**GCSE Mathematics (1MA1)**

**Themed papers – Manipulating fractions**

**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 1 mark)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working an or answer examiner might expect to see** | **Mark** | **Notes** |
|  | 720 ÷ 8 = 90  | B1 | This mark is given for the correct answer only |

**Question 2 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  |  = , ,  = ,  =  or = 0.4,  = 0.3666…,  = 0.5,  = 0.4666… | M1 | This mark is given for converting fractions to a common form; for example, fractions with a denominator of 30 or decimals |
| , , ,  | A1 | This mark is given for writing the fractions in the correct order, starting from the smallest |

**Question 3 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | For example, 0.75, 0.7142…, 0.76, 0.73333…. | M1 | This mark is given for at least three fractions in order or fractions converted into decimals |
| , , ,  | A1 | This mark is given for a correct answer only |

**Question 4 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | , , , ,  | B1 | This mark is given for any 4 fractions in the correct order or at least two other fractions over a denominator of 12 |
| A1 | This mark is given for the correct answer only |

**Question 5 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | (32 ÷ 4) × 5 or (32 × 5) ÷ 40.8*x* = 32, *x* =  | M1 | This mark is given for a method to set up and solve the problem |
| 40 | A1 | This mark is given for the correct answer only |

**Question 6 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) |  | B1 | This mark is given for the correct answer only |
| (b) |  +  =  | M1 | This mark is given for finding a common denominator |
|  | A1 | This mark is given for the correct answer (or an equivalent fraction) |

**Question 7 (Total 4 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) |  –  | M1 | This mark is given for a method to put both fractions over the same common denominator |
|  | A1 | This mark is given for the correct answer only |
| (b) |  =  | M1 | This mark is given for finding a method to multiply two factions |
|  | A1 | This mark is given for the correct answer only |

**Question 8 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) |  ×  =  =  | B1 | This mark is given for the correct answer only |
| (b) |  ×  =  –  | M1 | This mark is given for a method to uses a common denominator |
|  | A1 | This mark is given for the correct answer only |

**Question 9 (Total 2 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  |  × 48 = 72 | 1 | This mark is given for a method to fins Jim’s number |
|  × 72 = 60 | 1 | This mark is given for the correct answer only |

**Question 10 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 1 =  1 =   | P1 | This mark is given for a process to convert mixed numbers into improper fractions |
|  ×  =  | P1 | This mark is given for a correct multiplication |
| 2 | A1 | This mark is given for a correct answer (or an equivalent mixed number) |

**Question 11 (Total 4 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) | 2 + 1 +  + 3 +  +  | M1 | This mark is given for a method to add fractions using common denominators |
| 3 or  | A1 | This mark is given for the correct answer only (or equivalent) |
| (b) |   ÷  =  ×  =  = 1 | M1 | This mark is given for a complete method to divide one faction by another |
| 1 | A1 | This mark is given for the correct answer only |

**Question 12 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  |  –  | M1 | This method mark is given for converting both expressions to improper fractions  |
|  –  | M1 | This method mark is given for a correct method to find a common denominator |
|  | A1 | This accuracy mark is given for the correct answer (or an equivalent fraction) |

**Question 13 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
|  | 1 –  | 1 | This mark is given for comparing  to 1 |
|  = 1 | 1 | This mark is given for comparing  to 1 |
|  | 1 | This mark is given for the correct answer only, with supporting evidence |

**Question 14 (Total 3 marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Working or answer an examiner might expect to see** | **Mark** | **Notes** |
| (a) |  + or0.4 + 0.25 | 1 | This mark is given for a suitable common denominator with one fraction out of two correct ordecimal equivalents |
|  or 0.65 | 1 | This mark is given for the correct answer only |
| (b) |  or 0.125 | 1 | This mark is given for the correct answer only |

**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** |
| **1** | 4 | Nov-18 | 3F | 1 | Number | N8 | 1 | **86** | 0.86 | 0.99 | 0.95 | 0.88 | 0.73 | 0.51 | 0.2 |
| **2** | 4 | Jun-17 | 2F | 2 | Number | N1 | 1 | **77** | 1.53 | 1.93 | 1.82 | 1.58 | 1.27 | 1.01 | 0.85 |
| **3** | 6 | Nov-18 | 2F | 2 | Number | N10 | 1 | **71** | 1.41 | 1.83 | 1.65 | 1.41 | 1.15 | 0.94 | 0.62 |
| **4** | 8 | Jun-19 | 1F | 2 | Number | N1 | 1 | **54** | 1.08 | 1.85 | 1.6 | 1.16 | 0.64 | 0.27 | 0.11 |
| **5** | 4 | Jun-17 | 3F | 2 | Number | N3 | 1 | **53** | 1.06 | 1.68 | 1.45 | 1.1 | 0.71 | 0.33 | 0.09 |
| **6a** | 11a | Nov-18 | 1F | 1 | Number | N1 | 1 | **87** | 0.87 | 0.99 | 0.94 | 0.88 | 0.78 | 0.67 | 0.47 |
| **6b** | 11b | Nov-18 | 1F | 2 | Number | N2 | 1 | **52** | 1.03 | 1.85 | 1.46 | 1.02 | 0.57 | 0.36 | 0.22 |
| **7a** | 19a | Jun-19 | 1F | 2 | Number | N2 | 1 | **52** | 1.04 | 1.86 | 1.57 | 1.07 | 0.6 | 0.23 | 0.05 |
| **7b** | 19b | Jun-19 | 1F | 2 | Number | N2 | 1 | **55** | 1.1 | 1.73 | 1.45 | 1.1 | 0.81 | 0.58 | 0.36 |
| **8a** | 8a | Jun-17 | 1F | 1 | Number | N2, N8 | 1 | **57** | 0.57 | 0.81 | 0.68 | 0.57 | 0.48 | 0.39 | 0.21 |
| **8b** | 8b | Jun-17 | 1F | 2 | Number | N2, N8 | 1 | **44** | 0.87 | 1.74 | 1.35 | 0.83 | 0.37 | 0.11 | 0.03 |
| **9** | 10 | Nov-17 | 3F | 2 | Number | N8, N12 | 1 | **37** | 0.73 | 1.52 | 1.08 | 0.73 | 0.35 | 0.14 | 0.07 |
| **10** | 22 | Nov-19 | 1F | 3 | Number | N4 | 1 | **36** | 1.09 | 1.96 | 1.52 | 1.07 | 0.57 | 0.32 | 0.19 |
| **11a** | 19a | Jun-18 | 1F | 2 | Number | N8 | 1 | **32** | 0.63 | 1.54 | 1.06 | 0.59 | 0.25 | 0.08 | 0.02 |
| **11b** | 19b | Jun-18 | 1F | 2 | Number | N8 | 1 | **16** | 0.32 | 1.01 | 0.56 | 0.25 | 0.09 | 0.03 | 0.01 |
| **12** | 17 | Mock Set 1  | 1F | 3 | Number | − | − | − | − | − | − | − | − | − | − |
| **13** | 14 | Nov-17 | 1F | 3 | Number | N1, N2, N8 | 3 | **16** | 0.47 | 1.59 | 0.82 | 0.41 | 0.18 | 0.1 | 0.02 |
| **14a** | 22a | Nov-17 | 1F | 2 | Number | N2 | 1 | **48** | 0.95 | 1.75 | 1.35 | 0.96 | 0.55 | 0.31 | 0.2 |
| **14b** | 22b | Nov-17 | 1F | 1 | Number | N3 | 1 | **2** | 0.02 | 0.15 | 0.03 | 0.01 | 0.01 | 0 | 0 |
|  |   |   |   | **37** |   |   |   |  | 15.63 | 26.78 | 21.34 | 15.62 | 10.11 | 6.38 | 3.72 |