

Functional Skills
Mathematics Level 2

Onscreen Practice Test 2
Mark Scheme

Functional Skills qualifications from Pearson

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- If working is **crossed out and still legible**, then it should be marked, as long as it has not been replaced by alternative work.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

Section A (Non-Calculator)

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|--|----------|-----------|--|
| Q1 | Begins process to divide 174 by 12 or finds maximum number of full boxes | 1 or | A | $\frac{1....}{174 \div 12 = 14 \text{ remainder } 6}$, $10 \times 12 = 120$ with remainder 54 OR $174 \div 12 = 14.5$ |
| | Process to evaluate 174 divided by 12 to get 14 and a remainder | 2 or | AB | e.g. 14 remainder 6 or 14.5 |
| | Accurate figure with supportive working | 3 | ABC | 15 NB This question requires working shown |
| Total marks for question | | 3 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|--|----------|-----------|--|
| Q2 | Forms a correct fraction in consistent units | 1 or | A | $12\frac{1}{2}$ or $\frac{12.5}{200}$ or $\frac{0.125}{2}$ |
| | Converts to a vulgar fraction | 2 or | AB | e.g. $\frac{12\frac{1}{2} \times 2}{200 \times 2} (= \frac{25}{400})$ |
| | Accurate figure with supportive working | 3 | ABC | $\frac{1}{16}$ NB This question requires working shown |
| Total marks for question | | 3 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|------------------------------|----------|-----------|--|
| Q3(a) | Begins to convert units | 1 or | A | $5 \times 12 (=60)$ or $8 \times 2.5 (=20)$ or $5 \times 12 + 8 (=68)$ or $2.5 \times 12 (=30)$ |
| | Finds figures to compare | 2 or | AB | e.g. $'60' \times 2.5 + 8 \times 2.5 (=170)$ or $'68' \times 2.5 (=170)$ OR $5 \times '30' + 8 \times 2.5 (=170)$ |
| | Accurate figure | 3 | ABC | 170 |
| Q3(b) | Valid check using estimation | 4 | D | e.g. $6 \times 30 = 180$ |
| Total marks for question | | 4 | | |

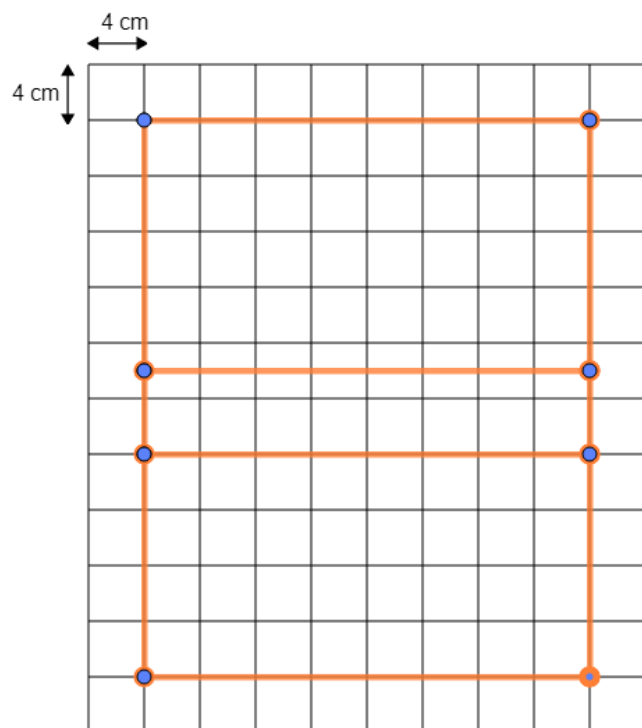
| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|---|----------|-----------|---|
| Q4 | Process to calculate height | 1 | A | $10 + 10 \div 2 (=15)$ |
| | Begins to evaluate formula | 1 or | B | $10 \times 10 (=100)$ |
| | Full process to evaluate formula | 2 | BC | $2 \times '100' \times '15' (=3000)$ |
| | Process to find total volume of resin in cm^3 or volume of resin in one stand in m^3 | 1 or | D | {volume} $\times 126 (=378000)$ OR {volume} $\div 1000000 (=0.003)$ |
| | Full process to find total volume required | 2 or | DE | '378000' $\div 1000000 (=0.378)$ OR '0.003' $\times 126 (=0.378)$ |
| | Accurate figure | 3 | DEF | 0.378 {volume} allow 1 conceptual error for the D and DE marks |
| Total marks for question | | 6 | | |

Section B (Calculator)

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|---|----------|-----------|---|
| Q5 | Begins process to find new number of toys | 1 or | A | $2700 \div 7.5 (=360)$ oe OR $9 \div 7.5 (= 1.2)$ or $7.5 \div 9 (= 0.83\dots)$ |
| | Full process to find new number of toys | 2 or | AB | $'360' \times 9 (=3240)$ OR $2700 \times '1.2' (=3240)$ or $2700 \div '0.83\dots' (=3240)$ |
| | Accurate figure | 3 | ABC | 3240 |
| Total marks for question | | 3 | | |

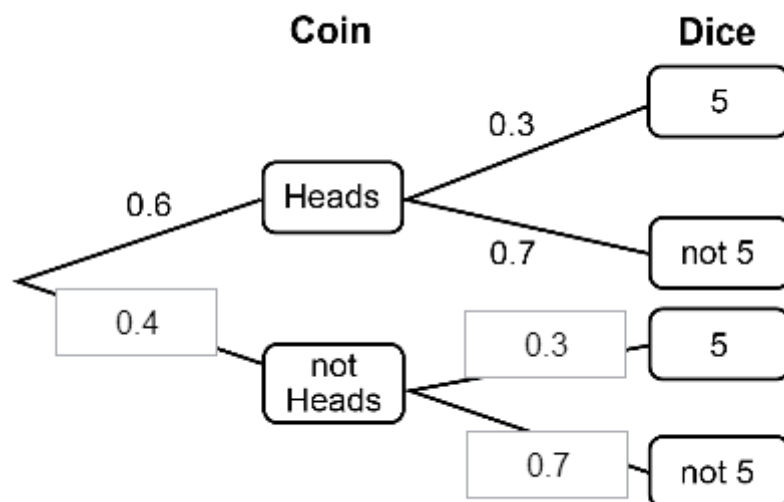
| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|-----------------------------------|----------|-----------|---|
| Q6 | Begins process to use scale | 1 or | A | e.g. draw a rectangle with 1 side length correct |
| | Begins process to draw front view | 2 or | AB | At least 2 rectangles as in the diagram (10 by 8 or 4 by 8) |
| | Correct diagram | 3 | ABC | Fully correct |
| Total marks for question | | 3 | | |

Example solution for question 6



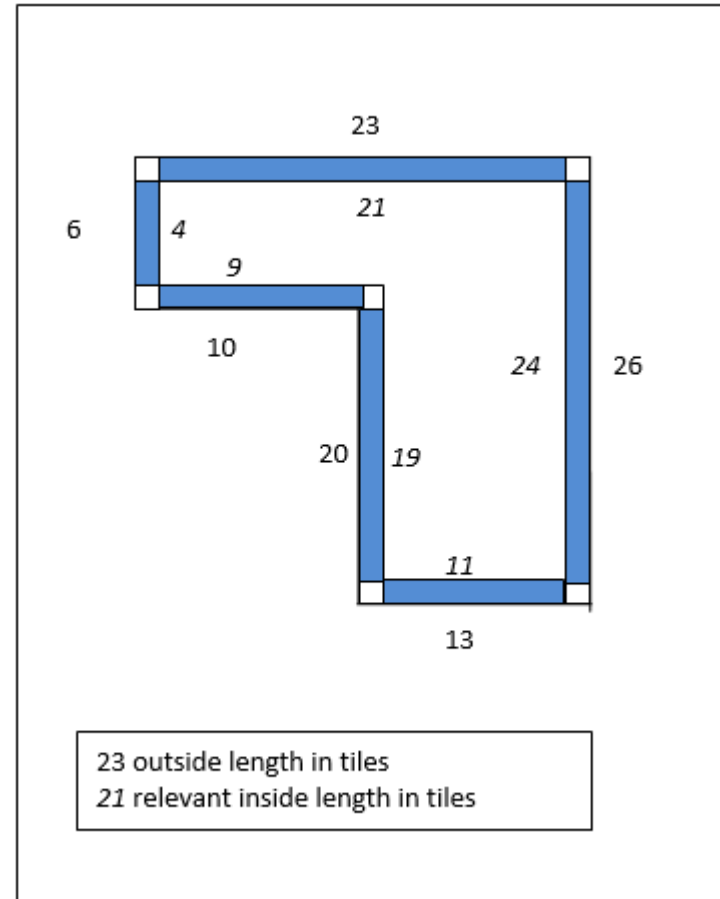
| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|---|----------|-----------|---|
| Q7(a) | Begins to complete the probability tree | 1 or | A | $1 - 0.6 (=0.4)$ OR 0.3 and 0.7 correctly placed |
| | Accurate figures correctly placed | 2 | AB | 0.4 and 0.3 and 0.7 |
| Q7(b) | Process to calculate probability | 1 or | C | $0.6 \times 0.3 (=0.18)$ |
| | Accurate figure | 2 | CD | 0.18 oe |
| Total marks for question | | 4 | | |

Correct solution for question 7(a)



| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|-----------------------|----------|-----------|--------------------------------------|
| Q8 | Accurate figures | 1 | A | (3, 4) |
| | Finds position of Q | 1 or | B | Marked with an \times at $(-2, 1)$ |
| | Accurate figures | 2 | BC | 100 ± 2 |
| Total marks for question | | 3 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|---|----------|-----------|--|
| Q9(a) | Process to find a needed length or number of tiles to cover an edge | 1 | A | e.g. $520 - 120 (=400)$ or $200 + 260 (=460)$ or $120 - 20 - 20 (=80)$ or $200 - 20 (=180)$ OR e.g. $520 \div 20 (=26)$ |
| | Process to find perimeter or begins to find number of tiles needed | 1 or | B | e.g. $520 \times 2 + '460' \times 2 (=1960)$ OR $'480' + '220' + '380' + '180' + '80' + '420' (=1760)$ OR At least 4 of $520 \div 20 (=26)$, $260 \div 20 (=13)$, $'400' \div 20 (=20)$, $'200' \div 20 (=10)$, $120 \div 20 (=6)$, $'460' \div 20 (=23)$ OR At least 4 of $'480' \div 20 (=24)$, $'220' \div 20 (=11)$, $'380' \div 20 (=19)$, $'180' \div 20 (=9)$, $'80' \div 20 (=4)$, $'420' \div 20 (=21)$ |
| | Full process to find number of tiles | 2 or | BC | $'1960' \div 20 - 2 \times 5 (=88)$ OR $'1760' \div 20 (=88)$ OR $'26' + '13' + '20' + '10' + '6' + '23' - 2 \times 5 (=88)$ OR $'24' + '11' + '19' + '9' + '4' + '21' (=88)$ |
| | Accurate figure | 3 | BCD | 88 |
| Q9(b) | Valid check | 1 | E | e.g. $90 \times 20 = 1800$, $88 - 24 - 11 - 19 - 9 - 4 = 21$ |
| Total marks for question | | 5 | | |



| Question | Process | Mark | Mark Grid | Evidence |
|--------------------------|----------------------------|------|-----------|---|
| Q10 | Addresses problem | 1 or | A | 2 correct of <ul style="list-style-type: none"> • True • False • Not enough information to tell • False |
| | Progresses through problem | 2 or | AB | 3 correct of <ul style="list-style-type: none"> • True • False • Not enough information to tell • False |
| | Accurate answers | 3 | ABC | All correct <ul style="list-style-type: none"> • True • False • Not enough information to tell • False |
| Total marks for question | | 3 | | |

Correct solution for question 10

| Statement | True | False | Not enough information |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| At least half the group P students have weekly pay of £350 or more | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The spread of weekly pay for group P is less than the spread of weekly pay for group Q | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| More group P students have weekly pay of £300 than group Q students have weekly pay of £289 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| The most common weekly pay for group P students is £350 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| Question | Process | Mark | Mark Grid | Evidence |
|--------------------------|------------------------------------|------|-----------|--|
| Q11(a) | Process to find median | 1 or | A | $(5 + 8) \div 2 (=6.5)$ |
| | Accurate figure | 2 | AB | 6.5 |
| Q11(b) | Valid decision with correct reason | 1 | C | e.g. No AND the line does not show negative correlation OR No AND the line slopes up but the points slope down OR No AND the line does not fit the data |
| Q11(c) | Accurate figure | 1 | D | 36 ± 4 |
| Total marks for question | | 4 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|--|----------|-----------|--|
| Q12 | Begins process to find an estimate for the mean | 1 or | A | e.g. at least 2 of 12×3 or 7×8 or 4×13 or 2×18 Allow use of 'midpoints' provided they are consistent and within an interval including the end points OR at least 2 of 36 or 56 or 52 or 36 seen |
| | Complete process to find an estimate for the mean number of speeding cars per hour | 2 | AB | $(\text{'36'} + \text{'56'} + \text{'52'} + \text{'36'}) \div 25 (=7.2)$ Condone 1 error |
| | Process to find comparable rates of speeding cars in the morning or afternoon | 1 | C | $18 \div 2 (=9)$ OR $\text{'7.2'} \times 2 (=14.4)$ |
| | Begins process to work with percentage | 1 or | D | $\text{'9'} \div \text{'7.2'} \times 100 (=125)$ OR $100 + 20 (=120)$ OR $\text{'7.2'} \times 0.20 \text{ oe } (=1.44)$ OR $\text{'14.4'} \times 0.20 \text{ oe } (=2.88)$ |
| | Full process to find figures to compare | 2 | DE | $\text{'125'} - 100 (=25)$ OR $\text{'9'} \div \text{'7.2'} \times 100 (=125)$ and $100 + 20 (=120)$ OR $\text{'7.2'} + \text{'1.44'} (=8.64)$ OR $\text{'14.4'} + \text{'2.88'} (=17.28)$ |
| | Valid decision with accurate figures | 3 | DEF | No AND 25 (%) OR No AND 120 (%) and 125 (%) OR No AND 9 and 8.64 OR No AND 18 and 17.28 |
| Total marks for question | | 6 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|--------------------------|--------------------------|------|-----------|------------------------------|
| Q13 | Process to work out base | 1 | A | $32 - 10 - 10 (=12)$ |
| | Process to work out area | 1 or | B | $8 \times '12' \div 2 (=48)$ |
| | Accurate figure | 2 | BC | 48 |
| Total marks for question | | 3 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|--------------------------|---------------------------------|------|-----------|--|
| Q14 | Converts ratio to fraction | 1 or | A | $\frac{7}{2+7} \left(= \frac{7}{9} \right)$ |
| | Full process to find percentage | 2 or | AB | $'\frac{7}{9}', \times 100 (=77.77\dots)$ oe |
| | Accurate figure correct to 1 dp | 3 | ABC | 77.8 |
| Total marks for question | | 3 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|---|----------|-----------|---|
| Q15 | Process to find income | 1 | A | $25 \times 374 (=9350)$ |
| | Begins process to find new ticket price | 1or | B | $25 \times \frac{12}{100} (=3)$ oe OR $(100 - 12) \div 100 (=0.88)$ |
| | Full process to find new ticket price | 2 | BC | $25 - '3' (=22)$ OR $25 \times '0.88' (=22)$ |
| | Full process to find figures to compare | 1or | D | $'9350' \div '22' (=425)$ OR $400 \times '22' (=8800)$ OR $'9350' \div 400 (=23.37(5))$ |
| | Valid decision with accurate figures | 2 | DE | No AND 425 OR No AND (£)9350 and (£)8800 OR No AND (£)23(.375) and (£)22 |
| Total marks for question | | 5 | | |

| Question | Process | Mark | Mark Grid | Evidence |
|---------------------------------|--|----------|-----------|---|
| Q16(a) | Process to find area of metal in a circular end | 1 or | A | $\pi \times 21^2$ (=1385.45...) |
| | Accurate figure | 2 | AB | [1384, 1386] |
| Q16(b) | Process to find value of x | 1 or | C | $2 \times \pi \times 21$ (=131.94...) |
| | Accurate figure | 2 | CD | [131.8, 132] |
| Q16(c) | Process to find area of curved surface of cylinder | 1 or | E | $2 \times \pi \times 21 \times 60$ (=7916.81...) |
| | Accurate figure | 2 | EF | [7908, 7920] NB Allow use of 3.14 or better as π |
| Total marks for question | | 6 | | |