**NCFE Level 3 Certificate in**

**Mathematics for Everyday Life (603/3437/X)**

Practice paper (May 2020)

DATE

Paper 1: P00XXXX

**Mark Scheme**

v1.0

This mark scheme has been written by the Assessment Writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

* examples and criteria of the types of response expected from a learner
* information on how individual marks are to be awarded
* the allocated assessment objective(s) and total mark for each question.

**Marking guidelines**

*General guidelines*

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all learners, who must receive the same treatment. You must mark the first learner in exactly the same way as you mark the last.

* The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
* Reward learners positively giving credit for what they have shown, rather than what they might have omitted.
* Be prepared to award zero marks if the learner’s response has no creditworthy material.
* Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
* The marks awarded for each response should be clearly and legibly recorded in the grid on the front of the question paper.
* If you are in any doubt about the application of the mark scheme, you must consult with your Team Leader or the Chief Examiner.

*Guidelines for using the marking grid*

Marks in the mark scheme are explicitly referenced against the following:

|  |  |
| --- | --- |
| **M** | Method Marks: Marks available for the correct or suitable method used. |
| **A** | Accuracy Marks: Marks available for an accurate answer where the correct or suitable method has also been used. Unless otherwise stated with CAO. |
| **B** | Independent of other marks available used to award for a single correct answer. |
| **G** | Graph marks: marks available for completing a graph or diagram accurately. |
| **E** | Explanation: Marks available for an accurate explanation |
| **CAO** | Correct Answer only: Marks available for the correct answer - no method required. |
| **FT** | Follow through. |

**Assessment objectives**

This unit requires learners to:

|  |  |
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| **AO1** | Deepen competence in the selection and use of mathematical methods and techniques. |
| **AO2** | Develop confidence in representing and analysing authentic situations mathematically and in applying mathematics to address related questions and issues. |
| **AO3** | Build skills in mathematical thinking, reasoning and communication. |

The weightings of each assessment objective can be found in the qualification specification.

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| **Section 1** | **Total for this section: 8 marks** |

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| **Q1** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | C | B1 |  | | | | C3 |

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| **Q2** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | B | B1 |  | | | | D1 |

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| **Q3** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | D | B1 |  | | | | A2 |

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| **Q4** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | C | B1 |  | | | | B3 |

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| **Q5** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | B | B1 |  | | | | C2 |

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| **Q6** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | A | B1 |  | | | | D3 |

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| **Q7** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | C | B1 |  | | | | A1 |

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| **Q8** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | B | B1 |  | | | | B2 |

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| **Section 2** | **Total for this section: 52 marks** |

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| **Q9** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **2** | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | Mean = 55.1875 | B1 | Accept correct rounding = 55.188, 55.19 or 55.2 | | | | C5 |
| 1 | SD = 1.24(..) | A1 |  | | | |  |
| 1 | 55.1875 + 2 × 1.24 or 57.6675  AND  55.1875 – 2 × 1.24 or 52.7075 | M1 | FT their mean and SD | | | |  |
| 1 | 52.6 | A1 | Must be supported by working | | | |  |

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| **Q10a** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 |  | G1 | For amounts (allow alternative, clear notation) | | | | D2 |
| 1 | G1 | Frequencies | | | | D2 |
| **Q10b** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **2** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 34 × 5 + 116 × 20 + 148 × 40 + 168 × 65 + 8 × 90  or  170 + 2320 + 5920 + 10920 + 720 | M1 | FT frequencies from Q10a | | | | D2 |
| 1 | (£)20 050 | A1 |  | | | | D2 |

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| **Q11a** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | (£)799.50 and (£)715.96 | M1 |  | | | | A3 |
| 1 | Japan | A1 | Conclusion  Only award if supported by correct working | | | | A3 |
| **Q11b** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 799.50 + 12 × 13 = £955.50 | M1 | FT from Q11a | | | | A3 |
| **Q11c** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **3** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | A - (£)889.76 and  B - (£)839.88 | A1 |  | | | | A3 |
| 1 | Option B | E1 | CAO  Only award if supported by correct working | | | | A3 |
| 1 | Any reasonable explanation such as the cost of calls in Year 2 need to be added to make the two options comparable | E1 |  | | | | A3 |

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| **Q12** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  |  | **6** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 2 | 00 – 69 represents winning  70 – 99 represents losing  OR  00 – 29 represents losing  30 – 99 represents winning. | M1  A1 | Won last game  1 mark – gives a rule for using 2 digit numbers  2marks – rule is efficient and correct | | | | B4 |
| 2 | 00 – 59 represents winning  60 – 99 represents losing  OR  00 – 39 represents losing  40 -99 represents winning | M1  A1 | Lost last game  1 mark – gives a rule for using 2 digit numbers  2 marks – rule is efficient and correct | | | | B4 |
| 2 | 83 (L); 05 (W); 20 (W); 72 (L); 84 (L); 58 (W); 60 (~~W~~ L); 12 (W)  OR  (83 (W) 05 (L) 20 (L) 72 (W) 84 (W) 58 (W) 60 (W) 12 (L) | M1  A1 | Correct corresponding with method chosen for lost last game  1 mark – if 1 error found  2 marks – if completely correct | | | | B4 |

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| **Q13a** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **2** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | (£)47.30 | M1 |  | | | | A2 |
| 1 | 9 weeks | A1 | Supported by correct working | | | | A2 |
| **Q13bi** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** | **1** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 400 × 1.00860 | M1 |  | | | | A4 |
| 1 | £645.20 | A1 |  | | | | A4 |
| **Q13bii** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** | **1** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 1.008365 or 18.327…  OR  400 × 1.008365 or 7330(.847…) | M1 | OE any full correct method | | | | A4 |
| 1 | (1.008365 – 1) × 100  OR  (their 7330(.847…) - 400)/400 × 100 | M1 | OE any full correct method  Implies 1st mark | | | | A4 |
| 1 | 1733% | A1 | CAO  Allow any correct rounding | | | | A4 |

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| **Q14ai** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** | **1** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 120 – 32 or 88 | M1 | OE | | | | C1 |
| 1 | = 0.733 | A1 | OE any full correct method  Implies first mark | | | | C1 |
| **Q14aii** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 9 or | M1 |  | | | | C1 |
| 1 | 0.408 | A1 | CAO | | | | C1 |
| **Q14b** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 37 or | M1 | For denominator 37 | | | | C1 |
| 1 | 0.541 | A1 | CAO | | | | C1 |
| **Q14c** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  |  | **3** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | OR | M1 |  | | | | C1 |
| 1 | 2 x (their ) | M1 | OE | | | | C1 |
| 1 | 0.459 | A1 | CAO | | | | C1 |

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| **Q15a** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** |  |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | Expected number turning up = *np* = 3 | A1 | Working need not be shown | | | | C4 |
| **Q15b** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  | **2** |  |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | 0.815 | M1 |  | | | | C4 |
| 1 | 0.03518(…) or 3.518(…)% | A1 | OE  Accept any correct rounding | | | | C4 |
| **Q15c** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  |  | **3** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | P(X > 3) = 1 – P(X £ 3), | M1 | Process identified  OE | | | | C4 |
| 1 | 0.0352 + 0.1319 + 0.2310 + 0.2501  or 0.6482 | M1 | Accept any correct rounding | | | | C4 |
| 1 | 0.3518 or 35.18% | A1 | OE  CAO | | | | C4 |
| **Q15d** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  |  |  | **2** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 1 | P(X >15) = P(X = 16) + P(X = 17) + P(X=18)  Or  0.1723 + 0.0811 + 0.0180 | M1 | Process identified  Accept correct rounding  OE | | | | C4 |
| 1 | 0.2713 or 27.13% | A1 | CAO | | | | C4 |

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| **Q16** |  |  | **AO1** | **AO2** | **AO3** |  | |
|  |  | **1** | **3** | **4** |
| **Marks** | **Process and Answer** |  | **Additional or Alternative Evidence**  **(with guidance)** | | | | **SC** |
| 2 |  | M1  A1 | Forward Pass  1 mark – vertices 1 to 5, forward pass values entered correctly ie 0, 4, 9, 11, 5  Allow one error  2 marks – all forward pass values entered correctly | | | | B2 |
| 2 |  | M1  A1 | Backward pass  1 mark – any 5 vertices entered eg10, 9, 8, 7, 5 backward pass values entered (in reverse), 27, 24, 21, 18, 15  Allow one error  2 marks – all back pass values entered correctly | | | | B2 |
| 1 | 27 (hours) | A1 | Project duration  CAO | | | | B2 |
| 1 | A, C, E, H, G and K | A1 | Critical activities  CAO | | | | B2 |
| 1 | F float 5 (hours) | A1 | FT their diagram | | | | B2 |
| 1 | J float 1 (hour) | A1 | FT their diagram | | | | B2 |

**Assessment Objective Grid**

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| **Question** | **AO1** | **AO2** | **AO3** | **Total** |
| 1 - 8 | 8 | 0 | 0 | 8 |
| 9 | 2 | 2 | 0 | 4 |
| 10 | 2 | 2 | 0 | 4 |
| 11 | 1 | 5 | 0 | 6 |
| 12 | 0 | 0 | 6 | 6 |
| 13 | 3 | 3 | 1 | 7 |
| 14 | 1 | 5 | 3 | 9 |
| 15 | 1 | 2 | 5 | 8 |
| 16 | 1 | 3 | 4 | 8 |
| **Total** | **19** | **22** | **19** | **60** |