

**PEARSON EDEXCEL FUNCTIONAL SKILLS MATHEMATICS
MARK SCHEME – LEVEL 2 SET 4**

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

PMAT1/N04				
Question	Process	Mark	Mark Grid	Evidence
Q1	Process to work with sales	1	A	e.g. $114 - 19 - 57 (=38)$ OR $\frac{19 + 57}{114}$
	Expresses remaining sales as a fraction of all sales	1 or	B	e.g. $\frac{'38'}{114}$ oe OR $1 - \frac{'76'}{114} \left(= \frac{38}{114} \right)$ or $1 - \frac{'2'}{3}$ OR $\frac{19}{57}$ oe
	Accurate fraction in simplest form	2	BC	$\frac{1}{3}$
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q2a	Full process to work with ratio	1 or	A	$72 \div (4 + 5) \times 5 (=40)$
	Accurate figure	2	AB	40
Q2b	Valid check	1	C	Valid check e.g. $40 \div 5 = 8$ and $8 \times 9 = 72$ OR $72 \div (4 + 5) \times 4 = 32$ and $40 + 32 = 72$
Total marks for question		3		

Question	Process	Mark	Mark Grid	Evidence
Q3	Begins to work with costs	1 or	A	e.g. $33.25 + 29 (=62.25)$ OR $17.5 \times 3 (=52.5)$
	Develops solution	2 or	B	e.g. $33.25 + 29 (=62.25)$ and $17.5 \times 3 (=52.5)$ OR '62.25' – 17.5 (=44.75)
	Full process to find remaining balance	3 or	C	'62.25' – '52.5' (=9.75) oe
	Accurate figure	4	D	9.75
Total marks for question		4		

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Question	Process	Mark	Mark Grid	Evidence
Q4	Begins process to find volume	1 or	A	e.g. $8 \times 10 \div 2 (=40)$ OR $8 \times 10 \times 6 (=480)$
	Full process to find volume	2	AB	e.g. $'40' \times 6 (=240)$ OR $'480' \div 2 (=240)$
	Process to convert between kg and litres or finds total volume for 20 candles	1	C	e.g. $5 \times 1.2 (=6)$ OR $'240' \times 20 (=4800)$ NB Allow $'240'$ to be {volume} or {area}
	Process to convert between cm^3 and litres	1 or	D	e.g. $'6' \times 1000 (=6000)$ OR $'240' \div 1000 (=0.24)$ OR $'4800' \div 1000 (=4.8)$
	Full process to find figures to compare	2 or	DE	e.g. $'6000' \div '240' (=25)$ OR $'6' \times 1000 (=6000)$ and $'240' \times 20 (=4800)$ OR $5 \times 1.2 (=6)$ and $'4800' \div 1000 (=4.8)$ OR $'6' \div 20 (=0.3)$
	Valid decision with accurate figures	3	DEF	e.g. Yes AND 25 (candles) OR Yes AND 6000 (cm^3 available) and 4800 (cm^3 needed) OR Yes AND 6 (litres) and 4.8 (litres) OR Yes AND 0.24 (l per candle needed) and 0.3 (l per candle available)
Total marks for question		6		

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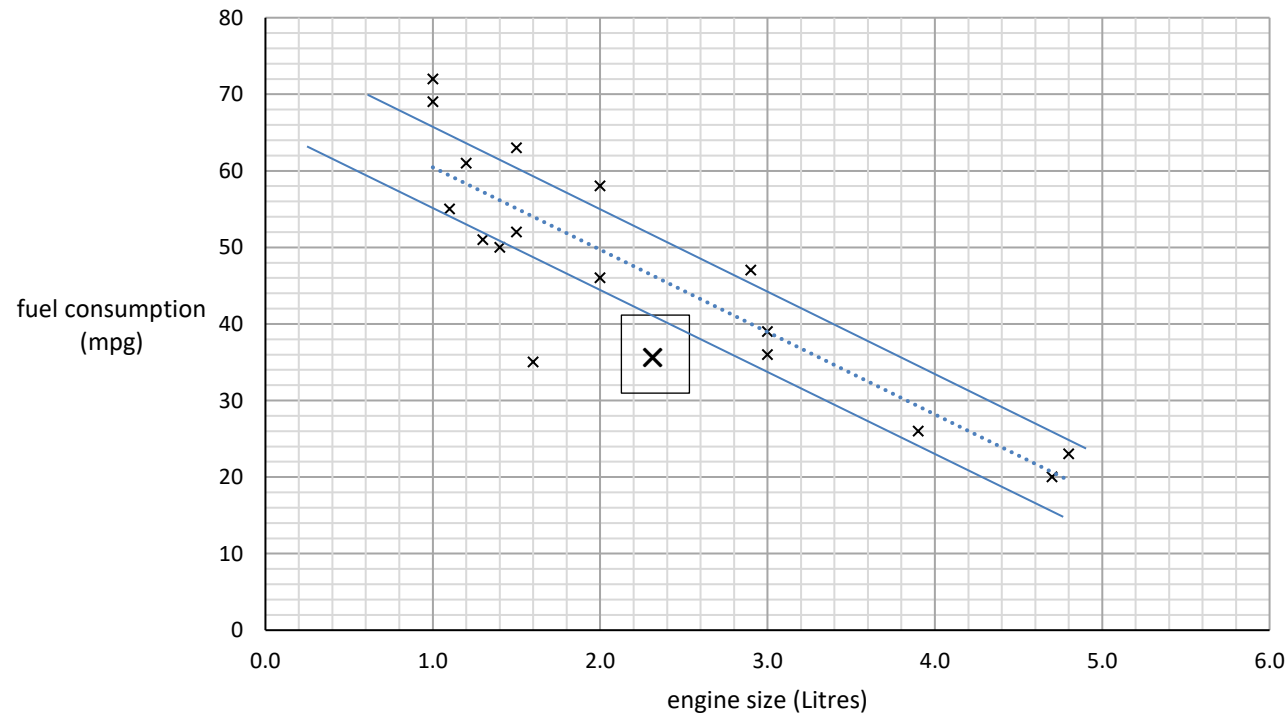
Section B (Calculator)

PMAT2/C04				
Question	Process	Mark	Mark Grid	Evidence
Q1	Begins to work with formula	1 or	A	e.g. $5 \times (350 - 32) (=1590)$ or $(350 - 32) \div 9 (=35.33..)$ OR $\frac{5(350 - 32)}{9}$ OR $190 \times 9 (=1710)$
	Full process to work with formula	2 or	AB	e.g. $5 \times (350 - 32) \div 9 (=176.66..)$ OR $5 \times (350 - 32) (=1590)$ and $190 \times 9 (=1710)$ OR $190 \times 9 \div 5 + 32 (=374)$
	Valid decision with accurate figure	3	ABC	e.g. No AND 176(.66..) (°C) OR No AND 1590 and 1710 OR No AND 374 (°F)
Total marks for question		3		

Question	Process	Mark	Mark Grid	Evidence
Q2	Engages with scale	1	A	e.g. $2 \times 5 (=10)$ or $4 \times 5 (=20)$ May be implied by correct dimensions on a diagram NB allow '6.3' $\times 5$ for this mark
	Draws a sketch of a cylinder	1	B	Correct sketch of a cylinder
	Labels dimensions accurately	1	C	Labels sketch with diameter as 10(cm) or radius as 5(cm) AND height as 20(cm)
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q3a	Correct plotting	1	A	Plots point (2.3, 36)
Q3b	Draws line of best fit	1	B	Line of best fit drawn
Q3c	Accurate figure	1	C	e.g. 26 ft accurate reading from their line of best fit
Q3d	Selects correct answer	1	D	Ticks negative
Total marks for question		4		



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Question	Process	Mark	Mark Grid	Evidence
Q4a	Accurate figure	1	A	7.2 oe
Q4b	Begins to convert between fractions, decimals and percentages, convert at least two values correctly to a common format or correctly orders four values	1 or	B	e.g. 2 of $47\% = 0.47$ $\frac{5}{9} = 0.55..$ $\frac{4}{7} = 0.57..$ OR e.g. 47%, 0.5, 0.53, $\frac{5}{9}$ NB award if correct reverse order given
	Correctly orders values	2	BC	47%, 0.5, 0.53, $\frac{5}{9}$, $\frac{4}{7}$ oe
Total marks for question		3		

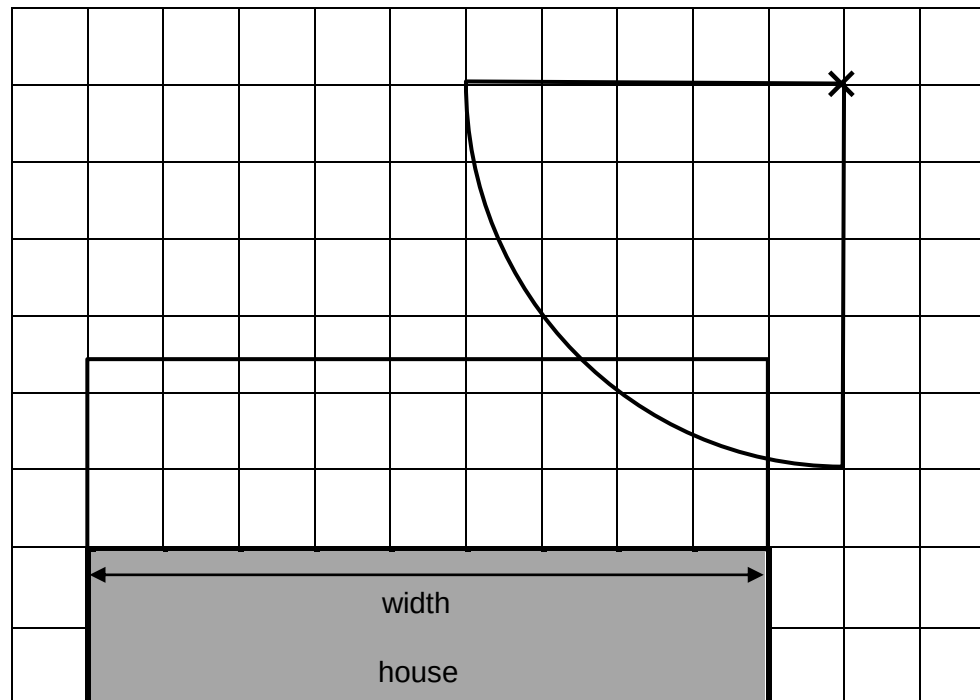
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Question	Process	Mark	Mark Grid	Evidence
Q5	Identifies mode	1	A	3.3
	Uses conversion graph to convert between kg and lb	1	B	e.g. 3.3(kg) = 7.2(lb) OR 7.7(lb) = 3.5(kg) May be seen in subsequent calculations
	Begins process to express change to fraction	1 or	C	e.g. $\frac{3.3 - 3.5}{3.5}$ (= -0.057..) or $\frac{7.2 - 7.7}{7.7}$ (= -0.064..)
	Full process to find percentage change	2 or	CD	e.g. $\frac{3.5 - 3.3}{3.5} \times 100$ (= 5.7..) or $\frac{7.7 - 7.2}{7.7} \times 100$ (= 6.4..) Note for pre-stand – consider {mode} and {conversion} for C and D
	Accurate figures with interpretation	3	CDE	e.g. 6 % decrease or -6%
Total marks for question		5		

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Question	Process	Mark	Mark Grid	Evidence
Q6a	Completes scale	1	A	4
Q6b	Begins to work with scale and constraints	1 or	B	e.g. draws extension 2.5sq long out from the house across the width of house OR draws arc 5sq radius from centre of tree or a line 5sq long from the tree in the direction of the house
	Valid decision with explanation	2	BC	Yes AND fully supportive and correct diagram.
Total marks for question		3		

Example solution for Q6b



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Question	Process	Mark	Mark Grid	Evidence
Q7	Process to find area of circle	1	A	e.g. $3.14 \times (52 \div 2)^2$ (=2122.64)
	Begins process to find curved surface area	1	B	3.14×52 (=163.28) OR 52×154 (=8008) OR $3.14 \times 52 \times 154$ (=25145.12)
	Full process to find total surface area	1 or	C	'2122.64' $\times$ 2 + '25145.12' (=29390.4) NB consider {}
	Valid decision with accurate comparable figures	2	CD	e.g. No AND 29390(.4) OR No AND 29405 NB accept use of π in place of 3.14 for all marks
Total marks for question		4		

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Question	Process	Mark	Mark Grid	Evidence
Q8a	Accurate probability	1	A	$\frac{118}{263}$ oe
Q8b	Begins to work with probability	1 or	B	$74 + 43 + 21 + 7 (=145)$ OR $1 - \frac{118}{263}$
	Accurate probability	2	BC	$\frac{145}{263}$ oe
Q8c	Begins to work with costs	1 or	D	e.g. $4200 \div 5 \times 2 (=1680)$ OR $24 \times 112.9 (=2709.6)$ OR $4200 - 24 \times 112.9 (=1490.6)$ OR $24 \times 112.9 + (4200 \div 5 \times 2) (=4389.6)$
	Full process	2 or	DE	e.g. $4200 - ('1680' + 24 \times 112.9) (= -189.6)$ OR $('1680' + 24 \times 112.9) - 4200 (=189.6)$
	Accurate figure	3	DEF	189.60
Total marks for question		6		

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Question	Process	Mark	Mark Grid	Evidence
Q9	Begins to express one amount as a percentage of another	1 or	A	e.g. $15 \div 92 \times 100 (=16.304..)$ or $110 \div 610 \times 100 (=18.032..)$ OR $15 \div 92 (=0.163..)$ or $110 \div 610 (=0.180..)$
	Full process to find figures to compare	2 or	AB	e.g. $15 \div 92 \times 100 (=16.304..)$ and $110 \div 610 \times 100 (=18.032..)$ OR '0.16..' $\times 610 (=99.45..)$ or '0.18..' $\times 92 (=16.59..)$
	Valid decision with accurate figures	3	ABC	e.g. Yes AND 16(.304..)(%) and 18(.032..)(%) OR Yes AND 99(.45..)(g of sugar would be in the cookie dough) or Yes AND 16.5(9..) (g of sugar would be in 92g of grapes) NB for pre-stand Allow use of 16% and 18% throughout. Consider allowing comparison of 0.163 and 0.18
Total marks for question		3		

Question	Process	Mark	Mark Grid	Evidence
Q10a	Full process to work with perimeter	1 or	A	$(38.2 - 13.9) \div 2 (=12.15)$
	Accurate figure	2	AB	12.15
Q10b	Valid check	1	C	selects correct calculation $\begin{array}{r} 40 - 14 \\ \hline 2 \end{array}$
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q11a	Accurate figure	1	A	0.068
Q11b	Begins process to work with compound interest	1 or	B	e.g. $3800 \div 100 \times 2.4 (=91.2)$ OR $(100 + 2.4) \div 100 (=1.024)$ NB PE 273.6 seen implies B mark
	Full process to work with compound interest for 3 years	2 or	BC	e.g. $3800 \times '1.024'^3 (=4080.218..)$ OR calculates each individual year (3891.2, 3984.5888, 4080.218..)
	Process to find amount of interest earnt	3 or	BCD	'4080.218..' – 3800 (=280.218..)
	Accurate figure	4	BCDE	280.21 or 280.22
Total marks for question		5		

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Question	Process	Mark	Mark Grid	Evidence
Q12	Full process to find an average	1 or	A	$(1562 + 1703) \div 2 (=1632.5)$ OR $(1348 + 1847 + 1760 + 1562 + 1240 + 1703) \div 6 (=1576.66..)$
	Accurate figure for average used	2	AB	1632 or 1632.5 or 1633 OR 1576 or 1576.6(6..) or 1577
	Full process to find range	1 or	C	$1847 - 1240 (=607)$
	Accurate figure	2	CD	607
	One simple comment comparing ft their mean or range	1 or	E	e.g. The average number of patients per person is lower than the national average OR The range is (much) smaller than nationally so are more consistent
	Fully comparative comments for both mean and range	2	EF	e.g. The average number of patients per person is lower than the national average and the range is (much) smaller than nationally so are more consistent
Total marks for question		6		