

## **GENERAL EDUCATION AND TRAINING CERTIFICATE**

## **NQF LEVEL 1**

## **ABET LEVEL 4 SITE-BASED ASSESSMENT**

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| **LEARNING AREA** | **:** | **MATHEMATICS AND MATHEMATICAL SCIENCES** |
| **CODE** | **:** | **MMSC4** |
| **TASK** | **:** | **INVESTIGATION** |
| **TIME** | **:** | **3 HOURS** |
| **MARKS** | **:** | **50** |

**This assessment task consists of 3 pages**.

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| **INSTRUCTIONS** |  |  |

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| 1. | Answer ALL the questions. |  |  |

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| 2. | Calculators may be used but you are required to show all the calculations. |  |  |

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| 3. | Write neatly and legibly. |  |  |

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| 4. | You have THREE hours to complete this investigation. |  |  |

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| **QUESTION 1** |  |  |

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| 1.1 | Given the following table of values:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | ***x*** | 1 | 2 | 3 | 4 | | ***y*** | 3 | 6 | 9 | 12 | |  |  |

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|  | 1.1.1 | Describe the relationship between *x* and *y* in your own words. |  | (2) |

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|  | 1.1.2 | Generate a formula that expresses the relationship between *x* and *y* in the given table. |  | (2) |

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|  | 1.1.3 | Draw a graph to represent the relationship between *x* and *y*.  HINT: The graph must be drawn on a Cartesian Plane or system of axes with units ranging from −8 to + 8 on both the axes. Each unit must be 1 cm in length. |  | (5) |



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|  | 1.1.4 | What type of graph did you draw? |  | (1) |

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| 1.2 | Given the following table of values:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | ***x*** | −3 | 0 | 3 | 6 | | ***y*** | 0 | 2 | 4 | 6 | |  |  |

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|  | 1.2.1 | Describe the relationship between *x* and *y* in your own words. |  | (3) |

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|  | 1.2.2 | Show that the formula that expresses the relationship between x and y in the table is *y* =*x* + 2 |  | (3) |

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|  | 1.2.3 | Draw a graph to represent the relationship between *x* and *y*.  HINT: The graph must be drawn on a Cartesian Plane or system of axes with units ranging from −8 to + 8 on both the axes. Each unit must be 1 cm in length. |  | (5) |

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|  | 1.2.4 | What type of graph did you draw? |  | (1) |

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| 1.3 | Consider the two cases above in QUESTIONS 1.1 and 1.2. Make a mathematical deduction based on the relationship between *x* and *y* and the kind of graph that relationship produces when drawn on the Cartesian Plane. |  | (3) |

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| **QUESTION 2** |  |  |

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| 2.1 | Look at the following statements: A: 2*x* + 7 + 3*x* = 5*x* + 7  B: *x* + 3 = *x* + 7  C: 2*x* + 1 = 11  Answer the questions below by writing down for each statement ALL values of *x* OR Only ONE value of *x* OR NONE value(s) of *x*.  HINT: You must choose three values to substitute into the statement to make the conclusion on the answer you give. |  |  |

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|  | 2.1.1 | For which value(s) of *x* will statement A be true? |  | (3) |

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|  | 2.1.2 | For which value(s) of *x* will statement A be never true? |  | (3) |

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|  | 2.1.3 | For which value(s) of *x* will statement B be true? |  | (3) |

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|  | 2.1.4 | For which value(s) of *x* will statement B be never true? |  | (3) |

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|  | 2.1.5 | For which value(s) of *x* will statement C be true? |  | (3) |

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|  | 2.1.6 | For which value(s) of *x* will statement C be never true? |  | (2) |

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| 2.2 | Which of the above statements is an equation with only ONE solution? Motivate your answer. |  | (2) |

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| 2.3 | Write the values of *x* that make the following statements true without showing any calculation and say whether the statement is an equation or an identity: |  |  |

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|  | 2.3.1 | 5 + *x* = 7 |  | (2) |

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|  | 2.3.2 | 3*x* = 5*x* |  | (2) |

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|  | 2.3.3 | 2*x* + 6 = 2(*x* + 3) |  | (2) |

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| **TOTAL:** |  | **50** |