

Mark Scheme (Results)

May 2015

Pearson Edexcel Functional Skills
Mathematics Level 2 (FSM02)

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. 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

May 2015

Publications Code FC042142

All the material in this publication is copyright

© Pearson Education Ltd 2015

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 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 $£12 \div 5$,

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		1 or		1 of:		Evidence	
Appropriate graph or chart							

– (e.g. bar, stick, line graph)		linear scale(s), labels, plotting (2mm tolerance)
	2 or	2 of: 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.

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: Chocolates

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q1a	R1	Starts to draw net of cuboid with or without lid	1 or	A	Draws 5 or 6 rectangles which could form the net of a cuboid. Lengths may not be correct and dividing lines may not be shown
	I6	Complete correct net	2	AB	Fully correct net with 6 faces (ignore any flaps)
Q1b	R1	Works with dimensions or volume	1 or	C	$30 \div 6 (=5)$ or $18 \div 3 (=6)$ or $15 \div 3 (=5)$ or $30 \div 3 (=10)$ or $18 \div 6 (=3)$ or $15 \div 6 (=2\dots)$ oe OR $30 \times 18 \times 15 (=8100)$ OR $6 \times 3 \times 3 (=54)$ May be seen on diagram
	A4	Finds maximum number of boxes or completes process using volume	2 or	CD	$'5' \times '6' \times '5' (=150)$ OR $'10' \times '3' \times '5' (=150)$ OR $'10' \times '6' \times '2' (=120)$ OR $'8100' \div '54' (=150)$ OR Yes and 6480 and 8100
	I7	Correct decision from correct figures	3	CDE	Yes and 150 OR No he can fit more and 150 Yes and 120 with correct working
Total marks for question			5		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q2	R2	Works with total number of chocolates	1	F	$2 \times 120 (=240)$
	R3	Starts to work with proportion	1 or	G	E.g. ' 240 ' \div $50 (=4.8)$ (batches needed) OR $1250 \div 280 (=4.46\dots)$ (batches available) OR $280 \div 50 (=5.6)$ (g needed per truffle) OR $1250 \div '240' (=5.208\dots)$ (g per truffle available) OR $5 \times 50 (=250)$ (so work with 5 batches) Allow full process to find figures to compare working with 120 truffles for G
	A4	Full process to find figures to compare	2 or	GH	E.g. ' 240 ' \div $50(=4.8)$ and $1250 \div 280 (=4.46\dots)$ (batches) OR $280 \div 50(=5.6)$ and $1250 \div '240'(=5.208\dots)$ (g) OR ' 5.6 ' \times ' 240 '(= 1344) (g needed) OR ' 4.46 ' \times $50(=223.21\dots)$ (truffles can be made) OR $1250 \div '5.6'(=223.21\dots)$ (truffles can be made) OR ' 4.8 ' \times $280(=1344)$ OR $280 \times '5' (=1400)$ Allow 700 g makes 125 truffles or 840 g makes 150 truffles oe and conclusion for H (working with 120 truffles)

	17	Correct conclusion with valid correct figures	3	GHJ	E.g. No and 4.8 and [4.4, 4.5] (batches) OR No and 5.6 and 5.2 (g per truffle) OR No and 1344 (g needed) OR No and [223, 224] and 240 (truffles) OR No and [111, 112] (truffles) (also award mark F) OR No and 1400 (g) needed for 5 batches
Total marks for question			4		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q3a	R1	Begins to develop appropriate graph or chart	1 or	K	1 of: Labels, plotting, linear scale
	A4	Improves graph or chart	2 or	KL	2 of: Labels, plotting, linear scale
	I6	Completes graph or chart	3	KLM	All of: Labels, plotting, linear scale Minimum labels : Jan – Jun etc., 2013, 2014, Profits or £
Q3b	R3	Begins to find annual totals	1	N	5000 + 5400 (=10400) OR 5600 + 7800 (=13400)
	A4	Finds difference in annual totals or starts to work with percentage	1 or	NP	'13400' – '10400' (=3000) OR 0.4 × 10400 oe (=4160) Allow 0.4 × any figure from question

	A4	Complete valid process	2 or	NPQ	<p>'4160' + 10400 (=14560) OR 1.4 × 10400 (=14560) OR '13400' – '10400' (=3000) and 0.4 × 10400 (=4160) OR $\frac{3000}{10400} \times 100$ (=28.8...) OR $\frac{13400}{10400} \times 100$ (=128.8...) OR '13400' – '4160' (=9240) OR 10% = 1040, 20% = 2080, 30% = 3120</p>
	16	Correct decision with correct figures	3	NPQR	<p>E.g. No and (£)14560 OR No and (£)4160 and (£)3000 OR No and [28, 29](%) OR No and [128, 129](%) and 140(%) OR No and(£) 9240 and (£)10400 OR No and (£)3120 and (£)3000</p>
Total marks for question			7		

Section B: Walking

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4a	R2	Begins to work with fraction or difference	1 or	A	$24.99 \div 3 (=8.33)$ OR $30 - 13.5(0) (=16.5)$ Accept $0.33... \times 24.99$
	A4	Completes work with fraction	2 or	AB	$24.99 - '8.33' (=16.66)$ OR $24.99 \times 2 \div 3 (=16.66)$ OR $'16.5' \div 2 (=8.25)$
	A5	Complete process to find figures to compare	3 or	ABC	$30 - '16.66' (=13.34)$ OR $30 - 13.5(0) (=16.5)$ and $24.99 \times 2 \div 3 (=16.66)$ OR $'8.25' \times 3 (=24.75)$
	I7	Correct conclusion and valid figures	4	ABCD	No and (£)13.34 OR No and (£)16.5(0) and (£)16.66 OR No and (£)24.75 (original cost)

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q4b	R2	Begins to substitute into formula	1 or	E	$100 \times 500 (=50000)$ OR $100 \div 691 (=0.14\dots)$ OR $500 \div 691 (=0.72\dots)$
	A4	Full process for substitution	2 or	EF	$'50000' \div 691 (=72.35\dots)$ OR $'0.14\dots' \times 500(=72.35\dots)$ OR $'0.72\dots' \times 100 (=72.35\dots)$
	I6	Correct answer with correct units	3	EFG	72 cm with correct units
Total marks for question			7		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q5	R1	Begins to work with time or speed	1	H	$120 \div 60 (=2)$ may be implied from subsequent calculations OR $9.6 \div 120 (=0.08)$
	A4	Works with time and speed or converts to miles	1 or	J	$9.6 \div '2' (=4.8)$ OR $'0.08' \times 60 (=4.8)$ OR $9.6 \div 1.6(=6)$
	A4	Finds speed in mph	2 or	JK	$'4.8' \div 1.6 (=3(\text{mph}))$ OR $'6' \div '2' (=3(\text{mph}))$
	I6	Correct speed	3 or	JKL	3 (mph) Accept 225 (calories per hour)
	R3	Uses information from table ft their speed	1 or	M	$'225' \times '2' (=450)$ OR $400 \div '2' (=200)$
	I7	Yes with accurate figures	2	MN	Yes and 450 (calories in 120 mins) OR Yes and 200 and 225 (calories per hour)
Total marks for question			6		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q6	R1	Full process to calculate mean	1 or	P	$(11285 + 14670 + 8634 + 10268 + 4720) \div 5$ (=9915...) OR $(11285 + 14670 + 8634 + 10268 + 4720)$ (=49577) and $10000 \times 5 (=50000)$ OR $\pm 1285 \pm 4670 \pm 1636 \pm 268 \pm 3720$
	I7	Completes mean calculation	2	PQ	No and [9915, 9916] (steps) OR No and 49577 and 50000
	A5	Performs a valid check	1	R	Any reverse calculation or alternative method (estimation?)
Total marks for question			3		

Section C: Arts Centre

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q7	A4	Begins to process time in locations	1 or	A	Shows start and (implicit) finish time for at least 2 of: Interviews, St Albans, Hatfield, Lunch (at any time), Office (at least 2 hours for paperwork) OR Consistently coordinates time in Hatfield and St Albans and travel time and shows start and (implicit) finish time (elapsed time correct) for these. (Travel time may be implied from activity start and finish times).
	I6	Correct time in all locations	2	AB	Shows start and (implicit) finish time for all of: Interviews, St Albans, Hatfield, Lunch between 12 and 1 pm, Office (at least 2 hours for paperwork) AND Starts no earlier than 8:30 am AND at least 30 mins for lunch
	A5	Begins to process travelling time	1	C	Correct travelling time for at least one journey
	I6	Clearly presented correct time plan	1	D	Sequentially ordered and correct time plan showing at least arrival time in all places, lunch break of at least 30 mins, at least 2 hours paperwork, finished by 5 pm

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
					(See example solution at end of mark scheme)
Total marks for question			4		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q8	R1	Begins to produce data collection sheet	1 or	E	Input opportunities AND headings for at least 2 of Men/Women ; under 30/over 30; use/not use
	R2	Improves data collection sheet	2 or	EF	Input opportunities AND headings for all of Men/Women; under 30/over 30; use/not use
	I6	Fully correct efficient data collection sheet	3	EFG	Data collection sheet showing all categories in a table with 8 efficient input opportunities (Not a questionnaire)
Total marks for question			3		

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
Q9a	R1	Starts to work with percentage or total amount or cost per person	1 or	H	120 × 27.5 (=3300) OR 27.50 × 0.92 (=25.3) OR 3000 ÷ 120 (=25)
	A4	Completes calculation	2 or	HJ	0.92 × '3300' oe (=3036) '25.3' × 120 (=3036) OR 3000 ÷ 120 (=25) AND 27.50 × 0.92 (=25.3)
	I6	Correct decision from accurate figures	3	HJK	Yes and (£)3036 OR Yes and (£)25 and (£)25.3(0)
Q9b	R3	Finds cost to hire room for Option A or revenue from ticket sales	1 or	L	4 × 24 (=96) OR 90 × 8 (=720)
	A4	Finds cost to hire room for Option A and revenue from ticket sales	2 or	LM	4 × 24 (=96) AND 90 × 8 (=720)
	I6	Completes process for Option A	3	LMN	'720' – '96' (=624)
	R3	Starts to work with ratio	1 or	P	'720' ÷ 10 (=72)
	A4	Completes work with ratio	2 or	PQ	'72' × 7 (=504) OR 0.7 × '720' (=504) OR '720' – '72' × 3 (=504) OR

Question	Skills Standard	Process	Mark	Mark Grid	Evidence
	17	Correct decision from accurate figures	3	PQR	'72' × 3 (=216) AND 4 × 24 (=96) Correct decision e.g. Option A AND (£)624 AND (£)504 OR Option A AND (£)96 AND (£)216
Total marks for question			9		

Question 7 – Example solution

8:30 – 9:30	Paperwork in office	14:00 – 14:25	Travel to Hatfield
9:30 – 11:00	Interviews	14:30 – 15:15	Hatfield
11:00 – 11:30	Paperwork in office	15:15 – 15:45	Travel to office
11:30 – 12:10	Travel to St Albans	15:45 – 16:15	Paperwork in office
12:10 – 13:00	Lunch	16:15	Home
13:00 – 14:00	St Albans		

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London WC2R 0RL

Ofqual



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

