, 444] OR Best bikes AND (£)6.8(75) (difference)

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2(b)	R1	Engages with the problem	1 or	J	e.g. $162 - 135 (= 27)$ OR $135 \div 162 (= \frac{5}{6})$ OR $162 \div 5 (= 32.4)$ oe OR $135 \div 4 (= 33.75)$
	A4	Full process to find figures to compare	2 or	JK	e.g. $162 - 135 (= 27)$ and $162 \div 5 (= 32.4)$ OR $\frac{'27'}{162} (= \frac{1}{6})$ oe OR $1 - \frac{'5'}{6} (= \frac{1}{6})$ oe OR ' 27 ' $\div 162 \times 100 (= 16.6..)$ (and $1 \div 5 \times 100 (= 20)$) oe OR $162 - '32.4'$ ($= 129.6$) oe OR $135 + '32.4'$ ($= 167.4$) OR ' 33.75 ' $\times 5 (= 168.75)$
	I7	Valid decision with accurate and consistent figures	3	JKL	e.g. No AND 27 and 32.4 (beats per minute difference) OR No AND $\frac{1}{6}$ OR No AND [16, 17] (%) and 20(%) OR No AND 0.1(6..) and 0.2 OR No AND 129.6 (beats per minute) OR No AND 167.4 (beats per minute) OR No AND 168.75 (starting beats per minute)
Total marks for question			7		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3(a)	R1	Process to work with probability	1 or	M	$100 - 62 (= 38)$ oe
	A4	Correct answer in correct probability notation	2	MN	38% oe
Q3(b)	R2	Begins to work with 60 seconds in a minute	1	P	e.g. $60 - 22 (= 38)$ OR $22 + (38) = 60$ (build up to 60) OR 14 (mins) (and) 60 (secs) OR $60 \times 15 (= 900)$ or $60 \times 13 (= 780)$ OR $(60 \times 15) + (60 \times 60 \times 2) (= 8100 \text{ secs})$ OR $(60 \times 13) + (60 \times 60 \times 2) + 22 (= 8002 \text{ secs})$ May be seen on a diagram
	R1	Valid process to find the difference	1 or	Q	e.g. '38' + 60 (= 98) OR 13 (mins) 22 (secs) + '38'(secs) + 1 (min) (= 15 mins) oe OR '135' (mins) – '133 (mins) 22' (secs) (= 1 min 38 secs) oe OR '8100' – '8002' (= 98)
	I6	Accurate figure with units	2	QR	98 secs OR 1 min 38 seconds or 1.63(3..) mins NB If awarding R award P
Total marks for question			5		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Section B: The house

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(a)	R3	Begins to engage with a decimal amounts of monthly rent	1 or	A	$895 \times 0.7 (= 626.5)$ oe OR $895 \times 1.25 (= 1118.75)$ oe OR $1 + 0.7 (= 1.7)$ or $1 + 1.25 (= 2.25)$ or $1.25 + 0.7 (= 1.95)$ oe
	A4	Develops solution	2	AB	$895 \times 0.7 (= 626.5)$ oe and $895 \times 1.25 (= 1118.75)$ oe OR $895 + '626.5' (= 1521.5)$ OR $895 + '1118.75' (= 2013.75)$ OR $1 + 0.7 + 1.25 (= 2.95)$ oe
	I6	Full process to work out total cost or total of share	1	C	$895 + '626.5' + '1118.75' (= 2640.25)$ OR $895 \times '2.95' (= 2640.25)$ OR $'537' + '375.9' + '671.25' (= 1584.15)$
	R2	Begins process to work with ratio	1 or	D	$'2640.25' \div (3+2) (= 528.05)$ OR $895 \div (3+2) (= 179)$ OR $'626.5' \div (3+2) (= 125.3)$ OR $'1118.75' \div (3+2) (= 223.75)$
	A4	Full process to work with ratio	2	DE	$'528.05' \times 3 (= 1584.15)$ OR $'179' \times 3 (= 537)$ OR $'125.3' \times 3 (= 375.9)$ OR $'223.75' \times 3 (= 671.25)$
	I6	Accurate figure in correct money notation	1	F	£1584.15 If F mark awarded, award all 6 marks. NB 1584.15 without a pound sign should be awarded 5 marks.

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4(b)	R1	Begins to work with formula	1 or	G	e.g. $3000 \times 1.034 (= 3102)$ OR $3000 \div 18 (= 166.66..)$ or $1.034 \div 18 (= 0.0574..)$ OR $170 \times 18 (= 3060)$
	A4	Full substitution into formula or finds figures to compare	2 or	GH	e.g. '3102' $\div 18 (= 172.33..)$ OR '166.66' $\times 1.034 (= 172.33..)$ OR '0.0574..' $\times 3000 (=172.33..)$ OR '3102' $\div 170 (= 18.24..)$ OR $3060 \div 1.034 (= 2959.38)$ OR $3000 \times 1.034 (= 3102)$ and $170 \times 18 (= 3060)$
	I7	Valid decision with accurate figures	3	GHJ	Yes AND (£)[172.3, 173] OR Yes AND 18.2(4..) (months) OR Yes AND (£)2959(.38) OR Yes AND (£)3102 and (£)3060
	A5	Valid check	1	K	Valid check, e.g. reverse calculation or alternative method
Total marks for question			10		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5(a)	A4	Begins to work with perimeter or finds missing length	1 or	L	e.g. $3.5 + 2 + 4.7 (= 10.2)$ OR $2 + 1.25 (= 3.25)$ or $4.7 - 3.5 (= 1.2)$
	I6	Full process to find total perimeter	2	LM	$(4.7 + 3.25) \times 2 (= 15.9)$ oe May be seen in subsequent working
	A4	Process to engage with the multiplier	1 or	N	e.g. $'15.9' \times 1.5 (= 23.85)$ oe OR $25 \div 1.5 (= 16.66..)$ OR $25 \div '15.9' (= 1.572..)$
	I7	Valid decision with accurate figures	2	NP	Yes AND 23.85(m) OR Yes AND 15.9(m) and 16.6(6..)(m) OR Yes AND 1.57(2..) (times around) NB If NP awarded, award all 4 marks
Q5(b)	R2	Begins to work with scale	1 or	Q	Rectangle with one side 7 sq or 5 sq OR Rectangle with sides in the ratio 7:5 and long side against a wall and 1 sq away from the door, the window, the shelves and fireplace OR $175 \div 25 (= 7)$ or $125 \div 25 (= 5)$ or $25 \div 25 (= 1)$ May be indicated on diagram
	I6	Fully correct solution	2	QR	Rectangle 7 sq by 5 sq and long side against a wall and 1 sq away from the door, the window, the shelves and fireplace
Total marks for question			6		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Section C: Limousine hire

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R2	Process to find one of the missing lengths	1	A	$8.2 - 4.3 (= 3.9)$ OR $6.5 - 3.1 (= 3.4)$
	I6	Process to find one relevant area	1 or	B	e.g. $8.2 \times 6.5 (= 53.3)$ or $8.2 \times 3.1 (= 25.42)$ or $4.3 \times 6.5 (= 27.95)$ or $0.5 \times '3.9' \times '3.4' (= 6.63)$ or $4.3 \times '3.4' (= 14.62)$ or $'3.9' \times 3.1 (= 12.09)$
	A4	Full process to work out total area or total number of packs required if individual areas used	2	BC	e.g. $'53.3' - '6.63' (= 46.67)$ OR $'25.42' + '14.62' + '6.63' (= 46.67)$ OR $'27.95' + '12.09' + '6.63' (= 46.67)$ OR $'6.19..' + '2.68..' + '1.47..' (= 10.34..)$
	A4	Process to calculate number of packs for total area or partial area	1	D	e.g. $'46.67' \div 4.51 (= 10.34..)$ OR $'27.95' \div 4.51 (= 6.19..)$ or $'12.09' \div 4.51 (= 2.68..)$ or $'6.63' \div 4.51 (= 1.47..)$
	I6	Functionally rounded figure for number of packs	1	E	11 (packs)
Total marks for question			5		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	R1	Begins to work with constraints	1 or	F	2 customers placed correctly with gaps and start times OR 3 customers placed correctly without gaps and start times
	R2	Develops solution	2 or	FG	3 customers placed correctly with gaps and start times OR 4 customers placed correctly without gaps and start times
	I7	Fully correct solution	3	FGH	4 customers placed correctly with clear start and finish times with at least 45 minute gap between bookings
Total marks for question			3		

Driver: Adnan		Day: Saturday
Time	Client	
9 am to 12 pm	Magenty family	
1 pm to 2.30 pm	Ms S(ingh)	

Driver: Fayez		Day: Saturday
Time	Client	
9 am to 12 pm	Mr H(arding)	
1 pm to 3 pm	Mr and Dr Pacitti	

Driver: Toni		Day: Saturday
Time	Client	
9.30 am to 11 am	B(arker) family	
12 pm to 1.30 pm	Mr and Mrs K(han)	
2.30 pm to 5 pm	Lee family	

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8	I6	Works with mileage	1	J	2834 – 2529 (= 305)
	A4	Works with proportion	1 or	K	e.g. $75.2 \div 4.54$ (= 16.56..) OR ' 305 ' \div 20 (= 15.25) OR $75.2 \div$ ' 305 ' (= 0.24..) or $4.54 \div 20$ (=0.227) OR ' 305 ' \div 75.2 (= 4.055..) or $20 \div 4.54$ (= 4.405..)
	R3	Full process to find figures to compare	2 or	KL	e.g. ' 305 ' \div ' $16.56..$ ' (= 18.41..) oe OR $75.2 \div 4.54$ (= 16.56..) and ' 305 ' \div 20 (= 15.25) OR ' $0.24..$ ' \times 20 (= 4.93..) OR ' $16.56..$ ' \times 20 (= 331.27..) OR ' 15.25 ' \times 4.54 (= 69.235) OR $75.2 \div$ ' 305 ' (= 0.24..) and $4.54 \div 20$ (=0.227) OR ' 305 ' \div 75.2 (= 4.055..) and $20 \div 4.54$ (= 4.405..)
	I7	Valid decision with accurate figures	3	KLM	e.g. No AND [18.4, 18.5] (mpg) OR No AND [16.5, 16.6] and 15.25 (gallons) OR No AND 4.9(3..) (l) OR No AND 331(.27..) (miles) and 305 (miles) OR No AND 69(.235) (litres) OR No AND 0.24(..) (lpm) and 0.22(7) (lpm) OR No AND 4.0(5..) (mpl) and 4.4(05..) (mpl)
Total marks for question			4		

FUNCTIONAL SKILLS (MATHEMATICS)
MARK SCHEME FINAL – LEVEL 2 - MARCH 2018

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9(a)	R3	Begins to find a route	1 or	N	Describes a route using at least 3 distances or 4 places, e.g. $3.1 + 4.3 + 4.2 (= 11.6)$ OR $8.1 + 4.2 + 4.8 (= 17.1)$ OR $5.1 + 5.5 + 4.3 (= 14.9)$ OR O to M to A to C OR O to A to C to M OR O to C to M to A
	A4	Identifies a complete route or finds the length of a complete route	2 or	NP	e.g. $3.1 + 4.3 + 4.2 + 4.8 (= 16.4)$ OR $5.1 + 5.5 + 4.3 + 3.4 (= 18.3)$ OR $8.1 + 4.3 + 5.5 + 4.8 (= 22.7)$ OR $3.1 + 5.5 + 4.2 + 3.4 (= 16.2)$ OR O to M to A to C to W OR O to C to M to A to W OR O to A to C to M to A to W OR O to M to C to A to W
	I7	Identifies shortest route and length of route	3	NPQ	O to M to C to A to W and 16.2 (miles) OR $3.1 + 5.5 + 4.2 + 3.4 = 16.2$ (miles) May be indicated on diagram
Q9(b)	A5	Identifies another consideration when planning a route	1	R	Any valid consideration, e.g. road works, lots of traffic, speed limits, closed roads, traffic lights, one-way streets, time of day
Total marks for question			4		

Ofqual



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



Pearson Education Limited is a registered company in England and Wales whose registered office is at 80 Strand, London, WC2R 0RL, United Kingdom, company Registration number 872828, VAT Number GB278 5371 21.