Comparison of key skills specifications 2000/2002 with 2004 standardsX015461July 2004Issue 1

**Mark Scheme (Results)**

November 2017

Pearson Edexcel GCSE (9 – 1)

In Mathematics (1MA1)

Foundation (Calculator) Paper 3F



**Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK’s largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

**Pearson: helping people progress, everywhere**

Pearson aspires to be the world’s leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We’ve been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

November 2017

Publications Code 1MA1\_3F\_1711\_MS

All the material in this publication is copyright
© Pearson Education Ltd 2017

**General marking guidance**

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

**1** All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate’s response, the response should be sent to review.

**2** All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate’s response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

**Questions where working is not required**: In general, the correct answer should be given full marks.

**Questions that specifically require working**: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

**3 Crossed out work**

This should be marked **unless** the candidate has replaced it with an alternative response.

**4 Choice of method**

If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

**5** **Incorrect method**

If it is clear from the working that the “correct” answer has been obtained from incorrect working, award 0 marks.

**6** **Follow through marks**

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

**7** **Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question or its context. (e.g.. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (e.g.. incorrect algebraic simplification).

**8** **Probability**

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

**9** **Linear equations**

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

**10 Range of answers**

Unless otherwise stated, when an answer is given as a range (e.g. 3.5 – 4.2) then this is inclusive of the end points (e.g. 3.5, 4.2) and all numbers within the range.

|  |
| --- |
| **Guidance on the use of abbreviations within this mark scheme** |
| **M** method mark awarded for a correct method or partial method**P** process mark awarded for a correct process as part of a problem solving question**A** accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)**C** communication mark**B** unconditional accuracy mark (no method needed)**oe** or equivalent**cao** correct answer only**ft** follow through (when appropriate as per mark scheme)**sc** special case**dep** dependent (on a previous mark)**indep** independent**awrt** answer which rounds to**isw** ignore subsequent working |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 1 |  |  | 4000 | B1  | for 4000 |
| 2 |  |  | 2*y* | B1 | for 2*y* |
| 3 |  |  | 1, 2, 3, 6, 9, 18 | B2 | for all 6 factors with no incorrect  |
|  |  |  |  | [B1 | for at least 3 factors with no more than one error] |
| 4 | (a) | 5.80 × 3 + 7.80 = 25.20 | 90p or £0.90 | M1 | for a correct first step from which a complete method could be developed, eg. 5.8(0) × 3 (= 17.4(0)) or 24.3(0) – 7.8(0) (= 16.5(0)) |
|  |  |  |  | M1 | for complete method, eg. 7.8(0) + 5.8(0) × 3 ̶ 24.3(0) (= 0.9(0)) |
|  |  |  |  | A1 | for answer in correct notation with correct units, eg. 90p or £0.90 (accept £0.90p and £0.9)[SC: B1 for an answer of £2.90] |
|  | (b) |  | 8.27pm | M1 | for using 60 mins = 1 hour in the conversion of 102 minutes, eg. 1 h 42 mins or 1.42 or 1.7 or (60 + 42) mins or 102 ̶ 60 or 102 ÷ 60or for an answer of 8.27am or 08.27 |
|  |  |  |  | A1 | for 8.27(pm) oe |
| 5 |  |  | 13 | M1 | for the start of a method, eg. 2 × 1000 (= 2000) or 150 ÷ 1000 (= 0.15) or 1000 ÷ 150 (= 6.66…) |
|  |  |  |  | M1 | for a fully correct method, eg. 2000 ÷ 150 or 2 ÷ 0.150 or 13.3(...) |
|  |  |  |  | A1 | cao |
| 6 |  |  | Correct pictogramwith key | C3[C2[C1 | for a fully correct pictogram, including keyfor 2 circles drawn for Friday or $3\frac{3}{4}$ circles (or equivalent) drawn for Saturday]for deducing that one circle represents 4 cycles (or 20 ÷ 5) or $\frac{1}{2}$ circle represents 2 cycles or $\frac{1}{4}$ circle represents 1 cycle] |
| 7 |  |  | shown | M1 | for (angle *BCA*) = 180 – 117 (= 63)  |
|  |  |  |  | M1 | for (angle *CAB*) *=* 180 – “63” – 54 (= 63) or (angle *CAB*) *=* 117 – 54 (= 63)  |
|  |  |  |  | C2 | for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 with fully correct reasons,from: angles on a straight line add up to 180º  angles in a triangle add up to 180º exterior angle of a triangle is equal to sum of interior opposite angles |
|  |  |  |  | [C1M1M1C2[C1 | for angle *BCA* = 63 and angle *CAB* = 63 and one of the above reasons]ORfor $\frac{(180-54)}{2} $ (= 63)for identification of **two** angles in triangle *ABC* being “63”for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 **and** angles on a straight line add up to 180º **and** fully correct reasons: base angles of an isosceles triangle are equal and angles in a triangle add up to 180ºfor angle *BCA* = 63 and angle *CAB* = 63 and one reason from: base angles of an isosceles triangle are equal angles in a triangle add up to 180º]  |
|  8  |  |  | 30 | M1 | for 12 m = 1.9 to 2 cm or for a scale factor of 2.25 to 2.75 (comparing length of bus with height of the building) or a **complete** method using the height of the bus to compare with the height of the building. |
|  |  |  |  | A1 | answer in range 27 to 33 |
| 9 |  |  | 2, 7 or 3, 13 or 5, 11 or 2, 23 | M1 | for identifying two different prime numbers or two numbers which add up to give a square number or for a list of at least 3 prime numbers with no errors **and** a list of 3 square numbers with no errors. |
|  |  |  |  | A1 | for two correct prime numbers  |
| 10 |  |  | 60 | M1 | for method to find the number, eg. $48×\frac{3}{2}$ (=72) or to find $\frac{1}{6}$ th of the number, eg. 48 ÷ 4 (=12) |
|  |  |  |  | A1 | cao |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 11 |  |  | Offer 1 | P1 | for a process to find the cost of a number of lessons in Offer 1, eg. 24 × (12 – 1) (= 264) or for a process to find 5% (or 95%) of an appropriate amount, eg. 24 × 0.05 (= 1.20) or 24 × 0.95 (= 22.80) in Offer 2 |
|  |  |  | (supported) | P1 | for a complete process leading to values to be used for comparison,eg. 24 × (12 – 1) (= 264) and 24 × 0.95 × 12 (= 273.60) |
|  |  |  |  | C1 | Offer 1 and correct values, eg. (£)264 and (£)273.6(0) used for comparison |
| 12 |  | Complete methods3.60 ÷ 2.5 × 3.5or 3.60 ÷ 5 × 7or 3.5 ÷ (2.5 ÷ 3.6)or $\frac{3.5}{2.5} ×3.6$ | 5.04 | M1A1 | for a correct first step to find the cost of a unit of weight (eg. 1 kg or 0.5 kg)eg 3.60 ÷ 2.5 (= 1.44) or 3.60 ÷ 5 (= 0.72) or a complete alternative methodfor 5.04 (accept £5.04p) |
|  |  | or $3.6 ÷ \frac{2.5}{3.5} $ |  |  |  |
| 13 | (a) |  | (–2) **–1.5 –1** **–0.5** (0) **0.5** | B2[B1 | for a fully correct tablefor 2 or 3 correct entries] |
|  |  |  |  |  |  |
|  | (b) |  | Correct line | M1 | for correctly plotting at least 5 of their points (provided B1 scored in part (a)) or for a straight line with gradient 0.5 or for a straight line through (0,–1) with a positive gradient |
|  |  |  |  | A1 | for a correct line between *x* = –2 and *x* = 3 |
|  | (c) |  | 2.6 | B1 | for answer in the range 2.5 to 2.7 or ft a single straight line with positive gradient |
| 14 |  |  | Reflection | B1 | for reflection |
|  |  |  | in the *x*-axis (or *y* = 0) | B1 | for *x*-axis (or *y* = 0)NB: award no marks if more than one transformation is given |
| 15 |  |  | (£6), 18, 24, 27 | M1 | demonstrates a proportional method to find at least one cost for cotton, eg. £6 ÷ 2 × 9 (= (£)27) or a correct entry in the table. |
|  |  |  | 15, 45, 60, 67.50 | M1 | demonstrates a proportional method to find at least one cost for silk, eg. £6 ÷ 2 × 5 (= (£)15) or a correct entry in the table. |
|  |  |  |  | A1 | for a fully correct table (accept 67.5(0)) |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 16 | (a) |  | 40 | P1 | for the start of a process to find the number of boxes that will fit along one edge, eg. 240 ÷ 40 (= 6) or 150 ÷ 30 (= 5) or 140 ÷ 35 (= 4)or 240 ÷ 30 (= 8) or 240 ÷ 35 (= 6.85… ie 6 boxes), etc.or for a process to find a volume, eg. 40 × 30 × 35 (= 42000) or 0.4 × 0.3 × 0.35 (= 0.042) or 240 × 150 × 140 (= 5040000) or 2.4 × 1.5 × 1.4 (= 5.04)NB: condone incorrect or no conversion between m and cm |
|  |  |  |  | P1 | for a complete process to find the maximum number of boxes, eg. “6” × “5” × “4” (= 120) or “5040000” ÷ “42000” (= 120) or “5.04” ÷ “0.042” (= 120) |
|  |  |  |  | P1 | (dep on P1) for (their number of boxes) ÷ 3, eg. 120 ÷ 3 (= 40) |
|  |  |  |  | A1 | cao |
|  | (b) |  | explanation | C1 | for explaining that it could take more time or it could take less time **with** an appropriate reason, eg. “less space means less number of boxes which will take less time” or “it will take more time since a different arrangement would be required” |
| 17 | (a) |  | 4(*m* + 3) | B1 | for 4(*m* + 3) or 2(2*m* + 6)  |
|  | (b) |  | term, expression | B1 | for ‘term’ in the 1st space |
|  |  |  |  | B1 | for ‘expression’ in the 2nd space |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 18 | (a) |  | 3*n* + 1 | M1 | for a method to deduce the *n*th term, eg. 3*n* + *k*, where *k* is an integer or *k* is omitted or for *n* = 3*n* + 1  |
|  |  |  |  | A1 | for 3*n* + 1 oe(accept *n* replaced by another letter) |
|  | (b) |  | No (supported) | C1 | for using (their expression in (a)) = 90or shows that 88 or 91 is in the sequence |
|  |  |  |  | C1 | for an answer of “No” and a convincing argument eg. pattern number 30 has 91 counters or (90 – 1) ÷ 3 (= 29.66…) or shows that the next term after 88 is 91 Note: no ft from (a) |
| 19 | (a) |  | 160 < *h* ≤ 170 | B1 | correct class interval |
|  | (b) |  |  | C2 | for fully correct frequency polygon  |
|  |  |  | Line segments joining the points (135, 4), (145, 11), (155, 24), (165, 22) and (175, 19) | [C1 | for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the intervals (including end values)OR correct frequency polygon with one point incorrectOR correct frequency polygon with first and last point joined] NB: ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 20 |  |  | New York (supported) | P1 | for changing between £ and $, eg 1.089×1.46 (= 1.58(9.)) or 2.83÷1.46 (= 1.93(8.)) or between litres and gallons, eg 1.089×3.785 (= 4.12(1.)) or 2.83÷3.785 (= 0.74(7.)) |
|  |  |  |  | P1 | for a complete process to give values that can be used for comparison, eg “1.938...” ÷ 3.785 (= 0.51(2.)) **or** “1.589...”...× 3.785 (= 6.01(7.)) **or** 1.089 × 3.785 = (4.12(1.)) and 2.83 ÷ 1.46 (= 1.93(8.))  |
|  |  |  |  | C1 | for New York and correct comparative values. |
| 21 |  |  | 648 | M2 | a complete method, eg 12.5 × 1000 ÷ 19.3 |
|  |  |  |  | [M1 | for using volume = mass/density, eg 12500 ÷ 19.3 (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648... ] |
|  |  |  |  | A1 | for answer in range 647 to 648 |
| 22 |  |  | 15 | P1 | strategy to start the problem, eg 8 : 20 and 20 : 5 |
|  |  |  |  | P1 | process to solve the problem, eg or 24 : 60 : 15 |
|  |  |  |  | A1 | cao |
| 23 | (a) |  | 0.625 | B1 | cao  |
|  | (b) |  | 9.75 ≤ *x* < 9.85 | B2 | 9.75 ≤ *x* < 9.85 |
|  |  |  |  | [B1 | for 9.75 **or** 9.85 (or )] |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 24 |  |  | 147 | P1 | starts process, eg uses *x* and *x* + 7 |
|  |  |  |  | P1 | starts to work with at least 6 correct sides, may be on the diagram or in an expression |
|  |  |  |  | P1 | (dep on previous P1) gives a correct expression for the perimeter, eg *x* + *x* + 7 + *x* + 7 + *x* + 7 + *x* + *x* + 7 + *x* + 7 + *x* +7 or adds at least 6 correct sides and equates to 70 |
|  |  |  |  | A1 | for width = 3.5 oe **and** length = 10.5 oe |
|  |  |  |  | B1 | ft (dep P2) for correct area for their *x* |
| 25 |  |  | 0.000 745 2 | M1 | for digits 7452 seen |
|  |  |  |  | A1 | cao |
| 26 | (a) |  | Mel (supported) | B1 | Mel with reference to greatest number of throws |
|  | (b) |  |  | M1 | selects overall total and multiplies P(point up)×P(point down) eg $\frac{50}{150}×\frac{100}{150}$ oe(accept × or × or ×) |
|  |  |  |  | A1 | for  oe |

| **Paper: 1MA1/3F** |
| --- |
| **Question** | **Working** | **Answer** | **Mark** | **Notes** |
| 27 |  |  | *x* = 1.5, *y* = 3.5 | M1 | for correct method to eliminate one variable (condone one arithmetic error) |
|  |  |  |  | M1 | (dep) for substituting found value in one of the equations or correct method after starting again (condone one arithmetic error) |
|  |  |  |  | A1 | for both *x* = 1.5 and *y* = 3.5 |

Question 20

|  |  |  |  |
| --- | --- | --- | --- |
| London | 1.089 × 1.46 = $1.58(9..) per litre | → | 1.589... × 3.785 = $6.01(7..) per gallon |
| 1.089 × 3.785 = £4.12(1..) per gallon | → | 4.121... × 1.46 = $6.01(7..) per gallon |
| New York | 2.83 ÷ 1.46 = £1.93(8..) per gallon | → | 1.938... ÷ 3.785 = £0.51(2..) per litre |
| 2.83 ÷ 3.785 = $0.74(7..) per litre | → | 0.747... ÷ 1.46 = £0.51(2..) per litre |

The table shows the most commonly used approaches. There are of course other approaches that can be used.

**Modifications to the mark scheme for Modified Large Print (MLP) papers.**

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: ±5º

Measurements of length: ±5 mm

| **PAPER: 1MA1\_3F** |
| --- |
| **Question** | **Modification** | **Mark scheme notes** |
| 6 |  | Diagram enlarged. Key moved above and to the left of the diagram.Question wording changed: 15 changed to 14 so that candidates only have to draw half a circle instead of three quarters of a circle.The bike wheels have been replaced by a circle. Braille only: will have one horizontal line and one vertical line separating the circle into 4 sections. Braille will also add one whole circle in the key. | Standard mark scheme but now 3 ½ circles for Saturday. Note the simplification of the key for Braille.Accept a key drawn with quarter circles instead of the full bicycle wheel |
| 7 |  | Diagram enlarged. Angles moved outside of the angle arcs and the angle arcs made smaller.Braille only: will add information about the diagram. | Standard mark scheme |
| 8 |  | Diagram enlarged x3 exactly and simplified | Standard mark scheme |
| 13 | (a) | Wording added ‘There are four spaces to fill.’ Table turned to vertical format.Wording added ‘below.’ | Standard mark scheme |
|  | (c) | Diagram enlarged. | Standard mark scheme with additional tolerance on reading off. |

| **PAPER: 1MA1\_3F** |
| --- |
| **Question** | **Modification** | **Mark scheme notes** |
| 14 |  | Diagram enlarged. Wording added ‘It shows shape A and shape B given on a grid.’*x* axis changed to go from -2 to 8.Shape A moved to (2, 3) (2, 1) (6, 3) (6, 2). Shape B move to (2, -1) (2, -3) (6, -2) (6, -3).  | Standard mark scheme |
| 15 |  | Wording added ‘There are seven spaces to fill.’ Table turned to vertical format. Braille: will label the answer spaces: Cotton fabric Silk fabric  2m £6 (i) 6m (ii) (iii) 8m (iv) (v) 9m (vi) (vii) | Standard mark scheme |
| 16 |  | Model provided for all candidates. Diagram enlarged and also provided for MLP. Information left aligned. | Standard mark scheme |
| 18 |  | Diagram enlarged. Diagram labels moved to the left of the diagrams.Diagrams have been stacked vertically. | Standard mark scheme |
| 19 |  | Numbers in the table have changed to:130-140: **5**; 140-150: **10**; 150-160: **20**; 160-170: **30**; 170-180: **15** In part (b) Diagram enlarged. Right axis has been labelled. Axes labels moved to the left of the horizontal axis and above the vertical axis.Vertical axis extended so it goes up to 35. | Standard mark scheme with the amendment: Line segments joining the points (135, 5), (145, 10), (155, 20), (165, 30) and (175, 15) |
| 24 |  | Diagram enlarged. Wording added ‘Diagram (i) shows’. Shape labelled as ‘Diagram (i)’.Wording added ‘Diagram (ii)’ after ‘8-sided shape,’ Shape labelled as ‘Diagram (ii)’. | Standard mark scheme |

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom