**NCFE Level 2 Functional Skills Qualification in Mathematics (603/5060/X)**

Mark scheme: P001761

v1.8 Post refresher standardisation 30.01.2023

**Examiner Mark Scheme Guidance**

**Information**

This guidance is intended to support NCFE examiners in the valid, reliable and consistent application
of the relevant mark scheme version, against learner evidence generated during their external
assessment.

This mark scheme provides:

* the total marks available for each question
* the subject content reference for each mark
* example process/methods and evidence of the types of responses expected for each mark
* (once confirmed) the pass mark for the relevant assessment version.

This mark scheme **must** be used for paper-based and online marking of the assessment version indicated**.**

**Instructions and guidance on application**

* All learners must receive the same treatment and should be marked fairly. Examiners must
mark the first learner in exactly the same way as they mark the last.
* Mark schemes should be applied positively. Learners must be rewarded for what they have
shown they can do rather than penalised for things they have not done.
* Examiners should always award full marks if deserved, i.e. if the answer matches the mark
scheme. Half marks must not be awarded.
* Examiners should be prepared to award zero marks if the learner’s response is not worthy
of credit according to the mark scheme.
* The mark scheme is a working document and may be added to at the standardisation to reflect
valid alternative answers given by a learner.
* When in doubt regarding the application of the mark scheme to a learner’s response, the Chief Examiner must be consulted.

This mark scheme provides the following information:

* section and activity information
* question number
* total marks available per question (top row, shaded) followed by
* attribution of individual marks per question
* problem solving (PS) and underpinning skill (UPS) attribution
* process/method or answers, as well as additional or alterative evidence; indicative of the

subject content (SC) attribution

* any additional guidance, as required.

To support the valid, reliable and consistent marking of learner evidence, the following abbreviations
are applied throughout the mark scheme:

|  |  |
| --- | --- |
| **Annotation** | **Explanation and use** |
| **FT** | Follow through marks are applied when there are earlier arithmetic mistakes in the method. |
| **OE** | Or equivalent marks are available for the justification of the answer being presented in a different form to the mark scheme i.e. 0.5 or ½. |
| **CAO** | Correct answer only.  |
| **Their** | ‘Their’ refers to the learners’ own derived values. |
| **Seen** | Seen refers to the requirement to see the stated value in the learner’s response or working out.  |
| **Imp** | Implied refers to the learner’s response implying correct working out used but not seen. |
| **Brackets** | Indicates units are not required on final answers or for answers seen within working. |
| **BOD** | Benefit of doubt where learner handwriting may be difficult to interpret but previous working may indicate correct final answer. |
| **Shaded** | Indicates requirements for full marks to be awarded. |
| **ColouredSC box** | **On-screen only:** indicates where SC ref will appear out of order in the Learning Outcomes marking screen |

**Version Control**

Mark schemes are subject to version control. Examiners **must** ensure they have access to the latest version following each standardisation event.

Over time mark schemes will incorporate additional evidence captured and confirmed during standardisation events. Any additional evidence criteria will be captured in colour-coded text applicable
to the dated standardisation event.

**Recording of marks**

*Paper-based:* Individual marks should be annotated in the ‘Examiner’ column in the learner script,
added up and recorded at the end of each activity. The overall marks awarded for each learner
should be clearly and legibly recorded in the grid on the front of the learner script.

*Online:* Onscreen marking tools (i.e. ticks, crosses) marks should be applied to indicate application throughout the learner script, in addition to marks being recorded numerically within the corresponding ‘Learning Outcomes’ box, indicated by the relevant Subject Content reference.

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| --- | --- |
| **Annotation** | **Explanation and use** |
| **Tick** | Used to indicate correct values/method or final answer. |
| **Red highlight** | Used to indicate where the learner has made an error in either the value used or an incorrect calculation.  |
| **Red line box** | Used to indicate where the learner may have made an error that has resulted in benefit of doubt being applied i.e. transposition of figures but previous working clearly shows otherwise. |

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| **Paper number: P001761**  | **Version: 1.8 30.1.2023** | **Pass mark: 35** |
| **(Section A) Activity 1: Recruitment agency (Non-calculator Test)** |
| **Q** | **Marks** | **UPS / PS** | **Process and Answer** | **Additional or Alternative Evidence (with guidance)** | **SC** |
| **1 (a)** | **2** | **UPS** | 18.75(%) | Award 2 marks if correct answer given |  |
| 1 |  | 15 × 100 ÷ 80 | OE Any full correct method× 100 may be implied by their answer | N5b |
| 1 |  | 18.75(%) | CAOAward if rounded to 19 or 18.8 with 18.75 seen | N5b |
| **1 (b)** | **1** | **UPS** | 0.2, 0.2042, 0.24, 0.2402 | Allow Q4, Q1, Q3, Q2 | N9a |
| **1 (c)** | **2** | **PS** | See below |  |  |
| 1 |  | 6.25 and 6.2 OR$\frac{375}{60}$ and $\frac{372}{60}$ OR625(%) and 620(%) | OE any full correct methodAward if works with 2 consistent values | N7b |
| 1 |  | Yes AND 6.25 and 6.2 ORYes AND $\frac{375}{60}$ and $\frac{372}{60}$ ORYes AND 625(%) and 620(%) | OE Yes or valid comment implying yes supported by correct working | N7b |
| **1 (d)** | **5** | **PS** | (£)9.50 | Award 5 marks if correct answer given |  |
| 1 |  | 3 × (2000 ÷ 5) + 320 | OE full substitution | N3 |
| 1 |  | 1520 | CAOImplies 1st mark | N12 |
| 1 |  | 160 | Mode identified | H23b |
| 1 |  | Their 1520 ÷ their 160 or 9.5 | Their 1520 must come from correct substitution into formulaTheir 160 must be in range [160,165]OE any full correct method | N11a |
| 1 |  | (£)9.50 | FT their values from correct methods Must be a correct to 2dp result for their their 1520 ÷ their 1602 dp required | M13a |
| **1 (e)** | **1** | **UPS** | 63.254 | CAO | N10b |
| **1 (f)** | **4** | **PS** | See below |  |  |
| 1 |  | 21 or 22 | At least one correct mean | H25 |
| 1 |  | 23 or 20  | At least one correct median | H25 |
| 1 |  | 21 and 22 AND 23 and 20 | If 1st mark and 2nd mark not awarded, award 1 mark for correct method for at least one mean or median | H25 |
| 1 |  | Valid comment for both mean AND median  | FT their means and medians if in range of 14 – 26 and 17 – 29  | H25 |

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| **(Section B) Activity 2: Cargo ships (Calculator Test)** |
| **Q** | **Marks** | **UPS / PS** | **Process and Answer** | **Additional or Alternative Evidence (with guidance)** | **SC** |
| **2 (a)** | **1** | **UPS** | 11 107 000 000 | CAO | N1a |
| **2 (b)** | **2** | **UPS** | See below |  |  |
| 1 |  |  | Correct plan viewAllow the rectangle to touch the edges of the pentagonAccept any orientationMark intention | M21 |
| 1 |  |  | Correct side elevation Accept any orientationMark intentionAllow the rectangle placed in line with the vertical line of the trapezium | M21 |

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| **2 (c)** | **5** | **PS** | 3630 (tonnes) | Award 5 marks if correct answer given |  |
| **Alternative method 1 (Changing feet into metres)** |
| 1 |  | 40 × 12 ÷ 39 or 12.3(0…) OR8 × 12 ÷ 39 or 2.4(6…) OR8.5 × 12 ÷ 39 or 2.6(1…) OR39 ÷ 12 or 3.25 | OE any full correct method | M14a |
| 1 |  | 40 × 12 ÷ 39 or 12.3(0…) AND8 × 12 ÷ 39 or 2.4(6…) AND8.5 × 12 ÷ 39 or 2.6(1…)  | OE any full correct methodAllow use of their 3.25 as conversion factor which must come from 39 ÷ 12 12.3(0…), 2.4(6…) and 2.6(1…) implies 1st mark  | M14a |
| 1 |  | 25 ÷ their 12.3(…) or 2.(03…) OR25 ÷ their 2.4(6..) or 10.(15…) OR15 ÷ their 2.4(6..) or 6.(09…) OR29 ÷ their 2.6(1..) or 11.(08…)  | Their 12.3(…), 2.4(6…), 2.6(1…) must come from correct process to convert feet into metres OE any full correct method2 or 10 or 6 or 11 implies mark 12 and 6 and 11 implies first 2 marksTheir 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number | N11a |
| 1 |  | (Their 2 × their 6 × their 11) × 27.5  | Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole numberAccept 137 × 27.5, if 137 derived from volume calculation or 136 x 27.5 from roundingAccept 110 × 27.5, if 110 derived from calculation of load in different orientation | N9b |
| 1 |  | 3630 (tonnes) | CAO  | N11a |
| **Alternative method 2 (Changing metres into feet)** |
| 1 |  | 25 × 39 ÷ 12 or 81.25 OR15 × 39 ÷ 12 or 48.75OR29 × 39 ÷ 12 or 94.25 OR39 ÷ 12 or 3.25 | OE any full correct method | M14a |
| 1 |  | 25 × 39 ÷ 12 or 81.25 AND15 × 39 ÷ 12 or 48.75 AND29 × 39 ÷ 12 or 94.25 | OE any full correct method Allow use of their 3.25 as conversion factor which must come from 39 ÷ 1281.25, 48.75 and 94.25 implies 1st mark | M14a |
| 1 |  | Their 81.25 ÷ 40 or 2.(03…) ORtheir 81.25 ÷ 8 or 10.(15…)ORtheir 48.75 ÷ 8 or 6.(09…) ORtheir 94.25 ÷ 8.5 or 11.(08…) | Their 81.25, 48.75, 94.25 must come from correct process to convert metres into feetOE any full correct method2 or 10 or 6 or 11 implies mark 12 and 6 and 11 implies 1st 2 marksTheir 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number | N11a |
| 1 |  | (Their 2 × their 6 × their 11) × 27.5 or 3630 | Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole numberAccept 137 × 27.5, if 137 derived from volume calculation or 136 x 27.5 from rounding Accept 110 × 27.5, if 110 derived from calculation of load in different orientation | N9b |
| 1 |  | 3630 (tonnes) | CAO  | N11a |
|  | **Alternative method 3 ( Working in inches)** |
| 1 |  | 25 × 39 or 975OR15 × 39 or 585OR29 × 39 or 1131OR40 × 12 or 480 OR8 × 12 or 96OR8.5 × 12 or 102 | OE any full correct method | M14a |
| 1 |  |  25 × 39 or 975AND15 × 39 or 585AND29 × 39 or 1131OR40 × 12 or 480 AND8 × 12 or 96AND8.5 × 12 or 102 | OE any full correct methodAward for any three correct conversions, eg. 2 from metres to inches and 1 from feet to inches | M14a |
| 1 |  | 975 ÷ 480 or 2.(03…)OR585 ÷ 96 or 6.(09…)OR1131 ÷ 102 or 11(.08…) | Their 975, 480, 585, 96, 1131 and 102 must come from correct process to convert metres and feet into inchesOE any full correct method2 or 10 or 6 or 11 implies 1st mark 2 and 6 and 11 implies 1st 2 marksTheir 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number | N11a |
| 1 |  | (Their 2 × their 6 × their 11) × 27.5 or 3630 | Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole numberAccept 137 × 27.5, if 137 derived from volume calculation or 136 x 27.5 from rounding Accept 110 × 27.5, if 110 derived from calculation of load in different orientation | N9b |
|  | 1 |  | 3630 (tonnes) | CAO | N11a |
| **2 (d)** | **4** | **PS** | Yes and 8.(4525) (people)ORYes and 4.2(2... people) and 4 (people)ORYes and 26(.66...m2) and 28(.175 m2)ORYes and 3.5(…) (people) AND 3.3 (people) | Award 4 marks if correct answer given |  |
| **Alternative method 1 (using area of triangle)** |
| 1 |  | (6.1 – 5.4) × 4.9 × 0.5 or 1.715 or 1.72OR(6.1 – 5.4) × (4.9 ÷ 2) × 0.5 or 0.8575 | OE any full correct method to find the area of a triangle | M16b |
| 1 |  | Their 1.715 + (5.4 × 4.9) or(2 × their 0.8575) + (5.4 × 4.9) or(6.1 × 4.9) – (2 × their 0.8575) or 28.175ORtheir 0.8575 + (5.4 × 4.9 ÷ 2) or 14.0875 | OE Any full correct method to find area of shape or one half of shapeTheir 1.715 or their 0.8575 must come from correct method to calculate the area of a triangle28.175 or 14.0875 implies first 2 marks | M16b |
| 1 |  | Their 28.175 ÷ (10 ÷ 3) or 8.4(525) ORtheir 14.0875 ÷ (10 ÷ 3) or 4.2(2...)OR(10 ÷ 3) × 8 or 26(.66...) AND their 28.175 | OE Any full correct method to find actual number of people or to find figures to compareTheir 28.175 or their 14.0875 must come from correct method to calculate the total area or half of the area8.4(525) or 4.2(2…) or 14.0875 or 26(.66…) and 28.175 implies first 2 marksAward mark for 5 and an equivalent statement clarifying 13.2 m2 needed for 4 people implies 14.0(875 m2) fits less than 4 people | N11a |
| 1 |  | Yes and 8.(4525) (people)ORYes and 4.2(2... people) and 4 (people)ORYes and 26(.66...m2) and 28(.175 m2) | OE Yes and 8 people must be supported by correct working Award if 8 implied by valid comment, e.g. 6 (from using area of rectangle) seen with enough for 2 more people (from using area of triangle) | N11a |
| **Alternative method 2 (trapezium – not expected)** |
| 1 |  | 0.5 × (4.9 ÷ 2) × (6.1 + 5.4) OR(4.9 ÷ 2) × (6.1 + 5.4) | OE any full correct method to find area of a trapezium  | M16b |
| 1 |  | 14.0875 OR28.175 | Their 14.0875 or 28.175 must come from correct method 14.0875 or 28.175 implies 1st mark | M16b |
| 1 |  | Their 28.175 ÷ (10 ÷ 3) or 8.4(525) ORtheir 14.0875 ÷ (10 ÷ 3) or 4.2(2...)OR(10 ÷ 3) × 8 or 26(.66...) AND their 28.175 | OE Any full correct method to find actual number of people or to find figures to compareTheir 28.175 or their 14.0875 must come from correct method to calculate the total area or half of the area8.4(525) or 4.2(2…) or 14.0875 or 26(.66…) and 28.175 implies first 2 marksAward mark for 5 and an equivalent statement clarifying 13.2 m2 needed for 4 people implies 14.0(875 m2) fits less than 4 people | N11a |
| 1 |  | Yes and 8.(4525) (people)ORYes and 4.2(2... people) and 4 (people)ORYes and 26(.66...m2) and 28(.175 m2) | OE Yes supported by correct working  | N11a |
|  | **Alternative method 3**  |
| 1 |  | 0.5 × (4.9 ÷ 2) × (6.1 + 5.4) OR(4.9 ÷ 2) × (6.1 + 5.4) | OE any full correct method to find area of a trapezium | M16b |
| 1 |  | 14.0875 OR28.175 | Their 14.0875 or 28.175 must come from correct method14.0875 or 28.175 implies 1st mark | M16b |
| 1 |  | Their 28.175 ÷ 8 or 3.5 AND10 ÷ 3 or 3.3(…)  | 28.175 implies 1st two marks Their 28.175 must come from correct method to calculate the total area  | N11a |
| 1 |  | Yes and 3.5(…) (people) AND 3.3 (people) | OE Yes supported by correct working | N11a |
| **2 (e)** | **3** | **PS** | 276 (hours) | Award 3 marks if correct answer given |  |
| 1 |  | 24 | CAO | H28 |
| 1 |  | 6631 ÷ their 24 or 276.(291…) | Their 24 must be values in range [19, 27.5] | M15 |
| 1 |  | 276 (hours) | FT their 24 must be value in range [19, 27.5] Only award FT if 1st mark not awarded | N9b |
| **Activity 3: Driveway (Calculator Test)** |
| **Q** | **Marks** | **UPS / PS** | **Process and Answer** | **Additional or Alternative Evidence (with guidance)** | **SC** |
| **3 (a)** | **2** | **PS** | Yes AND (£)3807.47 or (£)3807 | Award 2 marks if correct answer given |  |
| 1 |  | 3500 × 1.0432 or 3807.4715 | OE any full correct method | M13b |
| 1 |  | Yes AND (£)3807(.47) or (£)3807 | OE Yes supported by correct working2 decimal places required | M13b |
| **3 (b)** | **4** | **PS** | No AND 56(.52) or 57ORNo AND 1413 and 1500 | Award 4 marks if correct answer given |  |
| **Alternative method 1 (scale first)** |
| 1 |  | 2.25 × 200 or 450 | OE any full correct method of using the scale Accept any use of consistent units | M18a |
| 1 |  | 3.14 × their 450 or 1413(cm) | OE any full correct method to find semi-circumference Allow use of $π$Accept [1413, 1413.71…] | M16a |
| 1 |  | Their 1413 ÷ (250 ÷ 10) or 56.52OR60 × (250 ÷ 10) or 1500 | OE any full correct method Their 1413 must come from correct method to calculate the semi-circumference 56.52 implies first 2 marksAccept [56.52, 56.55] | N11a |
| 1 |  | No AND 56(.52) or 57ORNo AND 1413 and 1500 | OE No supported by valid workingAccept [56.52, 57] or [1413, 1413.71…] implies 1st mark | N11a |
| **Alternative method 2 (circumference first)** |
| 1 |  | 3.14 × 2.25 or 7.065 | OE any full correct method Allow use of $π$Accept [7.065, 7.068]Accept any use of consistent units | M16a |
| 1 |  | Their 7.065 × 200 or 1413 | OE any full correct method of using the scale Accept [1413, 1413.71…] | M18a |
| 1 |  | Their 1413 ÷ (250 ÷ 10) or 56.52OR60 × (250 ÷ 10) or 1500 | OE any full correct method Their 1413 must come from correct method to calculate the semi-circumference 56.52 implies first 2 marksAccept [56.52, 56.55] | N11a |
| 1 |  | No AND 56(.52) or 57ORNo AND 1413 and 1500 | OE No supported by valid workingAccept [56.52, 57] or [1413, 1413.71…] implies 1st mark | N11a |
| **3 (c)** | **3** | **PS** | (£)2176.56 or (£)2176.57 | Award 3 marks if correct answer given |  |
| 1 |  | (50 × 31) + (2.5 × 375) or 2487.5 | OE any full correct method | M13a |
| 1 |  | Their 2487.5 × 0.875 or 2176.5625 | OE any full correct method2487.5 must come from correct method2176.5625 implies 1st mark | M13b |
| 1 |  | (£)2176.56 or (£)2176.57 | CAO | M13b |
| **3 (d)** | **2** | **PS** | Yes AND 172.5 (°) ORYes AND 357.5(°) and 360(°) | Award 2 marks if correct answer given |  |
| **1** |  | 360 – 90 – 90– 7.5 or 172.5OR170 + 90 + 90 + 7.5 | OE any full correct method | M22a |
| **1** |  | Yes AND 172.5(°) ORYes AND 357.5(°) and 360(°) | OE Yes supported by correct working | M22a |
| **3 (e)** | **2** | **UPS** | See below |  |  |
| 1 |  | (4, – 3) indicated correctly | CAO | M19 |
| 1 |  | (−1, −4) indicated correctly | CAO FT their point *C* to make a parallelogram | M22b |
| **3 (f)** | **2** | **UPS** | (£)45 | Award 2 marks if correct answer given |  |
| 1 |  | 36.9(0) ÷ 0.82 | OE any full correct method | N6b |
| 1 |  | (£)45 | CAO | N6b |
| **Activity 4: Care work (Calculator Test)** |
| **Q** | **Marks** | **UPS / PS** | **Process and Answer** | **Additional or Alternative Evidence (with guidance)** | **SC** |
| **4 (a)** | **4** | **PS** | (£)376.39 or (£)376.40 or (£)372.40 or (£)376.31 or (£)376.12 | Award 4 marks if correct answer given |  |
| **Alternative method 1** |
| 1 |  | (37 × 5) + (40 × 4) + (43 × 3) + (46 × 2) or 185 + 160 + 129 + 92 or 566 | Midpoints must be used | H24 |
| 1 |  | 40.4(...) | CAOAccept 40.43 | H24 |
| 1 |  | 9.31 × their 40.4(.2..) or 376.39 | OE any full correct methodTheir 40.4(.2…) can be from consistent use of upper or lower bounds and ÷ 14 or ÷ 4  | M13a |
| 1 |  | (£)376.39 | Allow (£)376.40 or (£)372.40 or (£)376.31 or (£)376.122 dp required  | M13a |
| **Alternative method 2** |
| 1 |  | Any two of:37 × 9.31 or 344.47 40 × 9.31 or 372.4 43 × 9.31 or 400.33 46 × 9.31 or 428.26 | Award 1 mark for any two mid points x 9.31 | M13a |
| 1 |  | (their 344.47 × 5) + (their 372.4 × 4) + (their 400.33 × 3) + (their 428.26 × 2) or 5269.46 | OE Any full correct methodTheir values must come from correct method5269.46 implies 1st mark | H24 |
| 1 |  | Their 5269.46 ÷ 14 | OE any full correct method5269.46 must come from correct methodAccept if ÷ 4 used | H24 |
| 1 |  | (£)376.39 | Allow (£)376.40 or (£)372.40 2 dp required | M13a |
| **4 (b)** | **4** | **PS** | See below |  |  |
| 1 |  | 13, 14, 15, 16, 18, … or19, 19, 18, 18, 16OR(16 + 18) ÷ 2 | OE any full correct method | H23a |
| 1 |  | 17 | CAO implies1st mark | H23a |
| 1 |  | $\frac{18 - their 17}{18}×100$  | OE any full correct methodTheir 17 can be any value between 13 and 19 | N6a |
| 1 |  | 5(.55…)(%) or –5(.55…)(%) or 6(%) | FT their 17 from correct method for median calculationAccept any correct rounding or truncating | N6a |
| **4 (c)** | **2** | **UPS** | 31.25(%) | Award 2 marks if correct answer given |  |
| 1 |  | $\frac{5}{16}$  | OE  | H26 |
| 1 |  | 31.25(%) | FT their fraction providing the numerator is 5 or the denominator is 16Award if rounded to 31(%) with 31.25 seen | H27 |
| **4 (d)** | **1**  | **UPS** | $\frac{104}{120}$ or $\frac{13}{15}$ | OE | N8 |
| **4 (e)** | **4** | **PS** | No AND (£)484.54 or (£)484.55ORNo AND (£)734(.16) and (£)757(.57) or (£)757(.58) | Award 4 marks if correct answer given |  |
| 1 |  | 10.5 × 1.04 or 10.92OR10.5 × 0.04 or 0.42 OR46 × 38 × 10.50 × 1.04 or 19088.16 OR46 × 38 × 10.50 × 0.04 or 734.16OR0.04 × 0.66 or 0.0264 | OE any full correct method | N6a |
| 1 |  | (Their 10.92 – 10.5) × 38 × 46 ORtheir 0.42 × 38 × 46 ORtheir 19088.16 – (46 x 38 x 10.5) OR38 × 46 × their 0.0264 or 46.1472 | OE any full correct methodTheir 10.92 and 0.42 must come from correct percentage method734.16 or 46.1472 implies 1st mark | M13a |
| 1 |  | Their 734.16 × 0.66 or 484.54(56) or 484.55OR500 ÷ 0.66 or 757(.575...) | OE any full correct methodTheir 734.16 must come from correct method to find total annual pay increase484(.5456) implies 1st three marks | N5a |
| 1 |  | No AND (£)484.54 or (£)484.55ORNo AND (£)734(.16) and (£)757(.57) or (£)757(.58) | OE No supported by correct working | M13a |