**GCSE Mathematics (1MA1)**

**Themed papers – Statistical diagrams: Bar Charts**

**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 6 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
| (a) | |  |  |  | | --- | --- | --- | | **Pet** | **Tally** | **Frequency** | | dog | ⏐⏐⏐⏐ ⏐⏐⏐ | 8 | | rabbit | ⏐⏐⏐ | 3 | | cat | ⏐⏐⏐⏐ | 5 | | hamster | ⏐⏐ | 2 | | B2 | This mark is given for a table with all frequencies correct  (B1 is given for two tallies correct) |
| (b) | 10  9  8  7  6  5  4  3  2  1  0  dog rabbit cat hamster | B1 | This mark is given for labelling the horizontal axis with pets |
| B1 | This mark is given for labelling the vertical axis with frequency |
| B1 | This mark is given for data from the frequency table accurately represented |
| (c) | dog | B1 | This mark is given for the most popular pet stated |

**Question 2 (Total 5 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | Walk | B1 | This mark is given for the correct answer only |
| (b) |  | B1 | This mark is given for a bar of height 7 drawn for girls walking |
| (c) | (5 + 9) – (6 + 4) = 14 – 10 = 4 | B1 | This mark is given for the correct answer only |
| (d) | (5 + 9) + (6 + 4) + (9 + 7) + (4 + 1) + (2 + 1) = 48  or  14 + 10 + 16 + 5 + 3 = 48 | M1 | This mark is given for a method to find the number of Year 6 students in the survey |
| 48 × 2 = 96 | A1 | This mark is given for the correct answer only |

**Question 3 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 4 | B1 | This mark is given for the correct answer only |
| (b) | (5 + 6 + 7 + 5 + 3 + 6 + 7) – (7 + 6 + 6 + 3 + 2 + 4 + 4)  or  (5 – 7) + (6 – 6) + (7 – 6) + (5 – 3) + (3 – 2) + (6 – 4) + (7 – 4) | M1 | This mark is given for a method to for ti find the difference in hours of sunshine |
| 7 | A1 | This mark is given for the correct answer only |

**Question 4 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | No labels on horizontal axis | C1 | This communication mark is given for a correct statement |
| No 0 on vertical axis | C1 | This communication mark is given for a correct statement |
| Middle column has incorrect height | C1 | This communication mark is given for a correct statement |

**Question 5 (Total 6 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 3 | B1 | This mark is given for the correct answer only |
| (b) | 10 – 1 = | M1 | This mark is given for selecting 1 and 10 |
| 9 | A1 | This mark is given for the correct answer only |
| (c) | 3 + 4 + 5 + 2 + 1 = 15 | M1 | This mark is given for finding the number of words with 6 letters or more |
| 5 + 8 + 12 + 10 + 9 + 3 + 4 + 5 + 2 + 1 = 59 | M1 | This mark is given for a method to find the total number of words |
|  | A1 | This mark is given for the correct answer only |

**Question 6 (Total 5 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) |  | B2  (B1 | 2 marks given for four accurate bars drawn  1 mark is given for 2 or 3 accurate bars drawn) |
| (b) | 12 + 10 + 11 + 6 + 9 | M1 | This mark is given for adding the number of adults who got each score |
| 48 | A1 | This mark is given for the correct answer only |
| (c) | more children give a higher rating,  3 more adults give “1” (than children)  the same number give “2”  1 more child gives “3” (than adults)  8 less adults give “4” (than children)  1 more child gives “5” (than adults) | C2  (C1 | 2 marks are given for 2 interpretations  1 mark is given for one correct interpretation) |

**Question 7 (Total 4 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
|  | Correct chart | C1 | This mark is given for a key or suitable shading to identify pets or years |
| C1 | This mark is given for 3 correct year group labels or a linear scale |
| C1 | This mark is given for a bar chart correctly showing data for at least 1 year groups or 2 pets |
| C1 | This mark is given for a fully correct bar chart with axes correctly scaled and labelled |

**Question 8 (Total 6 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 100 | B1 | This mark is given for the correct answer only |
| (b) | 260 – 100 = 160  340 – 120 = 220  440 – 160 = 280 | M1 | This mark is given for finding the number of laptops sold in at least two of the years shown on the graph |
| 160 + 220 + 280 | M1 | This mark is given for a method to find the total number of laptops sold in the three years 2015–2017 |
| 660 | A1 | This mark is given for the correct answer only |
| (c) | Tablets | B1 | This mark is given for identifying the correct item |
| The bars get proportionally longer over time | C1 | This mark is given for a correct statement |
| (d) | No; there is no information about costs and prices and thus no information about profits | B1 | This mark is given for a correct statement |

**Question 9 (Total 6 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 2 ÷ 40 × 100 | B1 | This mark is given for reading 2 students from the 20 to 24 bar |
| 5 | A1 | This mark is given for a correct answer only |
| (b) | 11, 8, 13, 6 and 2 | M1 | This mark is given for frequencies of 11, 8, 13, 6 and 2 used |
| 11 × 2 + 8 × 7 + 13 × 12 + 6 × 17 + 2 × 22  = 380 | M1 | This mark is given for totalling frequencies multiplied by correct mid‑interval terms 2, 7, 12, 17 and 22 |
|  | M1 | This mark is for dividing by the number of students |
| 9.5 | C1 | This mark is given for a correct estimate supported by correct working |

**Performance data:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Taken from** | | | **Total Marks available** | **TOPIC** | **Spec Ref** | **AO** | **% Mean marks** | **Edexcel mean averages Marks of candidates who achieved grade:** | | | | | | |
| **Q** | **Series** | **Paper** | **ALL** | **5** | **4** | **3** | **2** | **1** | **U** |
| 1a | 9a | Nov-19 | 3F | 2 | Statistics | S2 | 2 | **96** | 1.91 | 1.93 | 1.94 | 1.91 | 1.87 | 1.77 | 1.27 |
| 1b | 9b | Nov-19 | 3F | 3 | Statistics | S2 | 2 | **80** | 2.41 | 2.58 | 2.52 | 2.42 | 2.25 | 2.04 | 1.13 |
| 1c | 9c | Nov-19 | 3F | 1 | Statistics | S2 | 2 | **95** | 0.95 | 0.97 | 0.97 | 0.95 | 0.91 | 0.85 | 0.62 |
| 2a | 3a | Jun-17 | 2F | 1 | Statistics | S2 | 2 | **96** | 0.96 | 0.99 | 0.98 | 0.97 | 0.95 | 0.94 | 0.83 |
| 2b | 3b | Jun-17 | 2F | 1 | Statistics | S2 | 2 | **97** | 0.97 | 0.99 | 0.99 | 0.98 | 0.97 | 0.93 | 0.69 |
| 2c | 3c | Jun-17 | 2F | 1 | Statistics | S2 | 2 | **86** | 0.86 | 0.97 | 0.94 | 0.9 | 0.83 | 0.65 | 0.28 |
| 2d | 3d | Jun-17 | 2F | 2 | Statistics | S2 | 2 | **75** | 1.49 | 1.72 | 1.63 | 1.54 | 1.42 | 1.18 | 0.54 |
| 3a | 3a | Mock Set 1 | 3F | 1 | − | − | − | **−** | − | − | − | − | − | − | − |
| 3b | 3b | Mock Set 1 | 3F | 2 | − | − | − | **−** | − | − | − | − | − | − | − |
| 4 | 6 | Mock Set 2 | 1F | 3 | − | − | − | **−** | − | − | − | − | − | − | − |
| 5a | 6a | Mock Set 2 | 3F | 1 | − | − | − | **−** | − | − | − | − | − | − | − |
| 5b | 6b | Mock Set 2 | 3F | 2 | − | − | − | **−** | − | − | − | − | − | − | − |
| 5c | 6c | Mock Set 2 | 3F | 3 | − | − | − | **−** | − | − | − | − | − | − | − |
| 6a | 7a | Mock Set 4 | 2F | 2 | − | − | − | **−** | − | − | − | − | − | − | − |
| 6b | 7b | Mock Set 4 | 2F | 2 | − | − | − | **−** | − | − | − | − | − | − | − |
| 6c | 7c | Mock Set 4 | 2F | 2 | − | − | − | **−** | − | − | − | − | − | − | − |
| 7 | 9 | Mock Set 2 | 2F | 4 | − | − | − | **−** | − | − | − | − | − | − | − |
| 8a | 12a | Jun-18 | 1F | 1 | Statistics | S2 | 2 | **91** | 0.91 | 0.96 | 0.94 | 0.92 | 0.89 | 0.84 | 0.7 |
| 8b | 12b | Jun-18 | 1F | 3 | Statistics | S2, N2 | 2 | **51** | 1.52 | 2.23 | 1.97 | 1.63 | 1.18 | 0.64 | 0.26 |
| 8c | 12c | Jun-18 | 1F | 2 | Statistics | S2 | 2 | **60** | 1.19 | 1.5 | 1.38 | 1.23 | 1.04 | 0.84 | 0.58 |
| 8d | 12d | Jun-18 | 1F | 1 | Number | N13 | 2 | **30** | 0.3 | 0.64 | 0.47 | 0.29 | 0.15 | 0.08 | 0.04 |
| 9a | 23a | Nov-18 | 3F | 4 | Ratio | R16 | 3 | **25** | 1.01 | 2.68 | 1.57 | 0.94 | 0.5 | 0.21 | 0.07 |
| 9b | 23b | Nov-18 | 3F | 4 | Statistics | S2, S4 | 2 | **18** | 0.72 | 2.5 | 1.08 | 0.65 | 0.37 | 0.13 | 0.03 |
|  |  |  |  | **48** |  |  |  |  | **15.2** | **20.66** | **17.38** | **15.33** | **13.33** | **11.1** | **7.04** |