PEARSON EDEXCEL FUNCTIONAL SKILLS MATHEMATICS
MARK SCHEME – LEVEL 2 SET 1

Marking Guidance for Functional Skills Mathematics Level 2
PASS MARK FOR THIS TEST: 36

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- If working **is crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

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- **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 the range where data is plotted, and use consistent intervals. The scale may not start at 0 and not all intervals must be labelled. The minimum requirements will be given, but examiners should give credit if a title is given which makes the label obvious.

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Section A (Non-Calculator)

<table>
<tr><th colspan="5">PMAT2/N01</th></tr>
<tr><th>Question</th><th>Process</th><th>Mark</th><th>Mark Grid</th><th>Evidence</th></tr>
<tr><td>Q1(a)</td><td>Begins process to show a valid method</td><td>1 or</td><td>A</td><td>e.g. 312 × 16 = 4680 or 192 × 25 = 4800 OR
4992 4992

<table><tr><td></td><td>50</td><td>2</td></tr><tr><td>90</td><td>4500</td><td>180</td></tr><tr><td>6</td><td>300</td><td>12</td></tr></table> and 4500 + 180 + 300 + 12 (= 4992) OR

<table><tr><td></td><td>5</td><td>2</td><td></td></tr><tr><td>4</td><td>4 / 5</td><td>1 / 8</td><td>9</td></tr><tr><td>9</td><td>3 / 0</td><td>1 / 2</td><td>6</td></tr><tr><td></td><td>9</td><td>2</td><td></td></tr></table></td></tr>
<tr><td></td><td>Accurate figure</td><td>2</td><td>AB</td><td>49.92</td></tr>
<tr><td>Q1(b)</td><td>Accurate figure</td><td>1</td><td>C</td><td>36</td></tr>
<tr><td colspan="2">Total marks for question</td><td colspan="3">3</td></tr>
</table>

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Question	Process	Mark	Mark Grid	Evidence
Q2	Begins to work with costs	1 or	A	e.g. −107.35 + 1867.68 (=1760.33) **OR** −107.35 – 715.21 (= −822.56) **OR** 1867.68 – 715.21 (=1152.47) **OR** 107.35 + 715.21 (=822.56)
	Full process to find final balance	2 or	AB	e.g. '1760.33' – 715.21 (=1045.12) **OR** '−822.56'+ 1867.68 (=1045.12) **OR** '1152.47' + –107.35 (=1045.12)
	Accurate figure	3	ABC	1045.12
	Total marks for question	**3**		

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Question	Process	Mark	Mark Grid	Evidence
Q3	Use of rounded figure(s)	1	A	e.g. Use of 60 **or** 120 **or** 100 **or** 110 **or** 3 May be seen in a calculation
	Process to work with arc length of semi-circle or work with lengths	1 or	B	e.g. '3' × '120' ÷ 2 (= 180) **or** '3' × '100' ÷ 2 (= 150) **OR** ('120' + '110') × 2 (= 460) **or** ('100' + '100') × 2 (= 400) **OR** Uses triangles to estimate compound lengths e.g. 3 × ('60' × 3) – 60 – 60 (= 420)
	Full process to find total length of plastic trim needed	2 or	BC	e.g. '180' + '460' + 2 × '60' (= 760) **OR** '150' + '400' + 2 × '60' (= 670) **OR** '400' + '120' + '180' (= 700) **OR** '420' + (3 × '100') (= 720) Allow using accurate figures for marks B and C only
	Valid decision supported by accurate figure from their estimation(s)	3	BCD	e.g. Yes/No **AND** 760 **OR** Yes/No **AND** 670 **OR** Yes/No **AND** 700 **OR** Yes/No **AND** 720
	Total marks for question	**4**		

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Question	Process	Mark	Mark Grid	Evidence
Q4	Full process to find median	1 or	A	e.g. (14 + 17) ÷ 2 (= 15.5)
	Accurate figure	2	AB	15.5 (minutes) oe
	Full process to find range	1 or	C	67 – 5 (= 62) **OR** 5 to 67
	Accurate figure	2	CD	62 (minutes) oe
	Valid decision with one simple comment comparing ft their median or range between summer and winter	1 or	E	e.g. Yes **AND** the median in winter is much longer than summer **OR** Yes **AND** the range in winter is larger so trains are less consistent
	Valid decision with 2 comparative comments for both median and range, all units consistent	2	EF	e.g. Yes **AND** trains in winter have a larger range so are less reliable and the average minutes late is greater
	Total marks for question	**6**		

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Section B (Calculator)

PMAT2/C01				
Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q1	Begins to work with fractional rate of pay	1 or	A	e.g. (6 × 8.32) ÷ 3 (=16.64) **OR** 8.32 ÷ 3 × 4 (=11.0933..)
	Full process to calculate rate of pay for 6 hours	2 or	AB	e.g. '16.64' × 4 (=66.56) **OR** '11.0933..' × 6 (=66.56)
	Accurate figure	3	ABC	66.56 Allow 66.54 – 66.60
	Total marks for question	**3**		

Question	**Process**	**Mark**	**Mark Grid**	**Evidence**
Q2	Process to find area of base or works partially with volume	1 or	A	e.g. 8.5 × 8.5 (= 72.25) **OR** $\frac{1}{3}$ × 12.6 (= 4.2)
	Full process to find volume	2 or	AB	$\frac{1}{3}$ × '72.25' × 12.6 (= 303.45)
	Accurate figure	3	ABC	303.45
	Total marks for question	**3**		

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Question	Process	Mark	Mark Grid	Evidence
Q3(a)	Process to find total donated	1 or	A	175 × 4 (=700)
	Process to work with inverse proportion	2 or	AB	'700' ÷ 6 (=116.66..) oe
	Accurate figure rounded to 2 decimal places	3	ABC	116.66 **or** 116.67
Q3(b)	Valid check using reverse calculation	1	D	e.g. 116.66.. × 6 = 700 **or** 700 ÷ 4 = 175
	Total marks for question	**4**		

Question	Process	Mark	Mark Grid	Evidence
Q4	Process to use at least 2 angle facts	1 or	A	e.g. 180 – '60' (= 120) **OR** 180 ÷ 3 (=60) **and** 90 used for right angle NB angles may be indicated on the diagram
	Full process to find angle	2 or	AB	(180 – '120') ÷ 2 (= 30) **OR** 180 – '60' – 90 (=30)
	Accurate figure and correct pitch stated	3	ABC	30(º) **and** 7
	Total marks for question	**3**		

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Question	Process	Mark	Mark Grid	Evidence
Q5	Process to find area of one face	1	A	$\frac{7.6 \times 4.8}{2}$ (=18.24)
	Process to find total area or total number of packs	1	B	{area} × 4 (=72.96) **OR** '1.321..' × 4 (=5.286..)
	Process to work with total number of packs or packs per face	1 or	C	eg'72.96' ÷ 13.8 (=5.286..) **OR** {area} ÷ 13.8 (=1.321..) NB may be seen as a build-up method
	Process to find total cost	2 or	CD	e.g. '6' × 716.1 (=4296.6) Accept '5.286..' × 716.1 (=3785.98..) for this mark only
	Accurate figure	3	CDE	4296.6(0)
	Total marks for question	**5**		

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Question	Process	Mark	Mark Grid	Evidence
Q6	Begins process to work with percentage	1 or	A	e.g. 46 ÷ 100 × 30.99 (=14.2554) oe **OR** 1 – 46 ÷ 100 (=0.54) oe **OR** 16 ÷ 30.99 (=0.516..)
	Full process to find figures to compare	2 or	AB	e.g. '0.54' × 30.99 (=16.7346) oe **OR** 16 ÷ '0.54' (=29.629..) **OR** 1 – 46 ÷ 100 (=0.54) **and** 16 ÷ 30.99 (=0.516..) **OR** 46 ÷ 100 × 30.99 (=14.2554) **and** 30.99 – 16 (=14.99) **OR** (1 – '0.516..') × 100 (=48.37..)
	Valid decision with accurate figures	3	ABC	e.g. No **AND** (£)16.7(346) (correct new price) **OR** No **AND** (£)29.(629..) (original price) **OR** No **AND** 54(%) **and** 51(.6..)(%) **OR** No **AND** (£)14.2(554) **and** (£)14.9(9) **OR** No **AND** 48(.37..)(%) Accept functional rounding
	Total marks for question	**3**		

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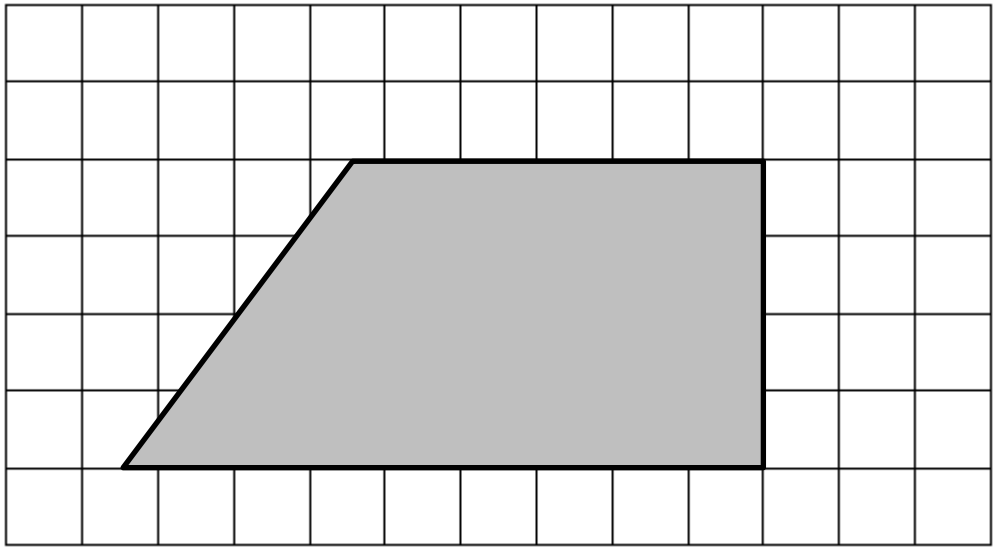
Question	Process	Mark	Mark Grid	Evidence
Q7(a)	Begins to draw using scale	1 or	A	Rectangle 8.5 sq lengths by 4 sq lengths **or** Rectangle 5.5 sq lengths by 4 sq lengths **or** triangle 3 sq by 4 sq by 5 sq **OR** 2 of: 340 ÷ 40 (= 8.5), 160 ÷ 40 (= 4), 220 ÷ 40 (= 5.5)
	Fully correct shape drawn	2	AB	Quadrilateral with all of: 8.5, 4, 5.5 sq lengths **and** 2 right angles **and** correct orientation
Q7(b)	Measures line AD ft their diagram and uses scale	1 or	C	'5'cm × 40 (= 200) ±2 mm
	Accurate figure	2	CD	200, allow 192 to 208 **OR** ft (AB) accurate figure supported
	Total marks for question	**4**		



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Question	Process	Mark	Mark Grid	Evidence
Q8	Converts between miles^2 and km^2	1	A	e.g. 93400 × 2.6 (=242840) **or** 93.4 × 2.6 (=242.84) **or** 90000 × 2.6 (=234000) **or** 90 × 2.6 (=234) **OR** 240(000) **or** 243(000) **or** 230(000) **or** 234(000)
	Begins to work with percentage	1 or	B	e.g. 56.1 × 0.196 (=10.9956) oe **OR** 1 + 0.196 (=1.196) oe
	Accurate figure supported	2	BC	67.0956 (millions) Accept within the range 66.9 – 67.1
	Begins to plot data	1 or	D	Accurately plots at least 4 of: (360,83), (130,11), (300,58), (310,39), (510,47), (640,67), (240,19), ft their ('242840' ÷ '1000', '67')
	Completes scatter graph ft their calculations	2	DE	Plots all of: (360,83), (130,11), (300,58), (310,39), (510,47), (640,67), (240,19), **and** ft their ('242840' ÷ '1000', '67')
	Valid description of correlation	1	F	e.g. there is (weak) positive correlation **or** the greater the land area the larger the population **or** the general trend is upwards but a few (1−3) countries don't fit this trend (possible outliers)
	Total marks for question	**6**		

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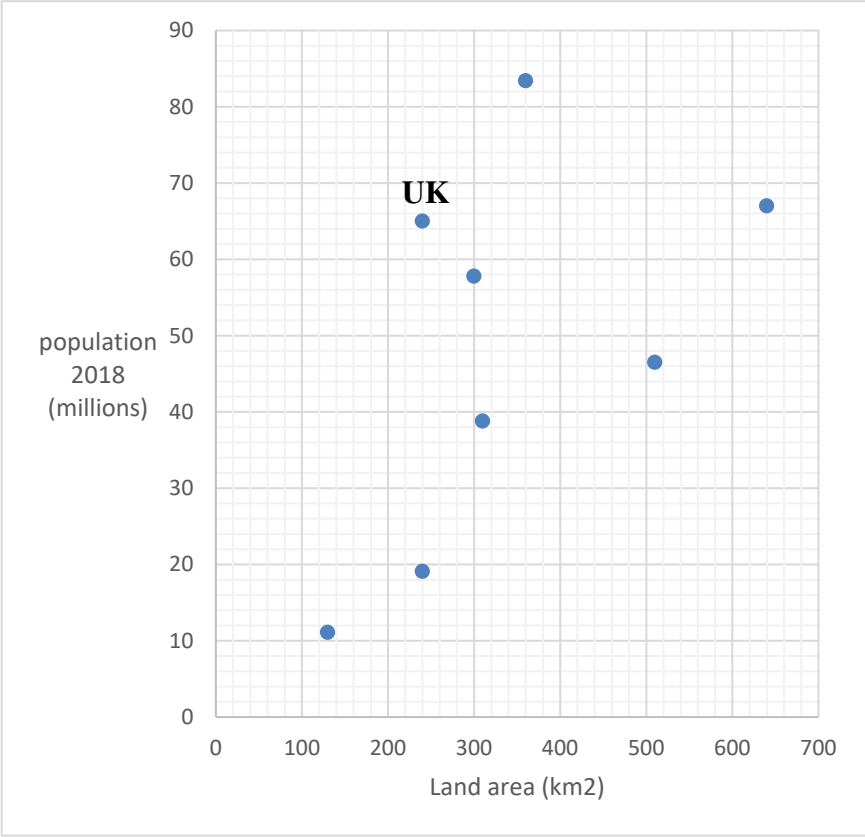

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Question	Process	Mark	Mark Grid	Evidence
Q9	Begins to work with formula	1 or	A	e.g. 2.59 × 6.593 (= 17.07587) **or** 143.96 ÷ 6.593 (= 21.83..) **or** 143.96 ÷ 2.59 (=55.583..) **OR** Full substitution with or without evaluation $\frac{143.96}{2.59 \times 6.593}$ **OR** 3.57 × 2.59 (=9.24..)
	Full process to work with formula	2 or	AB	e.g. 143.96 ÷ '17.07587' (= 8.430..) **OR** 3.57 × 2.59 (=9.24..) **and** 143.96 ÷ 6.593 (= 21.83..)
	Valid decision with accurate figures	3	ABC	e.g. Yes **AND** 8(.43..) (people per km^2) **OR** Yes **AND** 9(.24..) **and** 21(.83..) (people per square miles)
	Total marks for question	**3**		

Question	Process	Mark	Mark Grid	Evidence
Q10(a)	Begins process to calculate, must have at least 1 fraction correctly converted	1 or	A	e.g. $\frac{27}{8} - \frac{9}{8} (= \frac{18}{8})$ **OR** $3 - 1 + \frac{3}{8} - \frac{1}{8} (= 2\frac{2}{8})$ **or** 3 – 1 (=2) **and** $\frac{3}{8} - \frac{1}{8} (= \frac{2}{8})$
	Correct mixed number	2	AB	$2\frac{2}{8}$ oe
Q10(b)	Valid check using estimation	1	C	e.g. $3\frac{1}{2} - 1 = 2\frac{1}{2}$ so my answer is correct
	Total marks for question	**3**		

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Question	Process	Mark	Mark Grid	Evidence
Q11	Begins process to work with ratio	1 or	A	1.44 ÷ 9 (=0.16) **OR** 9 ÷ 1.44 (=6.25)
	Full process to work with ratio for short or medium pieces	2	AB	'0.16' × 7 (=1.12) **or** '0.16' × 8 (=1.28) **OR** 8 ÷ '6.25' (=1.28) **or** 7 ÷ '6.25' (=1.12)
	Begins to work with total length of short vertical pieces or medium vertical pieces or horizontal pieces	1 or	C	6 × '1.12' (=6.72) **or** 5 × '1.28' (=6.4) **OR** 3 × 1.8 (=5.4)
	Full process to find total length of metal needed	2 or	CD	'6.72' + '6.4' + '5.4' + (2 × 1.44) (=21.4)
	Accurate figure	3	CDE	21.4 **or** 22
	Total marks for question	**5**		

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Question	Process	Mark	Mark Grid	Evidence
Q12(a)	Begins to complete table	1 or	A	Calculates at least 3 of: 3 | **13** | 18 | 34 **2** | 10 | 14 | **26** **5** | 23 | **32** | 60
	Correct table	2	AB	Calculates all of: 3 | **13** | 18 | 34 **2** | 10 | 14 | **26** **5** | 23 | **32** | 60
Q12(b)	Process to work with probability	1 or	C	$\frac{18}{60}$ oe **OR** $\frac{18}{a}$ $a > 18$ **or** $\frac{b}{60}$ $0 < b < 60$ where a and b are integers
	Accurate figure	2	CD	$\frac{3}{10}$
Q12(c)	Identifies correct probabilities	1 or	E	e.g. $\frac{18}{34}$ **or** $\frac{14}{26}$ identified **OR** $\frac{18}{34}$ (=0.5294..) oe **or** $\frac{14}{26}$ (=0.5384..)oe
	Valid decision with accurate figures	2	EF	e.g. No **AND** 0.52(94..) **and** 0.53(84..) oe Accept No **AND** 0.53 **and** 0.54 from supported working
	Total marks for question	**6**		