**GCSE Mathematics (1MA1)**

**Themed papers – What’s Gone Wrong?**

**Compiled from student-friendly mark schemes**

**Please note that this mark scheme is not the one used by examiners for making scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn’t show follow-through marks (marks that are awarded despite errors being made) or special cases.**

**It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.**

**NOTES ON MARKING PRINCIPLES**

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| --- |
| **Guidance on the use of codes within this mark scheme** |
| M1 – method mark. This mark is generally given for an appropriate method in the context of the question. This mark is given for showing your working and may be awarded even if working is incorrect.P1 – process mark. This mark is generally given for setting up an appropriate process to find a solution in the context of the question.A1 – accuracy mark. This mark is generally given for a correct answer following correct working.B1 – working mark. This mark is usually given when working and the answer cannot easily be separated.C1 – communication mark. This mark is given for explaining your answer or giving a conclusion in context supported by your working.Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer). |

**Question 1 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | Probabilities for the first throw should add up to 1 (rather than 0.9) | C1 | This mark is given for a correct statement |
| 0.35 and 0.65 have been reversed on one set of the branches for the second throw | C1 | This mark is given for a correct statement |

**Question 2 (Total 1 mark)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | Patrick needs to find the fourth root of 64 rather than a quarter of 64 | C1 | This mark is given for a correct explanation |

**Question 3 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | For example:Sarah should have calculated *AC* 2 – *AB* 2Sarah should have calculated 82 – 62 | C1 | This mark is given for a correct statement describing Sarah’s mistake |
| (b) | For example:The scale factor in the diagram is 2.55 ÷ 2 is not 1 | C1 | This mark is given for the correct statement to say why Roy’s diagram is not correct |

**Question 4 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | For example:There is no frequency labelThe *y*-axis is not labelledThe polygon should not be closedThe polygon should not have a line at the bottomThe first and last points should not be connectedThe point (15, 6) has been plotted incorrectlyThe point (15, 6) has been plotted at (15, 8) | C2 | These marks are given for two correct statements(C1 is given for one correct statement) |

**Question 5 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | The denominator for the 2nd student is incorrect (it should be 29)or The probabilities for the 2nd student do not add up to 1 (they ad to ) | C1 | This mark is given for a correct comment |
| (b) | No, the probabilities should be multiplied together rather than added  | C1 | This mark is given for a correct conclusion with a supporting comment |

**Question 6 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | The line of best fit is not in the correct position | C1 | This mark is given for correct statement |
| The scale is incorrect (140 should be 150) | C1 | This mark is given for correct statement |

**Question 7 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | For example:Points should be joined by straight lines, not curved linesThe first quarter not shown9.5 is missing from the vertical axisThe vertical axis does not start from zero | B1 | This mark is given for a first correct statement |
| B1 | This mark is given for a second correct statement |

**Question 8 (Total 1 mark)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | The graph is drawn with line segments, rather than a curve | 1 | This mark is given for a correct statement  |

**Question 9 (Total 1 mark)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | For example:All three terms should have been multiplied by 2, not just two of them5 should also have been multiplied by 2He should have written 2 × *T* = *q* + 10 | C1 | This mark is given for a correct explanation of Spencer’s mistake |

**Question 10 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
| (a) | In the denominator on the second line, √3 × −√3 = −3, not 3 | C1 | This mark is given for a correct explanation |
| (b) | In the numerator on the second line, √12 = 2√3, not 3√2 | C1 | This mark is given for a correct explanation |

**Question 11 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | Median = 13th dress in order smallest to largestSize 12 | B1 | This mark is given for the correct answer only |
| (b) | No , categories are not mutually exclusive (a woman could be in both categories) | C1 | This mark is given for a correct statement |

**Performance data:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Taken from**  | **Total Marks available** | **TOPIC** | **Spec Ref** | **AO** | **% Mean marks** | **Edexcel mean averagesMarks of candidates who achieved grade:** |
| **Q** | **Series** | **Paper** | **ALL** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **U** |
| 1 | 4 | June 2018 | 3H | 2 | Probability | P4., P7, P8 | 2 | 79 | 1.57 | 1.85 | 1.77 | 1.69 | 1.60 | 1.49 | 1.34 | 1.16 | - | - | 0.90 |
| 2 | 12 | June 2019 | 3H | 1 | Number | N7 | 2 | 67 | 0.67 | 0.90 | 0.86 | 0.80 | 0.70 | 0.55 | 0.39 | 0.25 | - | - | 0.15 |
| 3a | 8a | June 2019 | 3H | 1 | Geometry | G20 | 3 | 75 | 0.75 | 0.96 | 0.94 | 0.89 | 0.81 | 0.66 | 0.42 | 0.22 | - | - | 0.10 |
| 3b | 8b | June 2019 | 3H | 1 | Geometry | G7 | 3 | 66 | 0.66 | 0.89 | 0.81 | 0.74 | 0.66 | 0.58 | 0.47 | 0.36 | - | - | 0.27 |
| 4 | 1 | Nov 2019 | 2H | 2 | Statistics | S2 | 2 | 59 | 1.18 | 1.56 | 1.81 | 1.44 | 1.36 | 1.26 | 1.13 | 1.03 | - | - | 0.76 |
| 5a | 12a | June 2017 | 2H | 1 | Probability | P9 | 2 | 72 | 0.72 | 0.93 | 0.89 | 0.84 | 0.77 | 0.66 | 0.49 | 0.26 | - | - | 0.10 |
| 5b | 12b | June 2017 | 2H | 1 | Probability | P8 | 2 | 59 | 0.59 | 0.87 | 0.83 | 0.76 | 0.66 | 0.49 | 0.27 | 0.11 | - | - | 0.05 |
| 6 | 2 | Nov 2018 | 2H | 2 | Statistics | S6 | 2 | 52 | 1.03 | 1.30 | 0.97 | 1.04 | 1.10 | 1.10 | 1.08 | 0.95 | - | - | 0.77 |
| 7 | 4 | June 2019 | 3H | 2 | Statistics | S2 | 2 | 50 | 1.00 | 1.25 | 1.11 | 1.03 | 1.00 | 0.94 | 0.84 | 0.73 | - | - | 0.55 |
| 8 | 7 | Nov 2017 | 1H | 1 | Algebra | A12 | 2 | 44 | 0.44 | 1.00 | 0.91 | 0.82 | 0.76 | 0.70 | 0.48 | 0.34 |  |  | 0.15 |
| 9 | 12 | Nov 2019 | 1H | 1 | Algebra | A5 | 3 | 40 | 0.40 | 1.00 | 0.86 | 0.80 | 0.71 | 0.51 | 0.30 | 0.12 | - | - | 0.05 |
| 10a | 20a | June 2018 | 2H | 1 | Number | N8 | 3 | 39 | 0.39 | 0.96 | 0.81 | 0.57 | 0.34 | 0.17 | 0.08 | 0.04 | - | - | 0.02 |
| 10b | 20b | June 2018 | 2H | 1 | Number | N8 | 3 | 45 | 0.45 | 0.91 | 0.78 | 0.61 | 0.43 | 0.27 | 0.17 | 0.11 | - | - | 0.08 |
| 11a | 3a | June 2017 | 3H | 1 | Statistics | S4 | 1 | 73 | 0.73 | 0.95 | 0.89 | 0.81 | 0.75 | 0.67 | 0.55 | 0.38 | - | - | 0.25 |
| 11b | 3b | June 2017 | 3H | 1 | Probability | P8 | 2 | 9 | 0.09 | 0.20 | 0.09 | 0.07 | 0.07 | 0.08 | 0.08 | 0.05 | - | - | 0.03 |
|  |  |  |  | **19** |  |  |  |  | **10.67** | **15.53** | **14.33** | **12.91** | **11.72** | **10.13** | **8.09** | **6.11** | **-** | **-** | **4.23** |