Functional Skills
Mathematics Level 2

Paper Based OnDemand Practice Set 3
Mark Scheme

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Marking Guidance for Functional Skills Mathematics Level 2

General

- All learners must receive the same treatment. Examiners must mark the first learner in exactly the same way as they mark the last.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme, the response should be escalated to a senior examiner to review.
- Mark schemes should be applied positively. Learners 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. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the learner's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated in the answer box, always check the working in the body of the script (and on any diagrams) and award any marks appropriate from the mark scheme.
- Working is always expected. For short questions, where working may not be seen, correct answers may still be awarded full marks. For longer questions, an answer in brackets from the mark scheme seen in the body of the working, implies a correct process and the appropriate marks may be awarded.
- **Questions that specifically state that working is required**: learners who do not show working will get no marks – full details will be given in the mark scheme for each individual question.

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 learner uses to reach an answer. The evidence column shows the *most likely* examples that will be seen. If the learner gives different evidence valid for the process, examiners should award the mark(s).
- If working **is crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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 work 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**, e.g. 528 instead of 523, may still gain process marks provided the question has not been simplified. Examiners should send any instance of a suspected misread to a senior examiner to review.
- It may be appropriate to **ignore subsequent work (isw)** when the learner's additional work does not change the meaning of their answer.

- **Correct** working followed by an **incorrect decision** may be seen, showing that the learner 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 learner presents a correct answer in working and writes it incorrectly on the answer box e.g. 698 in the body and 689 in the answer box; mark the better answer if clearly only a transcription error. Examiners should send any instance of transcriptions errors to a senior examiner to review.

- **Incorrect method** if it is clear from the working that the correct answer has been obtained from incorrect working, award 0 marks. Examiners must escalate the response to a senior examiner to review.

- **Follow through marks (ft)** must only be awarded when explicitly allowed in the mark scheme. Where the process uses the learner'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 coming from a correct or set of correct processes.

  - When words are used in { } then this value does not need to come from a correct process but should be the value the learner believes to be required. The constraints on this value will be detailed in the mark scheme. For example, {volume} means the figure may not come from a correct process but is clearly the value learners believe should be used as the volume.

- Marks can usually be awarded where units are not shown. Where units are required this will be stated. For example, 5(m) indicates that the units do not have to be stated for the mark to be awarded.

- Learners 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, when a range of answers is given e.g. [12.5, 13] this is the inclusive closed interval.

- **Accuracy** of figures. Accept an answer which has been rounded or truncated from the correct figure unless other guidance is given. For example, for 12.66.. accept 12.6, 12.7, 12.66, 12.67 or any other more accurate figure.

- **Probability** answers must be given as a fraction, percentage or decimal. If a learner gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths). If a learner gives the answer as a percentage a % must be used. Incorrect notation should lose the accuracy marks but be awarded any implied process marks. If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

- **Graphs.** A linear scale must be linear, in an appropriate range for the data used, and use consistent intervals. The scale used does not have to start at 0 and not all intervals must be labelled. The minimum requirements for labels will be given, but examiners should give credit if a title is given which makes the label obvious.

PRACL2/N03				
Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q1(a)	Accurate figure	1	A	84 NB may be shown on diagram
Q1(b)	Full process to work with angles	1 or	B	360 – 27 – 216 – '84' (=33)
	Accurate figure	2	BC	33 Ft their answer to (a) for both B and BC marks
	Total marks for question	**3**		

Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q2	Use of rounded figure(s)	1	A	e.g. use of 6 **or** 40 **or** 50 **or** 10000 **or** 12000 May be seen in subsequent calculations
	Full process to work out estimated annual salary	1 or	B	e.g. '6' × '40' × '50' (=12000) **or** '5.5' × '40' × '50' (=11000) **OR** 10000 ÷ 50 ÷ 40 (=5) **OR** 12000 ÷ 6 ÷ 50 (=40) **OR** '5.68' × '37' × '50' (=10508) NB an answer of (£)10928.32 scores this mark only
	Valid decision supported by accurate figure from their estimation using at least 2 rounded figures	2	BC	e.g. Yes/No **AND** (£)12000 (per year) **OR** Yes/No **AND** (£)5 (per hour) **OR** Yes/No **AND** 40 (hours per week) **OR** Yes/No **AND** (£)11000 (per year)
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q3(a)	Accurate figure	1	A	0.08
Q3(b)	Accurate figure	1	B	40
Q3(c)	Begins process to calculate with fractions with a common denominator with at least 1 fraction correctly converted or calculates with equivalent decimals	1 or	C	e.g. $\frac{32}{40} - \frac{15}{40} (= \frac{17}{40})$ **OR** $0.8 - 0.375 (=0.425)$
	Accurate figure	2	CD	$\frac{17}{40}$ oe **OR** 0.425
	Total marks for question	4		

Question	Process	Mark	Mark Grid	Evidence
Q4	Process to find median width	1	A	18.2, 18.6, 18.9, 19.4, 19.7 **or** identifies 18.9 May be seen in subsequent calculations
	Begins process to find a solution	1 or	B	e.g. {median} × 6 (=113.4) **OR** {median} ÷ 100 × 10 (=1.89) **OR** 127 – (2 × 3) (=121) **OR** (100 + 10) ÷ 100 (=1.1)
	Develops solution	2 or	BC	e.g. '113.4' ÷ 100 × 10 (=11.34) **OR** '18.9' + '1.89' (=20.79) **OR** '121' ÷ 6 (=20.166..) **OR** {median} ÷ 100 × 10 (=1.89) **and** 127 – (2 × 3) (=121)
	Further develops solution	3 or	BCD	e.g. '113.4' + '11.34' (=124.74) **OR** '20.79' × 6 (=124.74) **OR** {median} ÷ 100 × 110 (=20.79) **and** 127 – (2 × 3) (=121)
	Full process to find figures to compare	4 or	BCDE	e.g. '124.74 + 2 × 3 (=130.74) **OR** '20.79' × 6 (=124.74) **and** 127 – (2 × 3) (=121) **OR** {median} ÷ 100 × 110 (=20.79) **and** '121' ÷ 6 (=20.166..)
	Valid decision with accurate figures	5	BCDEF	e.g. No **AND** 130(.74) **OR** No **AND** 124(.74) **and** 121 **OR** No **AND** 20.7(9) **and** 20.1(66..)
	Total marks for question	6		

PRACL2/C03				
Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q1	Begins to convert units	1 or	A	e.g. 2.75 × 36 (=99) **or** 0.75 × 36 (=27)
	Full process to find length of fabric needed	2 or	AB	e.g. '99' × 2.54 (=251.46) oe
	Accurate figures supported	3	ABC	251(.46) Accept 252 NB working must be shown for this question
	Total marks for question	**3**		

Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q2	Begins process to work with ratio	1 or	A	375 ÷ 10 (=37.5) **OR** 2 + 1 + 10 (=13)
	Full process to work with ratio	2 or	AB	375 ÷ 10 × '13' (=487.5) oe **OR** '37.5' × 2 + '37.5' + 375 (=487.5)
	Accurate figure	3	ABC	487.5
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q3(a)	Begins to work with reverse percentage	1 or	A	e.g. $(100 - 7) \div 100 \ (=0.93)$ **or** $(1 - \frac{7}{100}) \times$ original number of tickets = 105276
	Complete process to find original price	2 or	AB	e.g. $105276 \div$ '0.93' $(=113200)$
	Accurate figure	3	ABC	113200
Q3(b)	Valid check	1	D	e.g. $113200 \times 0.93 = 105276$
Total marks for question		**4**		

Question	Process	Mark	Mark Grid	Evidence
Q4(a)	Accurate coordinates	1	A	$(-4, 0)$
Q4(b)	Plots centre or point B	1 or	B	Plots point $(2, 0)$ **OR** identifies centre as $(-1, 0)$
	Accurate diagram	2	C	circle drawn with centre $(-1, 0)$ **and** passes through points A **and** B
Total marks for question		**3**		

Question	Process	Mark	Mark Grid	Evidence
Q5	Process to find missing length	1	A	0.75 − 0.63 (=0.12) May be seen on the diagram or in subsequent working
	Begins process to find surface area	1 or	B	1 of: e.g. 0.63 × 0.96 (=0.6048) **OR** 0.63 × 0.7 (=0.441) **OR** '0.12' × 0.7 ÷ 2 (=0.042) **OR** '0.12' × '0.35' ÷ 2 (=0.021)
	Develops solution	2 or	BC	2 of: e.g. 0.63 × 0.96 (=0.6048) **OR** 0.63 × 0.7 (=0.441) **OR** '0.12' × 0.7 ÷ 2 (=0.042)
	Full process to find figures to compare	3 or	BCD	e.g. 1.3824 + '0.6048' × 2 + '0.441' × 2 + '0.042' × 2 (=3.558) **OR** 1.3824 + '0.6048' × 2 + '0.441' × 2 + '0.021' × 4 (=3.558)
	Valid decision with accurate figures	4	BCDE	e.g. No **AND** 3.558 (m^2) **OR** No **AND** 0.058 (m^2) too little
	Total marks for question	**5**		

Question	Process	Mark	Mark Grid	Evidence
Q6	Begins to work with formula	1 or	A	e.g. 2.67×8 (= 21.36) **or** 4×3.5 (=14) **or** $2.67 \div 4$ (=0.6675)
	Full process to work with formula	2 or	AB	e.g. '21.36' $\div$ '14' (= 1.5257..) **or** $(2.67 \times 8) \div (4 \times 3.5)$ (= 1.5257..) **or** $2.67 \times 8 \div (4 \times 3.5)$ (= 1.5257..) NB $\div$ must be shown
	Accurate figure correct to 3 decimal places	3	ABC	1.526
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q7(a)	Begins process to work with an estimate of the mean	1 or	A	e.g. 2 of : 8×2 **or** 23×7 **or** 38×12 **or** 53×10 Allow use of 'midpoints' provided they are consistent and within an interval including the end points **OR** 2 of 16 **or** 161 **or** 456 **or** 530 seen **OR** '31' $\times$ 32 (=992)
	Full process to find figures to compare	2 or	AB	$(8 \times 2 + 23 \times 7 + 38 \times 12 + 53 \times 10) \div (2 + 7 + 12 + 10)$ (=37.51..) (condone one error) Allow use of 'midpoints' provided they are consistent and within an interval including the end points **OR** '31' $\times$ 32 (=992) **and** '16' + '161' + '456' + '530' (=1163)
	Valid decision with accurate figure(s)	3	ABC	Yes **AND** 37(.51..) **or** 38 **OR** Yes **AND** 1163 **and** 992
Q7(b)	Valid check of mean	1	D	e.g. 37.51.. $\times$ 31 = 1163
	Total marks for question	**4**		

Question	Process	Mark	Mark Grid	Evidence
Q8(a)	Begins to interpret data	1 or	A	100 – 56 (=44) **OR** Calculates at least 1 of: e.g.

	under 25	25-40	over 40	total
online	27	**21**	8	56
shop	**15**	12	17	**44**
total	**42**	33	**25**	100

Question	Process	Mark	Mark Grid	Evidence
	Full process to find the number of people under 25 who buy in the shop	2	AB	100 – 56 – 12 – 17 (=15) **OR** Calculates at least the shop row e.g.

	under 25	25-40	over 40	total
online	27	**21**	8	56
shop	**15**	12	17	**44**
total	**42**	33	**25**	100

Question	Process	Mark	Mark Grid	Evidence
	Begins process to work with probability	1 or	C	$\dfrac{\text{'15'}}{a}\ a > 15$ **or** $\dfrac{b}{\text{'44'}}\ 0 < b < 44$ where a and b are integers
	Accurate figure	2	CD	$\dfrac{15}{44}$ oe
Q8(b)	Begins to express amount as a fraction	1 or	E	e.g. $\dfrac{48}{48 + 76}$ **OR** $\dfrac{48}{124}$
	Accurate fraction in simplest form	2	F	$\dfrac{12}{31}$
	Total marks for question	**6**		

Question	Process	Mark	Mark Grid	Evidence
Q9	Completes key	1	A	(1:) 2
	Begins to work with scale	1 or	B	Draws a rectangle of side length 8 squares **or** 4 squares
	Accurate drawing	2	BC	Draws a rectangle of side length 8 squares **and** 4 squares
				NB Nets or 3D shapes score no marks
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q10	Begins process to work with speed	1 or	A	58 ÷ 70 (=0.828..) **OR** 70 ÷ 60 (=1.16..)
	Full process to find time required	2 or	AB	'0.828..' × 60 (=49.71..) **OR** 58 ÷ '1.16..' (=49.71..)
	Accurate figure	3	ABC	50
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q11	Process to find circumference	1	A	e.g. 3.14 × 1.7 (=5.338)
	Process to find number of tables needed or works with tables per roll	1 or	B	150 ÷ 8 (=18.75) **OR** 30 ÷ {circumference + 0.65} (=5.01..)
	Develops solution	2 or	BC	e.g. '19' × {circumference + 0.65} (=113.772) **OR** 150 ÷ 8 (=18.75) **and** 30 ÷ {circumference + 0.65} (=5.01..)
	Full process to find number of rolls of ribbon required	3 or	BCD	e.g. '113.772' ÷ 30 (=3.7924) **OR** '19' ÷ '5.01..' (=3.79..) **or** '19' ÷ '5' (=3.8)
	Accurate rounded figure	4	BCDE	4
	Total marks for question	**5**		

Question	Process	Mark	Mark Grid	Evidence
Q12(a)	Begins to draw suitable diagram	1 or	A	1 of linear scale accurate plotting of at least 4 data points correct labels
	Develops solution	2 or	AB	2 of linear scale accurate plotting of at least 4 data points correct labels
	Fully correct scatter diagram	3	ABC	All of linear scale accurate plotting of all data points correct labels (e.g. Age (in years) **or** years **and** (weekly) pay (£)) NB age and pay can be plotted on either axes
Q12(b)	Describes correlation	1	D	(strong) Positive
Q12(c)	Begins to find range	1 or	E	e.g. 686 – 295 (=391) **or** 295 to 686
	Valid comment with accurate figure	2	EF	e.g. Pay for men has less variation **AND** (£)391 Male pay is more consistent than female pay **AND** (£)391
Total marks for question		**6**		

Example of a suitable diagram for Question 12(a)