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

Mark Scheme (Results)

January 2023

Pearson Edexcel International GCSE

In Mathematics A (4MA1) Paper 1F

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**General Marking Guidance**

* All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
* Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
* Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
* There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
* All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme.

Examiners should also be prepared to award zero marks if the candidate’s response is not worthy of credit according to the mark scheme.

* Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
* When examiners are in doubt regarding the application of the mark scheme to a candidate’s response, the team leader must be consulted.
* Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
* **Types of mark**
	+ M marks: method marks
	+ A marks: accuracy marks
	+ B marks: unconditional accuracy marks (independent of M marks)
* **Abbreviations**
	+ cao – correct answer only
	+ ft – follow through
	+ isw – ignore subsequent working
	+ SC - special case
	+ oe – or equivalent (and appropriate)
	+ dep – dependent
	+ indep – independent
	+ awrt – answer which rounds to
	+ eeoo – each error or omission
* **No working**

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

* **With working**

If there is a wrong 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.

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

If a candidate misreads a number from the question. Eg. Uses 252 instead of 255; method marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review. If there is a choice of methods shown, mark the method that leads to the answer on the answer line; where no answer is given on the answer line, award the lowest mark from the methods shown.

If there is no answer on the answer line then check the working for an obvious answer.

* **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: eg. Incorrect cancelling of a fraction that would otherwise be correct.

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

* **Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part ofthe question CANNOT be awarded to another.

| **International GCSE Maths**  |
| --- |
| Apart from Questions 8, 12a, 12b, 15, 17 and 18 (where the mark scheme states otherwise), the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method. |
| Q | **Working** | **Answer** | **Mark** | **Notes** |
| 1 | (a) |  | Hamlet | 1 | B1 |
|  | (b) |  | Henry V and Julius Caesar | 1 | B1 |
|  | (c)  |  | 26 450 | 1 | B1 |
|  | (d) |  | Twenty one thousand and fifty five | 1 | B1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 2 |  | 5 × 1000 (= 5000) **or** 350 ÷ 1000 (= 0.35) |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | “5000” ÷ 350 (= 14.2857…) **or** 5 ÷ “0.35” (= 14.2857…) **or** 14 |  |  | M1 Allow their 5000 or their 0.35 |
|  |  | 350 × “14” or 4900 or0.35 × “14” or “0.49” or(14.28(57…) – 14) × 100 |  |  | M1  |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 100 g or 0.1 kg |  | A1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 2**ALT** |  | 5 × 1000 (= 5000) **or** 350 ÷ 1000 (= 0.35) |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | 350, 700, 1050, ……., 4900 **or**0.35, 0.7, 1.05, …….., 4.9  |  |  | M1 for repeated addition to at least 4900 or 4.9 (allow one error)orfor repeated subtraction to at least 100 or 0.1 (allow one error) |
|  |  | 350, 700, 1050, ……., 4900 **or**0.35, 0.7, 1.05, …….., 4.9  |  |  | M1 for repeated addition to 4900 or 4.9 (no errors) or clearly indicated e.g. at the end of their list, circled, underlined etcor for repeated subtraction to 100 or 0.1 (no errors) clearly indicated e.g. at the end of their list, circled, underlined etc |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 100 g or 0.1 kg |  | A1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 3 | (a) |

|  |
| --- |
| **Pattern number 4** |
|   |  |  |  |  |   |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

 | Correct shape | 1 | B1 |
|  | (b) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 |
| 1 | 4 | 7 | **10** | **13** |

 |  10 and 13 | 1 | B1 for 10 and 13 |
|  | (c) |  | 22 | 1 | B1 |
|  | (d) | 10 13 16 19 22 25 28 31 34 37 40 43 or3 × 15 – 2 (= 43) and 3 × 14 – 2 (= 40) or(42 + 2) ÷ 3 (= 14.6….) | Correct reason | 1 | B1 for correct reason, for e.g.3*n* – 2 = 42 does not have a whole number (integer) answer/it’s a decimal or42 is a multiple of 3 or42 is in the 3 times table or40 and 43 are in the sequence or40 is in the sequence and 40 + 3 does not equal 42 orits 1 less than 43 |
|  |  |  |  |  |  | **Total 4 marks** |

| 4 | (a) |  | 80 | 1 | B1 |
| --- | --- | --- | --- | --- | --- |
|  | (b) |  |  thousandth | 1 | B1 oe e.g. 3 thousandth, 1000th,  , 0.003 |
|  | (c) |  | 0.04 0.042 0.2 0.204 0.24  | 1 | B1 |
|  | (d) |  | 25.79 | 1 | B1 |
|  | (e) |  | 36 | 1 | B1 |
|  |  |  |  |  |  | **Total 5 marks** |

| 5 | (a)(i) |  | A cross at 0.5 | 1 | B1  |
| --- | --- | --- | --- | --- | --- |
|   | (ii) |  | unlikely | 1 | B1 |
|  | (b) |

|  |  |  |
| --- | --- | --- |
| **Type of rice** | **Tally** | **Frequency** |
| arborio | IIII | 4 |
| basmati | IIIII I | 6 |
| jasmine | IIIII II | 7 |
| wild | III | 3 |

 |  | 2 | B2 for all frequencies correct(B1 for 2 frequencies correct or 2 tallies correct or 1 tally with its frequency correct) |
|  |  |  |  |  |  | **Total 4 marks** |

| 6 |  | × 600 (= 150) oe or × 600 (= 450) oe  |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | “450” × 13.60 (= 6120) |  |  | M1 |
|  |  | (7200 – “6120”) ÷ “150” or1080 ÷ “150” |  |  | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 7.2(0) |  | A1SC B2 for 11.46(666…) |
|  |  |  |  |  |  | **Total 4 marks** |

| 7 | (a) |  | 45*pk* | 1 | B1 accept 45*kp* |
| --- | --- | --- | --- | --- | --- |
|  | (b) |  | 11*e* – 5*f* | 2 | B2 for 11*e* – 5*f*(B1 for 11*e* or –5*f*) |
|  | (c) | or  or oe or (16 – 7) ÷ 2 or 9 ÷ 2 |  | 2 | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 4.5  |  | A1 accept or  |
|  |  |  |  |  |  | **Total 5 marks** |

| 8 |  | [6, 6.4] |  | 4 | M1 accept in the range 6 – 6.4 |
| --- | --- | --- | --- | --- | --- |
|  |  | “[6, 6.4]” × 80 (= [480, 512]) |  |  | M1 |
|  |  | 590 – “[480, 512]” (= [110, 78]) |  |  | M1 |
|  |  | *Working required* | 78 – 110 |  | A1 dep on M1  |
|  |  |  |  |  |  | **Total 4 marks** |

| 8**ALT** |  | [6, 6.4] |  | 4 | M1 accept in the range 6 – 6.4 |
| --- | --- | --- | --- | --- | --- |
|  |  | (590 ÷ 80) – “[6, 6.4]” (= [0.975, 1.375]) or7.375 – “[6, 6.4]” (= [0.975, 1.375]) |  |  | M1 |
|  |  | “[0.975, 1.375]” × 80 (= [78, 110]) |  |  | M1 |
|  |  | *Working required* | 78 – 110 |  | A1 dep on M1  |
|  |  |  |  |  |  | **Total 4 marks** |

| 9 | (a) |

|  |  |
| --- | --- |
|  | **Spinner A** |
| **1** | **2** | **3** |
| **Spinner B** | **1** | 1 | 2 | 3 |
| **2** | 2 | 4 | **6** |
| **3** | 3 | **6** | **9** |
| **4** | 4 | **8** | **12** |

 | Correct scores | 2 | B2 for all scores correct(B1 for 3 or 4 scores correct) |
|  | (b) |  |  | 1 | B1 ft oe accept 0.33(33…)  |
|  |  |  |  |  |  | **Total 3 marks** |

| 10 |  | (= 75) oe or 250 −160 (= 90) |  | 3 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | “90” – “75” or “75” – “90” |  |  | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 15 |  | A1 allow –15 |
|  |  |  |  |  |  | **Total 3 marks** |

| 11 |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***x*** | −2 | −1 | 0 | 1 | 2 | 3 |
| ***y*** | 5 | 3 | 1 | −1 | −3 | −5 |

(−2, 5) (−1, 3) (0, 1) (1, −1) (2, −3) (3, −5)  | Correct line between *x* = −2 and *x* = 3 | 3 | B3 for a correct line between *x* = −2 and *x* = 3(B2 for a correct straight line segment through at least 3 of (−2, 5) (−1, 3) (0, 1) (1, −1) (2, −3) (3, −5) **or** for all of (−2, 5) (−1, 3) (0, 1) (1, −1) (2, −3) (3, −5) plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) **or** plotted **or** for a line drawn with a negative gradient through (0, 1) **or** for a line with a gradient of −2) |
|  |  |  |  |  |  | **Total 3 marks** |

| 12 | (a) | e.g. or or  |  | 2 | M1 for finding a common denominator of 24 or a multiple of 24 with at least one fraction correct |
| --- | --- | --- | --- | --- | --- |
|  |  | e.g. or  | Shown |  | A1 dep on M1, for a complete method leading to  |
|  | (b) |  2, 5, 10, 13, 26, 65 **and** 2, 4, 8, 16, 26, 52, 104**or**2, 5, 13 **and** 2, 2, 2, 2, 13 oe5 213 8or

|  |
| --- |
| e.g. |
| **26** | 130 | 208 |
|  | **5** | **8** |

|  |
| --- |
| e.g. |
| **2** | 130 | 208 |
| **13** | 65 | 104 |
|  | **5** | **8** |

 |  | 2 | M1 for starting to list at least **two** factors of each number excluding 1 and *n*(Two factors may be written as, for e.g,130 ÷ 26 = 5 and 208 ÷ 26 = 8 oe or130 ÷ 13 = 10 and 208 ÷ 13 = 16 etc)**or** 2, 5, 13 **and** 2, 2, 2, 2, 13 seen (may be in a factor tree or a ladder diagram and ignore 1)**or** a fully correct Venn diagram oe**or** other clear method, e.g, table |
|  |  | *Working required* | 26 |  | A1dep on M1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 13 | (a) | 18 – – 3 × 5 or 18 – – 15 or 18 + 15  |  | 2 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 33 |  | A1 |
|  | (b) | oe or  or oe or oe |  | 2 | M1  |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* |  |  | A1 accept oe or  oe (must see *x* = … on answer line or in working) |
|  |  |  |  |  |  | **Total 4 marks** |

| 14 | (a) |  | Correct rotation | 2 | B2 for a fully correct rotation at (1, 2) (3, 2) (3, 5)(B1 for the triangle in correct orientation and size or rotated 90° clockwise about the origin (–1, –2) (–3, –2) (–3, –5)) |
| --- | --- | --- | --- | --- | --- |
|  | (b) |  | Enlargement, scale factor 3 and (0,0)  | 2 | B2 for enlargement, scale factor 3 and (0,0) (B1 for 2 correct fromfor enlargement, enlarge, etc so long as no mention of rotation, reflection or translation, flip, move etc.or SF 3, three times etc.or (0, 0) or Origin or 0 stated. Accept about, from etc. with no mention of line, or column vector.) |
|  |  |  |  |  |  | **Total 4 marks** |

| 15 |  | (= 6) oe **or** 3 × 4.8 (= 14.4) oe or4.8 × (3 + 2.5) ( = 26.4)  |  | 5 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | (= 6) oe **and** 3 × 4.8 (= 14.4) oeor[4.8 × (3 + 2.5)] – [0.5 × 2.4 × 2.5 + 0.5 × 2.4 × 2.5] or“26.4” – 6 (= 20.4) or |  |  | M1 |
|  |  | (“6” + “14.4”) ÷ 1.8 (= 11.3…) or “20.4” ÷ 1.8 (= 11.3…) or |  |  | M1 dep on M1 for a method to find the number of tins for their area |
|  |  | “12” × 16.4(0) (= 196.8(0))or 190 ÷ 16.4 (=11.58…) and “12” |  |  | M1 dep on previous M1 for a method to calculate the cost for their number of tins (their number of tins must be rounded up to the next integer)or the number of tins that can be bought compared with their number of tins |
|  |  | *Working required* | No and 196.8(0) or 11.58 and 12 seen |  | A1 dep on M2SC B1 for 190 ÷ 16.4(0) if M0 scored |
|  |  |  |  |  |  | **Total 5 marks** |

| 16 |  | 6 × 11 + 18 × 25 + 30 × 23 + 42 × 15 + 54 × 6 (= 2160) **or**66 + 450 + 690 + 630 + 324 (= 2160)[lower bound products are: 0, 300, 552, 540, 288][upper bound products are: 132, 600, 828, 720, 360] |  | 4 | M2 for at least **4** correct products added (need not be evaluated) **or**If not M2 then award:M1 for consistent use of value within interval (including end points) for at least **4** products which must be addedorcorrect midpoints used for at least **4** products and not added |
| --- | --- | --- | --- | --- | --- |
|  |  | “2160” ÷ “80” |  |  | M1 dep on at least M1Allow division by their Σ*f* provided addition or total under column seen |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 27 |  | A1  |
|  |  |  |  |  |  | **Total 4 marks** |

| 17 |  |  or |  | 3 | M1 for expansion of bracket on the LHS or dividing the RHS by 3 with two terms |
| --- | --- | --- | --- | --- | --- |
|  |  | or 1 = 4*x* oroe or ⎼4*x* = ⎼1 or oe or oe |  |  | M1 ft (dep on 4 terms) for terms in *x* on one side of equation; number terms on the other  |
|  |  | *Working required* |  |  | A1 oe dep on M1 awarded |
|  |  |  |  |  |  | **Total 3 marks** |

| 18 |  | **Two pairs** of intersecting arcs with equal radii centre *A* and *B*  |   | 2 | M1 for arcs that intersect within or on the guidelines **or** correct perpendicular bisector without arcs. |
| --- | --- | --- | --- | --- | --- |
|  |  | *Working required* | Bisector with construction arcs |  | A1 for a fully correct bisector with two intersecting arcs |
|  |  |  |  |  |  | **Total 2 marks** |

| 19 |  | 3 × 180 (= 540) or 360 – [(180 – 90) + (180 – 135) + (180 – 67) + (180 – 119)] (= 51) or360 – (90 + 45 + 113 + 61) (= 51) |  | 3 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | 90 + 135 + 67 + 119 + *x* = “540” oe411 + *x* = “540” oe or“540” – (90 + 135 + 67 + 119) or3 × 180 – (90 + 135 + 67 + 119) oe or540 – 411 or 180 – “51” oe |  |  | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 129 |  | A1 |
|  |  |  |  |  |  | **Total 3 marks** |

| 20 |  | 2 : 3 : 15 oe or 20 or (1 : 5) × 3 or(1 : 5 =) 3 : 15 or 2*n* : 3*n* : 15*n* e.g. 4 : 6 : 30 orG(reen) = 2, O(range) = 3 , Y(ellow) = 15 |  | 3 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | oe or 14 × 2 oroe oroe |  |  | M1  |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 28 |  | A1 or 28 : 42 : 210 or 28 , 42 , 210If not in this order must be labelled correctly |
|  |  |  |  |  |  | **Total 3 marks** |

| 21 | (a) | 18 000 + 14 × 1160 (= 34 240) oe or18 000 + 16 240 (= 34 240) |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | “34 240” – 32 000 (= 2240) or (= 1.07)  |  |  | M1 |
|  |  | or (= 107) or “1.07” – 1 (= 0.07) |  |  | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 7 |  | A1 |
|  | (b) | e.g. 1 − 0.15 (= 0.85) or 100(%) − 15(%) (= 85(%))  |  | 3 | M1 |
|  |  | e.g. 39 865 ÷ 0.85 or39 865 ÷ 85 × 100 oe  |  |  | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 46 900 |  | A1 |
|  |  |  |  |  |  | **Total 7 marks** |

| 22 |  | 1 – (0.24 + 0.4) (= 0.36) oe or 3*x* + *x* = 1 – (0.24 + 0.4) oe  |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | 48 ÷ 0.24 (= 200) or“0.36” ÷ 4 (= 0.09) or“0.36” ÷ 4 × 3 (= 0.27)  |  |  | M1 |
|  |  | “0.27” × “200” or“200” × “0.36” ÷ 4 × 3 (“200” – 48 – “80”) ÷ 4 × 3 |   |  | M1 for a complete method |
|  |  |  | 54 |  | A1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 22**ALT** |  | 1 – (0.24 + 0.4) (= 0.36) oe or 3*x* + *x* = 1 – (0.24 + 0.4) oe  |  | 4 | M1 |
| --- | --- | --- | --- | --- | --- |
|  |  | 48 ÷ 24 (= 2) oe or |  |  | M1 |
| oe or |
| oe |
|  |  | oe or |  |  | M1 for a complete method |
| oe or  |
| oe |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 54 |  | A1 |
|  |  |  |  |  |  | **Total 4 marks** |

| 23 |  | or or  |  | 5 | M1 | M2 for oe(= 28.0030…) or 28 |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | oe or 28 oroe or 28  |  |  | M1 |
|  |  | oe or 44oe or 88 |  |  | M1 for use of *πd* or oeAllow any value of *AB* > 18 if M2 not scored |
|  |  | “28…” + “43.9…” (= 71.9900…) or“28” + “44” |  |  | M1ft from previous M1Allow *their* *d* + *their*  |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 72 |  | A1 awrt 72 |
|  |  |  |  |  |  | **Total 5 marks** |

| 24 | (a) |  | 0.000 625 | 1 | B1 |
| --- | --- | --- | --- | --- | --- |
|  | (b) | 25 000 000 oe e.g. 25 × 106 or 0.25 × 108**or** 2.5 × 10*n**n* ≠ 7 |  | 2 | M1 |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* | 2.5 × 107 |  | A1 |
|  |  |  |  |  |  | **Total 3 marks** |

| 25 | (a) | or or  |  | 2 | M1 or for (*y* ± *a*)(*y* ± *b*) where *ab* = −48 or *a* + *b* = −2 |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | A1 oe Allow any letter for *y* |
|  | (b) |  |  | 1 | B1 allow Allow any letter for *x* |
|  | (c) |  oe or oe |  | 3 | M1 Condone = rather than > or any other sign for this mark. |
|  |  | or or or or oe |  |  | M1 Condone = rather than > or any other sign for this mark. |
|  |  | *Correct answer scores full marks (unless from obvious incorrect working)* |  |  | A1 oe accept Must have correct sign on answer line dep on M1 (sight of correct answer in working space and just (*w* =) oe on answer line gains M2 only) |
|  |  |  |  |  |  | **Total 6 marks** |

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