

**PEARSON EDEXCEL FUNCTIONAL SKILLS MATHEMATICS
MARK SCHEME – LEVEL 2 SAMPLE ASSESSMENT MATERIAL**

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Question	Process	Mark	Mark Grid	Evidence
Q1	Begins to work with ratio	1 or	A	$1500 \div (3 + 2 + 1)$ (=250) oe
	Full process to find the amount of blue paint	2 or	AB	'250' \times 2 (=500) oe
	Correct answer	3	ABC	500 (ml)
Total marks for question		3		

Question	Process	Mark	Mark Grid	Evidence
Q2	Process to multiply a consistent value of number of houses by frequency	1 or	A	e.g. 3×7 or 8×6 or 13×5 or 18×2 Allow use of 'midpoints' provided they are consistent and within an interval including the end points OR 21 and 48 and 65 and 36 seen (condone 1 error or omission)
	Full process to find the estimate of the mean	2 or	AB	$(3 \times 7 + 8 \times 6 + 13 \times 5 + 18 \times 2) \div (7 + 6 + 5 + 2)$ (=8.5) Allow use of 'midpoints' provided they are consistent and within an interval including the end points
	Accurate figure	3	ABC	8.5 Accept 8 or 9, supported by accurate working
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q3	Begins to work with 12 or 24 months, figure could be rounded, or difference in costs using rounded figures	1 or	A	e.g. $60 \times 24 (=1440)$ OR $10 \times 24 (=240)$ OR $60 - 10 (=50)$ OR $900 - 40 (=860)$
	Full process to find total cost of one offer or cost difference over 24 months	2 or	AB	e.g. '1440' + 40 (=1480) or '240' + 900 (=1140) OR '50' \times 24 (=1200) Allow using accurate figures for marks A and B only
	Full process to find total savings	3	ABC	e.g. '1480' – '1140' (=340) oe OR '1200' – '860' (=340) oe
	Valid decision with accurate figures supported by working	4	ABCD	e.g. Yes AND (£) 340
Total marks for question		4		

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Question	Process	Mark	Mark Grid	Evidence
Q4	Process to find the volume	1 or	A	$30 \times 100 \times 30 (=90\ 000)$
	Accurate figure for volume of water	2	AB	90 000 (cm ³) oe
	Process to convert between cm ³ and litres	1	C	e.g. '90 000' ÷ 1000 (=90)
	Uses the conversion rate appropriately or works with proportion	1 or	D	e.g. '90' ÷ 4.5 (=20) oe OR 10 gallons is 45 litres OR $36 \div 2 (=18)$ Calculations may be seen using a build-up method
	Full process to find figures to compare	2 or	DE	e.g. '20' × 2 (=40) OR '18' × 4.5 (=81) oe OR '90' ÷ 4.5 (=20) oe and $36 \div 2 (=18)$
	Valid decision with accurate figures	3	DEF	e.g. Yes AND 40 (fish) OR Yes AND 81 (litres) and 90 (litres) OR Yes AND 20 (gallons) and 18 (gallons)
Total marks for question		6		

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Section B (Calculator)

Question	Process	Mark	Mark Grid	Evidence
Q5(a)	Process to find the median	1 or	A	e.g. $(-2 + -9) \div 2 (= -5.5)$
	Writes a comparative statement	2	AB	e.g. -5.5 and the median value for set B is smaller than set A
Q5(b)	Valid check for the median	1	C	e.g. $'-5.5' \times 2 = -11$ and $-2 + -9 = -11$
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q6(a)	Completes sample space table	1	A	Correct cells in the table, see solution below.
Q6(b)	Accurate figure	1	B	$\frac{1}{36}$ oe
Q6(c)	Accurate figure	1	C	$\frac{6}{36}$ oe
Total marks for question		3		

Correct answer for Q6(a)

+	1	-2	3	-4	5	-6
-1	0	-3	2	-5	4	-7
2	3	0	5	-2	7	-4
-3	-2	-5	0	-7	2	-9
4	5	2	7	0	9	-2
-5	-4	-7	-2	-9	0	-11
6	7	4	9	2	11	0

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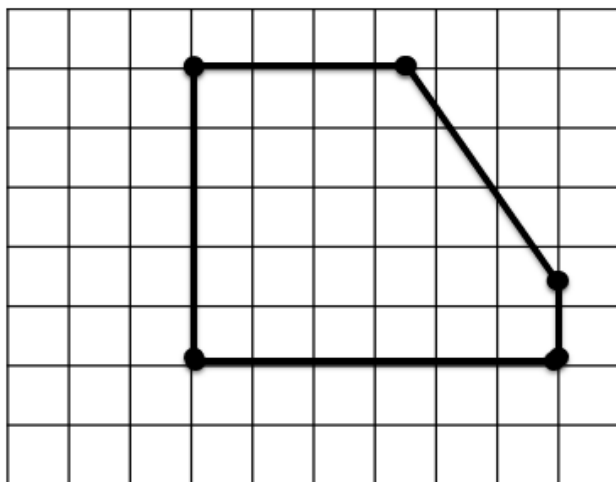
Question	Process	Mark	Mark Grid	Evidence
Q7	Begins the process to work with income	1 or	A	e.g. $2600 \times 12 (=31200)$ or $80 \times 39 (=3120)$ OR $80 \times 39 \div 12 (=260)$ OR $2600 \times 12 \div 52 (=600)$ or $80 \times 39 \div 52 (=60)$
	Process to find total annual or monthly or weekly income for both jobs	2	AB	e.g. $2600 \times 12 + 80 \times 39 (=34320)$ OR $'3120' \div 12 + 2600 (=2860)$ OR $2600 \times 12 \div 52 + 80 \times 39 \div 52 (=660)$
	A process to form an appropriate fraction	1 or	C	e.g. $\frac{'3120'}{\{\text{total}\}}$ or $\frac{'260'}{\{\text{total}\}}$ or $\frac{'60'}{\{\text{total}\}}$ Accept {total} to be the total of all income or the total of the office income annually or monthly or weekly
	Accurate figure (given as fraction in its simplest form)	2	CD	$\frac{1}{11}$
Total marks for question		4		

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Question	Process	Mark	Mark Grid	Evidence
Q8	Begins to draw front elevation	1 or	A	A rectangle 6 sq lengths by 5 sq lengths OR 2 of: $15 \div 3 (=5)$, $10.5 \div 3 (=3.5)$, $4.5 \div 3 (=1.5)$, $18 \div 3 (=6)$, $7.5 \div 3 (=2.5)$ OR Pentagon with at least 2 correct sides: 5, 3.5, 4.3, 1.5, 6 sq lengths and 2 right angles at the base OR Similar pentagon in incorrect scale
	Improves front elevation	2 or	AB	Pentagon with at least 3 correct sides: 5, 3.5, 4.3, 1.5, 6 sq lengths and 3 right angles OR Fully correct pentagon in incorrect orientation
	Correct front elevation	3	ABC	Pentagon with all correct sides: 5, 3.5, 4.3, 1.5, 6 sq lengths and 3 right angles in correct orientation
Total marks for question		3		

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Example of a fully correct answer for Q8



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Question	Process	Mark	Mark Grid	Evidence
Q9	Fully correct route	1	A	Route starts and ends at E and covers the total distance of between 15 and 20 km (between 9 and 12 miles) and goes through point C at least once e.g. E, D, C, A, F, E Can include going through the same point twice May be implied by subsequent calculations
	Converts between miles and km	1	B	e.g. $15 \times 0.6 (=9)$ or $20 \times 0.6 (=12)$ or $0.25 \div 0.6 (=0.41..)$ or ' 10 ' $\div 0.6 (=16.66..)$
	Process to find total distance for their route	1 or	C	e.g. $1.75 + 2.25 + 5.5 + 0.25 + 0.25 (=10)$ oe Must start and end at E and go through at least two other points
	Accurate distance figure for their route	2	CD	e.g. 10 or 16.66.. truncated or rounded to 1 d.p. or better
	Distance for their route with stated units	1	E	e.g. 10 miles or 16.6... km Award this mark for correct units stated even if figure for their distance is inaccurate
Total marks for question		5		

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Question	Process	Mark	Mark Grid	Evidence
Q10	Process to find area of one face	1 or	A	$2.5^2 (=6.25)$
	Full process to find surface area of the cube	2 or	AB	$6 \times 2.5^2 (=37.5)$
	Accurate figure	3	ABC	37.5
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q11(a)	Begins to work with percentage	1 or	A	$0.18 \times 389 (=70.02)$ oe OR $1 - 0.18 (=0.82)$ OR $330.98 \div 389 (=0.85..)$
	Full process to find figures to compare	2 or	AB	$'0.82' \times 389 (=318.98)$ oe OR $330.98 \div '0.82' (=403.63..)$ oe OR $1 - 0.18 (=0.82)$ and $330.98 \div 389 (=0.85..)$ OR $0.18 \times 389 (=70.02)$ and $389 - 330.98 (=58.02)$
	Valid decision with accurate figures	3	ABC	e.g. No AND (£)318(.98) (correct new price) OR No AND (£)403(.63..) (original price) OR No AND 82(%) and 85(.0.. %) oe OR No AND (£)70(.02) and (£)58(.02)
Q11(b)	Valid estimation check	1	D	e.g. $20 \div 100 \times 400 = 80$ is close to 70.02 or $80 \div 100 \times 400 = 320$ is close to 318.98 or $80 \div 100 \times 390 = 312$ is too far from 330.98
Total marks for question		4		

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Question	Process	Mark	Mark Grid	Evidence
Q12	Process to work with average	1	A	e.g. 56 identified (median) OR $(52 + 60 + 55 + 59 + 54 + 63 + 56) \div 7 (=57)$
	Begins to work with dimensions	1 or	B	$13600 \div 1000 (=13.6)$ or $2400 \div 800 (=3)$ OR $13600 \div 800 (=17)$ or $2400 \div 1000 (=2.4)$
	Full process to find the number of fridges	2	BC	'13' \times '3' (=39) OR '17' \times '2' (=34)
	Begins to work with load times	1 or	D	e.g. '56' \div 24 (=2.33..) or '57' \div 24 (=2.375)
	Full process to find figures to compare	2 or	DE	e.g. '39' \times '2.33..' (=91) or '39' \times '2.375' (=92.625) OR $90 \div$ '39' (=2.307..) OR Allow use of '34' for '39'
	Valid decision with accurate figures from their correct working	3	DEF	e.g. No AND 91 (mins) OR No AND 92(.625) (mins) OR No AND 2.30(7..) and 2.33(3..) (min per fridge)
Total marks for question		6		

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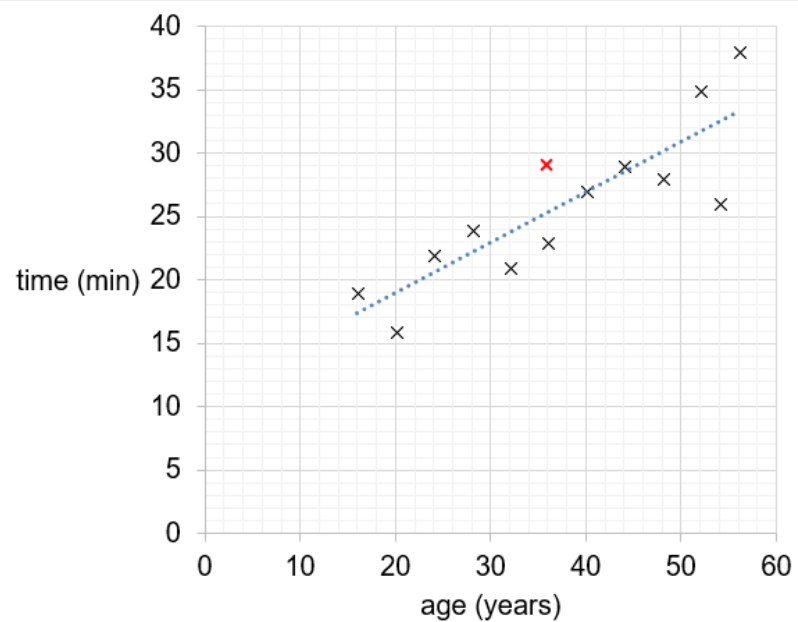
Question	Process	Mark	Mark Grid	Evidence
Q13	Begins to work with perimeter	1 or	A	$\pi \times 14$ (=43.9..) OR $48 - 6$ (=42) Allow use of 3.14 or better for π
	Full process to find figures to compare	2 or	AB	'43.9..' + 6 (=49.9..) OR $\pi \times 14$ (=43.9..) and $48 - 6$ (=42) OR $48 - '43.9..'$ (=4.01..)
	Valid decision with accurate figures	3	ABC	No AND 49(.9..) (inches) OR No AND 43(.9..) and 42 (inches) OR No AND 4(.01..) (inches for the overlap)
Total marks for question		3		

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Question	Process	Mark	Mark Grid	Evidence
Q14(a)	Correct plotting	1	A	Plots point (36,29)
Q14(b)	Correct line of best fit	1	B	Line of best fit placed correctly See guidance boxes on diagram, line must go in or pass through them
Q14(c)	Correct description of correlation	1	C	e.g. positive correlation (between age and time) OR an explanation in context e.g. as you get older it takes you longer to run the race
Total marks for question		3		

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Example of correct answer for Q14(b)



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Question	Process	Mark	Mark Grid	Evidence
Q15	Uses consistent units	1	A	e.g. 3.05(m) and 3.715(m) or 10 000(cm ²) May be seen or implied by subsequent working
	Process to find area	1	B	'3.05' × '3.715' ÷ 2 (=5.66..)
	Process to work with whole packs	1	C	'6' × 39.95 (=239.7) OR '26.63..' × '6' (=159.8) OR '6' ÷ 3 × 2 (=4) oe
	Process to work with fractional discount	1	D	'239.7' ÷ 3 × 2 (=159.8) oe OR 39.95 ÷ 3 × 2 (=26.63..) oe OR 39.95 × '4' (=159.8)
	Correct answer	1	E	159.80
Total marks for question		5		

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Question	Process	Mark	Mark Grid	Evidence
Q16(a)	Works with formula	1 or	A	$4.625 \times 34\ 000 (=157\ 250)$
	Full process to find the amount of deposit	2 or	AB	$175\ 000 - '157\ 250' (=17\ 750)$
	Accurate figure	3	ABC	17 750
Q16(b)	Begins to work with compound interest	1 or	D	$(100 + 2) \div 100 (=1.02)$ oe
	Full process to find the total amount	2 or	DE	e.g. $'4000' \times (1 + '0.02')^3 (= 4244.832)$ oe
	Accurate figure	3	DEF	4244.83(2) or 4244.84
Total marks for question		6		