**GCSE Mathematics (1MA1)**

**Themed papers – Height, length and weight**

**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**

|  |
| --- |
| **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** |
| (a) | Don, Mersey, Trent, Thames, Severn | B1 | This mark is given for the correct answer only |
| (b) | Three times the length of the River Don is 112 × 3 = 336  The length of the Thames is 346 (> 336)  Ami is correct | C1 | This mark is given for a correct comment supported by correct working |

**Question 2 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
|  | 240 – 45 – 45 = 150 | P1 | This mark is given for a process to find the length of the remainder of the wire |
|  | 150 ÷ 40 = 3.75 | P1 | This mark is given for a process to find how many 40 cm lengths can be cut from the remainder of the wire |
| 3 (lots of 40 cm lengths) | A1 | This mark is given for the correct answer only |

**Question 3 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 450 : 15 | M1 | This mark is given for writing down an unsimplified ratio |
| 30 : 1 | A1 | This mark is given for dividing both sides by 15 for the correct answer |

**Question 4 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 4 × 650 = 2600 | P1 | This mark is given for finding the total weight of four blocks |
| 3 kg = 3000g | P1 | This mark is given for converting 3 kg to 3000g |
| 3000 – 2600 = 400 | A1 | This mark is given for finding the weight of the other block of wood |

**Question 5 (Total 2 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
|  | 160 × 0.15 | M1 | This mark is given for a method to find 15% of 160 |
| 24 | A1 | This mark is given for the correct answer only |

**Question 6 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 1.88 + 0.06 or 188 + 6 | M1 | This mark is given for a method to find the height of David |
| 1.94 m or 194 cm | B1 | This mark is given for the correct answer with units shown (m or cm) |

**Question 7 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
|  | 12 ÷ 6 = 2 | M1 | This mark is given for a process to find the width of one square |
| 2 × 5 = | M1 | This mark is given for a process to find the width of five squares |
| 10 | A1 | This mark is given for the correct answer only |

**Question 8 (Total 4 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
| (a) | 29 (inches) | B1 | This mark is given for an answer in the range 29 to 30 |
| (b) | 6 feet 3 inches = (6 × 12) + 3 = 75 inches | M1 | This mark is given for finding 6 ft 3 inches in inches |
| 25 inches = 63 cm | M1 | This mark is given for finding a method to convert to cm |
| 75 inches = 189 cm | A1 | This mark is given for an answer in the range 186 to 195 |

**Question 9 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 3 stones = 19 kilograms | B1 | This mark is given for the correct answer only |
| (b) | 40 kilograms = 6.3 stones | M1 | This mark is given for reading off an appropriate conversion to use to find the conversion for 80 kg |
| 80 kilograms = 12.6 stones |  | This mark is given for a correct answer only (in the range 12.4 to 12.8) |

**Question 10 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 90 ÷ 6 = 15 | P1 | This mark is given for connecting *AB* and *BC* by ratio or proportion |
| 15 × 5 | P1 | This mark is given for a complete method to find the length *AB* |
| 75 | A1 | This mark is given for the correct answer only |

**Question 11 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | *a* – 1 + *a* + *a* + *a* + *a* + 4 | 1 | This mark is given for writing out the terms |
| 5*a* + 3 | 1 | This mark is given for collecting the terms |
| *L* = 5*a* + 3 | 1 | This mark is given for the correct answer as a formula |

**Question 12 (Total 4 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
|  | 210 ÷ 7  = 30 | P1 | This mark is given for a process to find the weight of a jar of paprika |
| 290 – (3 × 30) = 200  200 ÷ 4 =  50 | P1 | This mark is given for a process to find the weight of a packet of sage |
| (2 × 30) + (2 × 50) = | P1 | This mark is given for a process to find the weight of 2 jars of paprika and 2 packets of sage |
| 160 | A1 | This mark is given for the correct answer only |

**Question 13 (Total 3 marks)**

| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| --- | --- | --- | --- |
|  | 19.2 m = 1920 cm | M1 | This mark is given for a method to find the length of the plane in cm |
|  | M1 | This mark is given for a method to find the length of the model |
| 80 |  | This mark is given for the correct answer only |

**Question 14 (Total 5 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 52 + 122 | P1 | This mark is given for the start of a process of to use Pythagoras’ theorem |
| √(52 + 122) = √169 = 13 | P1 | This mark is given for a process to find the length of the diagonal |
| 5 + 5 + 12 + 12 + 13 = 47 | P1 | This mark is given for a process to add all the lengths |
| 47 × 1.5 | P1 | This mark is given for multiplying the total length by 1.5 |
| 70.5 (kg) | A1 | This mark is given for the correct answer only |

**Question 15 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 127.5 ≤ length < 128.5 | B1 | This mark is given for 127.5 in the correct position |
| B1 | This mark is given for 128.5 in the correct position |

**Question 16 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 4 × 5 = 20 kg  5 × 9 = 45 kg | P1 | This mark is given for a process to find the weight of the red bricks or the blue bricks |
| 20 + 45 + 6 = 71 kg | P1 | This mark is given for a process to find the weight of all the bricks |
| Average weight of bricks is  = 7.1 kg  so Donna is incorrect | C1 | This mark is given for finding the average weights of the bricks with a correct conclusion stated |

**Question 17 (Total 1 mark)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 8 × 103 × 10 = 8 × 104 | B1 | This mark is given for the correct answer only |

**Question 18 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 8.5 × 50 000 (= 425 000) | M1 | This mark is given for a method using a scale |
| 425 000 ÷ 100  or  425 000 ÷ 1000  or  425 000 ÷ 100 000 | M1 | This mark is given for a method to start a conversion to from cm to km |
| 4.25 | A1 | This mark is given for a correct answer only |

**Question 19 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 11th in a list of 21 heights is 165 | B1 | This mark is given for the correct answer only |
| (b) | The median height of the boys (165 cm) is greater than the median height of the girls (162 cm) | C1 | This mark is given for a correct statement about the medians |
| The range of the boys’ heights (41 cm) is smaller than the range of the girls’ heights (45 cm) | C1 | This mark is given for a correct statement about the ranges  (NB: to get both marks at least one must be interpreted in the context of the question) |

**Question 20 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
|  | Points are joined with a curve, not with line segments | C1 | This mark is given for a correct statement |
| Points should be plotted at mid-points of the intervals, not end points | 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 averages Marks of candidates who achieved grade:** | | | | | | |
| **Q** | **Series** | **Paper** | **ALL** | **5** | **4** | **3** | **2** | **1** | **U** |
| **1a** | 1a | Jun-17 | 3F | 1 | Number | N1 | 1 | **97** | 0.97 | 0.98 | 0.98 | 0.98 | 0.97 | 0.95 | 0.84 |
| **1b** | 1b | Jun-17 | 3F | 1 | Number | N2 | 2 | **82** | 0.82 | 0.96 | 0.93 | 0.89 | 0.78 | 0.51 | 0.17 |
| **2** | 13 | Jun-18 | 1F | 3 | Number | N2 | 3 | **73** | 2.2 | 2.67 | 2.55 | 2.39 | 2.04 | 1.27 | 0.51 |
| **3** | 16 | Nov-18 | 3F | 2 | Ratio | R4 | 1 | **71** | 1.41 | 1.88 | 1.71 | 1.45 | 0.98 | 0.49 | 0.17 |
| **4** | 8 | Nov-19 | 1F | 3 | Number | N2, R1 | 3 | **67** | 2.02 | 2.66 | 2.43 | 2.08 | 1.39 | 0.98 | 0.77 |
| **5** | 15 | Jun-18 | 1F | 1 | Ratio | R9 | 1 | **66** | 1.32 | 1.85 | 1.75 | 1.53 | 1 | 0.37 | 0.12 |
| **6** | 7 | Nov-18 | 3F | 2 | Ratio | R1, N13 | 1 | **64** | 1.28 | 1.81 | 1.56 | 1.29 | 0.92 | 0.56 | 0.28 |
| **7** | 13 | Jun-19 | 2F | 3 | Number | N13, G16 | 3 | **60** | 1.81 | 2.9 | 2.56 | 1.92 | 1.18 | 0.59 | 0.23 |
| **8a** | 11a | Jun-17 | 2F | 1 | Number | N6, N7 | 1 | **73** | 0.73 | 0.88 | 0.83 | 0.77 | 0.68 | 0.49 | 0.17 |
| **8b** | 11b | Jun-17 | 2F | 3 | Algebra | A14 | 2 | **48** | 1.45 | 2.4 | 2 | 1.52 | 0.96 | 0.38 | 0.08 |
| **9a** | 11a | Nov-19 | 2F | 1 | Algebra | A14 | 2 | **88** | 0.88 | 0.96 | 0.94 | 0.9 | 0.79 | 0.6 | 0.41 |
| **9b** | 11b | Nov-19 | 2F | 2 | Algebra | A14, R1 | 2 | **45** | 0.89 | 1.58 | 1.29 | 0.88 | 0.41 | 0.2 | 0.19 |
| **10** | 10 | Jun-17 | 3F | 3 | Ratio | R7 | 1 | **37** | 1.1 | 2.45 | 1.7 | 0.92 | 0.44 | 0.18 | 0.05 |
| **11** | 6 | Nov-17 | 1F | 3 | Algebra | A3, | 1 | **36** | 1.09 | 2.2 | 1.62 | 1.08 | 0.57 | 0.35 | 0.15 |
| **12** | 15 | Mock Set 2 | 1F | 4 | − | − | − | − | − | − | − | − | − | − | − |
| **13** | 15 | Nov-19 | 2F | 3 | Ratio | R1, 2, 5 | 1 | **24** | 0.73 | 1.71 | 1.1 | 0.69 | 0.31 | 0.16 | 0.06 |
| **14** | 25 | Jun-17 | 1F | 5 | Ratio | R11, G20 | 3 | **17** | 0.86 | 2.58 | 1.14 | 0.57 | 0.41 | 0.22 | 0.05 |
| **15** | 22 | Nov-19 | 2F | 2 | Number | N15 | 1 | **16** | 0.31 | 0.98 | 0.58 | 0.25 | 0.05 | 0.02 | 0.02 |
| **16** | 25 | Nov-19 | 1F | 3 | Statistics | S4 | 3 | **9** | 0.28 | 0.99 | 0.46 | 0.23 | 0.11 | 0.08 | 0.02 |
| **17** | 25 | Mock Set 2 | 1F | 1 | − | − | − | − | − | − | − | − | − | − | − |
| **18** | 8 | Mock Set 1 | 2F | 3 | − | − | − | − | − | − | − | − | − | − | − |
| **19a** | 8a | Mock Set 1 | 1F | 1 | − | − | − | − | − | − | − | − | − | − | − |
| **19b** | 8b | Mock Set 1 | 1F | 2 | − | − | − | − | − | − | − | − | − | − | − |
| **20** | 21 | Mock Set 1 | 3F | 2 | − | − | − | − | − | − | − | − | − | − | − |
|  |  |  |  | **58** |  |  |  |  | **20.15** | **32.44** | **26.13** | **20.34** | **13.99** | **8.4** | **4.29** |