**GCSE Mathematics (1MA1)**

**Themed papers – Statistical diagrams: Pie 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) | 60 – 27 = 33 | 1 | This mark is given for finding the number of students who did not walk to school |
|  | 1 | This mark is given for the answer shown or an equivalent fraction |
| (b) |  × 360 = 162°,  × 360 = 72°,  × 360 = 36° | 1 | This mark is given for finding the angle for at least one sector |
|  | 1 | This mark is given for drawing at least one sector accurately |
| WalkBicycleCarBus | 1 | This mark is given for an accurately drawn pie chart |
| 1 | This mark is given for all sectors accurately labelled |

**Question 2 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | Burger: 360 ÷ 36 × 11 = 110°Pie: 360 ÷ 36 × 17 = 170°Hot dog: 360 ÷ 36 × 8 = 80° | M1 | This mark is given for method to find at least one angle |
| A1 | This mark is given for at least one accurately drawn angle (from 3 sectors) or all 3 angles correctly calculated |
| burgerpiehot dog | A1 | This mark is given for a fully correct and labelled pie chart. |

**Question 3 (Total 4 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 56 ×  = 168, 40 ×  = 120, 24 ×  = 72 | M1 | This mark is given for correct working to find at least one angle |
| 168°, 120°, 72° | A1 | This mark is given for all three angles drawn accurately (within ±2°) |
| FrenchSpanishGerman | B1 | This mark is given for the correct labels on the diagram |
| (b) | No, since we don’t have actual figures for Lowry | C1 | This mark is given for a correct explanation |

**Question 4 (Total 4 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
|  |  = 150 | M1 | This mark is given for a method to find the value of *x* |
|  × 480 = 200 | M1 | This mark is given for a method to find the number of students in school **A** who have tigers as their favourite animal |
|  × 760 = 190 | M1 | This mark is given for a method to find the number of students in school **B** who have tigers as their favourite animal |
| Henry is not correct since School **A** has 10 more students who have tigers as their favourite animal | C1 | This mark is given for a correct conclusion |

**Question 5 (Total 4 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | × 240 (= 118) | P1 | This mark is given for a process to find the total number of girls in Year 7  |
| 240 + 8 − 32 (= 216) or number of girls in Year 8 = 118 + 8 (= 126) | P1 | This mark is given for a process to process for total students in Year 8  |
| × 360 | P1 | This mark is given for a complete method to find the angle for Year 8 girls  |
| 210 | A1 | This mark is given for a correct answer only  |

**Question 6 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | athletics =  × 360 = 104°cycling =  × 360 = 136°swimming =  × 360 = 64°gymnastics =  × 360 = 56° | M1 | This mark is given for a method to find the angles in the pie chart for each sport |
| athleticsswimminggymnasticscycling | A1 | This mark is given for a pie chart with all angles drawn correctly (within 2°) |
| B1 | This mark is given for all sectors labelled properly |

**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** | **5** | **4** | **3** | **2** | **1** | **U** |
| 1a | 5a | Nov-17 | 2F | 2 | Ratio | R3 | 1 | 84 | 1.68 | 1.86 | 1.79 | 1.7 | 1.56 | 1.26 | 0.84 |
| 1b | 5b | Nov-17 | 2F | 4 | Statistics | S2 | 2 | 57 | 2.27 | 3.56 | 2.98 | 2.29 | 1.52 | 0.96 | 0.42 |
| 2 | 12 | Jun-18 | 2F | 3 | Statistics | S2 | 2 | 61 | 1.82 | 2.85 | 2.55 | 1.97 | 1.22 | 0.6 | 0.26 |
| 3a | 14a | Jun-17 | 1F | 3 | Statistics | S2 | 2 | 39 | 1.18 | 2.37 | 1.72 | 1.07 | 0.6 | 0.36 | 0.2 |
| 3b | 14b | Jun-17 | 1F | 1 | Statistics | S2 | 2 | 14 | 0.14 | 0.36 | 0.21 | 0.11 | 0.05 | 0.02 | 0.01 |
| 4 | 18 | Nov-19 | 1F | 2 | Algebra | A22 | 2 | 13 | 0.25 | 0.82 | 0.47 | 0.2 | 0.06 | 0.02 | 0.02 |
| 5 | 21 | Mock Set 1  | 2F | 4 | − | − | − | − | − | − | − | − | − | − | − |
| 6 | 8 | Mock Set 3  | 3F | 3 | − | − | − | − | − | − | − | − | − | − | − |
|  |  |  |  | **22** |  |  |  |  | **7.34** | **11.82** | **9.72** | **7.34** | **5.01** | **3.22** | **1.75** |