

Functional Skills  
**Mathematics Level 1**

**Paper Based OnDemand Set 10**  
Mark Scheme

Standardisation

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## Marking Guidance for Functional Skills Mathematics Level 1

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Section A (Non-Calculator)

PMAT1/N10				
Question	Process	Mark	Mark Grid	Evidence
Q1	Begins to work with percentage	1 or	A	e.g. $860 \div 10 (=86)$ <b>OR</b> $15 \div 100 (=0.15)$ <b>OR</b> $860 \div 100 (=8.6)$
	Full process to find figures to compare	2 or	AB	e.g. $'86' + '86' \div 2 (=129)$ <b>OR</b> $\begin{array}{r} 15 \\ \times 86 \\ \hline 90 \\ 120 \\ \hline 1290 \end{array}$
	Valid decision with accurate figures from supportive working	3	ABC	Yes <b>AND</b> 129 NB This question requires working shown
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q2	Begins to work with time	1 or	A	e.g. 8(pm) + 12(hours) (=8am) <b>OR</b> 30 – 24 (=6) <b>OR</b> 12 + 30 (=42 hours or 1.75 days or 1 day 18 hours)
	Full process to work with time	2 or	AB	e.g. M(onday) 8(pm) + ‘1 d(ay) 18 h(ours)’ (= Wednesday 2pm) <b>OR</b> A full build-up method, e.g. M(onday) 8(pm); T(uesday) 8(am); W(ednesday) 2(pm)
	Correct answer	3	ABC	W(ednesday) <b>AND</b> 14:00 <b>or</b> 2pm
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q3(a)	Begins process to find range	1 or	A	$\begin{array}{r} 3 \quad 9 \quad 4 \\ - \quad 1 \quad 1 \quad 6 \\ \hline (2 \quad 7 \quad 8) \end{array}$ <b>OR</b> 116 to 394
	Accurate figure	2	AB	278
Q3(b)	Accurate figure	1	C	4.7
Q3(c)	Accurate figure	1	D	900
<b>Total marks for question</b>		<b>4</b>		

Question	Process	Mark	Mark Grid	Evidence
Q4(a)	Estimates the fraction or rounds to a manageable figure	1	A	e.g. $\frac{1}{2}$ <b>or</b> 600 seen or used
	Full process to find the number	1 or	B	e.g. $2 \overline{) \begin{matrix} (3 & 0 & 0) \\ \underline{6} & 0 & 0 \end{matrix}}$ <b>OR</b> '600' $\div 5 \times 3 (=360)$ Allow $\frac{3}{5} \times 624 (=374.4)$ for this mark only
	Accurate estimate from supportive figures	2	BC	e.g. 300 <b>or</b> 360 NB This question requires working shown
Q4(b)	Valid reverse check	1	D	e.g. $300 \times 2 = 600$
<b>Total marks for question</b>		<b>4</b>		

**Section B (Calculator)**

PMAT1/C10				
Question	Process	Mark	Mark Grid	Evidence
Q1(a)	Writes a figure using digits	1 or	A	750 000 <b>or</b> 725 000
	Valid decision with correct figure	2	AB	(company) A <b>AND</b> 750 000 <b>or</b> 725 000 <b>and</b> no incorrect figures
Q1(b)	Correct answer	1	C	2.39, 2.41, 2.89, 2.9, 3.09
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q2	Process to work with percentage	1 or	A	$60 \div 100 \times 90 (=54)$ oe <b>or</b> $55 \div 100 \times 80 (=44)$ oe
	Process to compare percentages in whole numbers	2	AB	$60 \div 100 \times 90 (=54)$ oe <b>and</b> $55 \div 100 \times 80 (=44)$ oe
	Full process to find figures to compare	1 or	C	'54' – '44' (=10) <b>OR</b> '54' – 12 (=42) <b>OR</b> '44' + 12 (=56)
	Valid decision with accurate figures	2	CD	No <b>AND</b> 10 <b>OR</b> No <b>AND</b> 2 <b>OR</b> No <b>AND</b> 44 <b>and</b> 42 <b>OR</b> No <b>AND</b> 54 <b>and</b> 56
<b>Total marks for question</b>		<b>4</b>		

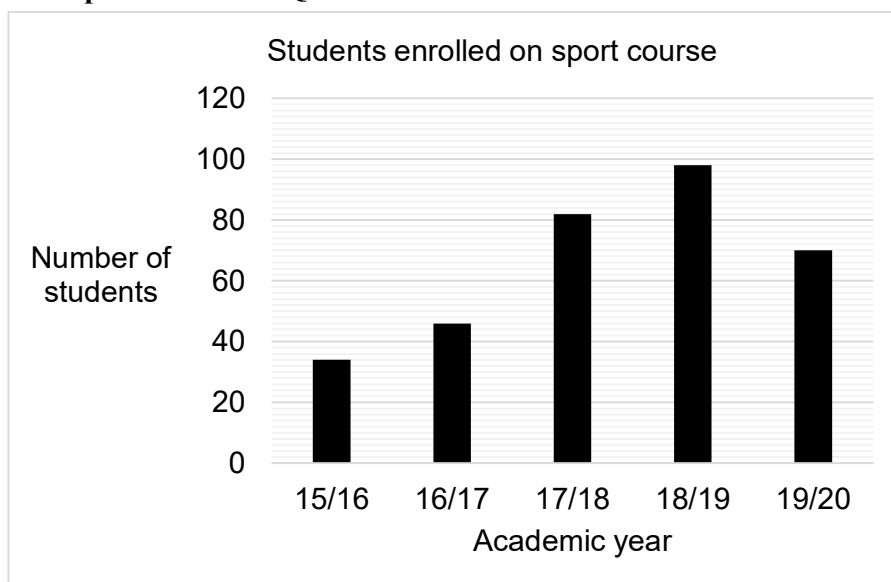


Question	Process	Mark	Mark Grid	Evidence
Q3	Process to find a missing length	1	A	7.6 – 5.3 (=2.3) <b>OR</b> 4.3 – 2.8 (=1.5)
	Process to find a relevant area	1 or	B	7.6 × 4.3 (= 32.68) <b>OR</b> '2.3' × '1.5' (=3.45) <b>OR</b> 7.6 × 2.8 (=21.28) <b>OR</b> 5.3 × '1.5' (=7.95) <b>OR</b> 5.3 × 4.3 (=22.79) <b>OR</b> 2.8 × '2.3' (=6.44)
	Process to find total floor area or total number of packs	2	BC	e.g. '32.68' – '3.45' (=29.23) <b>OR</b> '21.28' + '7.95' (=29.23) <b>OR</b> '22.79' + '6.44' (=29.23) <b>OR</b> '53.2' + '19.875' (=73.075)
	Process to find the number of packs	1 or	D	e.g. {area} ÷ 0.4 (=73.075) <b>OR</b> '21.28' ÷ 0.4 (=53.2) NB {area} can be one relevant area
	Accurate figure	2	DE	74
<b>Total marks for question</b>		<b>5</b>		

Question	Process	Mark	Mark Grid	Evidence
Q4(a)	Measures the correct angle or shows the units	1 or	A	Measures angle as $95(^{\circ}) \pm 2^{\circ}$ <b>OR</b> Indicates $^{\circ}$
	Accurate bearing with units	2	AB	$(0)95^{\circ} \pm 2^{\circ}$
Q4(b)	Correct answer	1	C	Indicates $\frac{7}{10}$ on the scale
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q5	Starts to draw a bar chart	1 or	A	one of: linear scale, labels, accurate plotting
	Develops their bar chart	2 or	AB	two of: linear scale, labels, accurate plotting
	Fully correct bar chart	3	ABC	All of: linear scale, labels, accurate plotting Minimum labels required: Horizontal, “(Academic) year, 15/16, 16/17, 17/18, 18/19, 19/20” Vertical “(number of) students” Labels may be implied in title.
<b>Total marks for question</b>		<b>3</b>		

### Example solution for Question 5



Question	Process	Mark	Mark Grid	Evidence
Q6	Begins to work with volume	1 or	A	1.8 – 0.3 (=1.5) <b>OR</b> 20 × 10 × 1.8 (=360) <b>or</b> 20 × 10 × 0.3 (=60)
	Full process to find volume of water	2	AB	20 × 10 × ‘1.5’ (=300) <b>OR</b> ‘360’ – ‘60’ (=300)
	Process to convert between units e.g. m <sup>3</sup> and litres	1	C	e.g. {volume} × 1000 (=300 000) <b>OR</b> ‘1000 ÷ 5000 × 56’ × {volume} (=3360) {volume} should be calculated or identified e.g. with cubic units
	Process to begin to work with formula	1 or	D	{volume in litres} ÷ 5000 (=60) <b>OR</b> 1000 ÷ 5000 (=0.2)
	Full process to work with formula	2	DE	{volume in litres} ÷ 5000 × 56 (=3360) <b>OR</b> 1000 ÷ 5000 × 56 (=11.2)
	Accurate figure	1	F	3360
<b>Total marks for question</b>		<b>6</b>		

Question	Process	Mark	Mark Grid	Evidence
Q7(a)	Accurate figure	1	A	15
Q7(b)	Accurate figure	1	B	4
Q7(c)	Accurate figure	1	C	27.4
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q8(a)	Full process to find perimeter	1 or	A	$180 + 120 + 215 (=515)$
	Accurate figure	2	AB	515
Q8(b)	Valid check	1	C	e.g. $515 - 215 = 300$
<b>Total marks for question</b>		<b>3</b>		

Question	Process	Mark	Mark Grid	Evidence
Q9	Begins to work with mean	1 or	A	$15 + 26 + 9 + 11 + 20 + 16 + 1 (=98)$ <b>OR</b> $'29.25' + '50.7' + '17.55' + '21.45' + '39' + '31.2' + 1.95 (=191.1)$ <b>OR</b> $7 \times 25 (=175)$
	Full process to work with mean	2	AB	$(15 + 26 + 9 + 11 + 20 + 16 + 1) \div 7 (=14)$ <b>OR</b> $( '29.25' + '50.7' + '17.55' + '21.45' + '39' + '31.2' + 1.95 ) \div 7 (=27.3)$ <b>OR</b> $15 + 26 + 9 + 11 + 20 + 16 + 1 (=98)$ <b>and</b> $7 \times 25 (=175)$ <b>OR</b> $'191.1' \div 7 (=27.3)$
	Process to work with costs	1 or	C	e.g. $'14' \times 1.95 (=27.3)$ <b>OR</b> $'98' \times 1.95 (=191.1)$ <b>OR</b> $15 \times 1.95 (=29.25)$ <b>OR</b> $25 \div 1.95 (=12.8..)$
	Valid decision with accurate figures	2	CD	e.g. Yes <b>AND</b> (£) 27(.3) <b>OR</b> Yes <b>AND</b> 14 <b>and</b> 12(.8..) <b>or</b> 13
<b>Total marks for question</b>		<b>4</b>		

Question	Process	Mark	Mark Grid	Evidence												
Q10	<p>Accurate labels for the groups</p> <p>Begins to place data into table Data: 4, 5, 6, 7, 8, 10, 11, 12, 12, 13, 14, 15</p> <p>Correctly completed table</p>	<p>1</p> <p>1 or</p> <p>2</p>	<p>A</p> <p>B</p> <p>BC</p>	<p>Correct labels for two missing groups 6 to 10 <b>and</b> 11 to 15 oe</p> <p>Populates a table with the data (allow 1 error or omission) NB may only use tallies</p> <p>Correct frequencies <b>OR</b> Correct frequencies fit their three groups NB ignore missing tallies</p> <table border="1" data-bbox="1136 805 1845 976"> <thead> <tr> <th>number of treadmills</th> <th>tally</th> <th>frequency</th> </tr> </thead> <tbody> <tr> <td>1 to 5</td> <td>II</td> <td>2</td> </tr> <tr> <td>6 to 10</td> <td>IIII</td> <td>4</td> </tr> <tr> <td>11 to 15</td> <td>HHI</td> <td>6</td> </tr> </tbody> </table>	number of treadmills	tally	frequency	1 to 5	II	2	6 to 10	IIII	4	11 to 15	HHI	6
number of treadmills	tally	frequency														
1 to 5	II	2														
6 to 10	IIII	4														
11 to 15	HHI	6														
<b>Total marks for question</b>		<b>3</b>														

Question	Process	Mark	Mark Grid	Evidence
Q11	Begins to work with percentage	1 or	A	$45 \div 100 \times 31.8 (=14.31)$ oe <b>OR</b> $(100 - 45) \div 100 (=0.55)$
	Full process to find discounted price	2	AB	‘0.55’ $\times$ 31.8 (=17.49) oe
	Begins to work with fraction	1	C	$34.5 \div 2 (=17.25)$ oe
	Full process to find figures to compare or one accurate discounted price	1 or	D	‘17.49’ – ‘17.25’ (=0.24) <b>OR</b> ‘17.49’ – ‘0.5’ (=16.99) <b>OR</b> ‘17.25’ + ‘0.5’ (=17.75) <b>OR</b> 17.49 <b>or</b> 17.25
	Valid decision with accurate figures	2	DE	Yes <b>AND</b> (£) 0.24 <b>or</b> 24(p) <b>OR</b> Yes <b>AND</b> (£) 17.49 <b>and</b> (£)17.25 <b>OR</b> Yes <b>AND</b> (£)16.99 <b>and</b> (£)17.25 <b>OR</b> Yes <b>AND</b> (£) 17.49 <b>and</b> (£)17.75
<b>Total marks for question</b>		<b>5</b>		