## Mark Scheme (Results)

## Summer 2018

Pearson Edexcel GCSE (9-1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F

## 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 or 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.

## 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

Summer 2018
Publications Code 1MA1_2F_1806_MS
All the material in this publication is copyright
© Pearson Education Ltd 2018

## 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. Send the response to review for your Team Leader to check.

## 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 I gnoring 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. (eg. 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 (eg. 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.

## 11 Number in brackets after a calculation

Where there is a number in brackets after a calculation E.g. $2 \times 6(=12)$ then the mark can be awarded either for the correct method, implied by the calculation or for the correct answer to the calculation.

12 Use of inverted commas
Some numbers in the mark scheme will appear inside inverted commas E.g. " 12 " $\times 50$; the number in inverted commas cannot be any number - it must come from a correct method or process but the candidate may make an arithmetic error in their working.

## 13 Word in square brackets

Where a word is used in square brackets E.g. [area] $\times 1.5$ : the value used for [area] does not have to come from a correct method or process but is the value that the candidate believes is the area. If there are any constraints on the value that can be used, details will be given in the mark scheme.

## Misread

If a candidate misreads a number from the question. Eg. uses 252 instead of 255 ; method or process marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.

## 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: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Question |  | Answer | Mark | Mark scheme | Additional guidance |
| 1 |  | 8 | B1 | cao |  |
| 2 |  | 1.6 | B1 | cao |  |
| 3 |  | 243 | B1 | cao |  |
| 4 |  | Suitable number eg. 564000 | B1 | for a suitable 6 digit number with 4 as thousands digit | Can be a decimal eg 4652.99, 4625.90 |
| 5 | (a) <br> (b) <br> (c) | $\begin{aligned} & 350 \\ & 7.7 \\ & 320 \end{aligned}$ | $\begin{aligned} & \text { B1 } \\ & \text { B1 } \\ & \text { B1 } \end{aligned}$ | cao <br> cao <br> cao | Accept trailing zeros eg 350.0 <br> Accept trailing zeros eg 7.70 <br> Accept trailing zeros eg 320.0 |
| 6 |  | 3 and 9 | P1 <br> A2 <br> (A1 | for starting to list factors of 36 or multiples of 3 or odd numbers cao for one correct answer) | Must be at least 3 . <br> In either order |
| 7 |  | (MYL) (MLY) (YML) (YLM) (LMY) (LYM) | M1 A1 | for at least 3 correct different combinations fully correct list with no extras or repeats | for M1 ignore extras or repeats; accept words or unambiguous abbreviations |



| Paper: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Que |  | Answer | Mark | Mark scheme | Additional guidance |
| 10 | (a) <br> (b) | $23,29$ <br> Explanation | B2 <br> (B1 <br> C1 | for 23 and 29 and no extras <br> for one correct and no more than one incorrect) <br> for decision and explanation eg yes and because all other even numbers have 2 as a factor | 2 correct and 1 incorrect award B1 <br> Decision is required may be yes or implied by she is ... oe. <br> Do not accept statements that are ambiguous, or contradictory |
| 11 | (a) <br> (b) <br> (c) | $\begin{aligned} & 17 \\ & 12 \\ & 5.5 \end{aligned}$ | $\begin{aligned} & \text { B1 } \\ & \text { B1 } \\ & \text { B1 } \end{aligned}$ | cao <br> cao <br> Accept $\frac{11}{2}, 5 \frac{1}{2}$ oe |  |
| 12 |  | Correct pie chart | M1 <br> A1 <br> A1 | for method to find at least one angle <br> eg B: $360 \div$ " 36 " $\times 11(=110)$ or P: $360 \div$ " $36 " \times 17(=170)$ or HD: $360 \div$ " 36 " $\times 8$ ( $=80$ ) <br> for at all 3 angles correctly calculated <br> OR at least one accurately drawn angle <br> for a fully correct labelled pie chart | Accept numbers if present in Number of fan column eg 0 added to a number is acceptable for this mark. <br> Labels as "snacks" from table not just angle size. |


| Paper: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Question |  | Answer | Mark | Mark scheme | Additional guidance |
| 13 |  | $\frac{338}{350}$ | M1 <br> A1 | for 350-12 (=338) or $\frac{y}{350}$ oe where $y<350$ and $y \neq 12$ or $1-\frac{12}{350}$ oe oe | For the method mark probability fractions can be expressed as equivalent expressions, even if not correct probability notation eg. 338 : 350 scores M1 A0 <br> Using correct probability notation Allow 0.96 to 0.97 or $96 \%$ to $97 \%$ |
| 14 |  | $\begin{array}{ccc} \hline & & \mathbf{4} \\ 45 & 22 & \\ & & \mathbf{1 8} \\ & \mathbf{2 3} & \\ & & 16 \end{array}$ | C1 <br> C1 <br> C1 | for correctly placing at least one piece of data (22 or 16) OR for finding at least one unknown piece of data ( $4,18,7$ or 23 ) <br> for correctly placing at least one piece of data (22 or 16) and for finding at least one unknown piece of data $(4,18,7$ or 23$)$ <br> for a complete correct tree. <br> SC C2 if all 6 figures are shown as the numerator of fractions in the correct places | Unknown figures may be seen in working and need not be on the diagram <br> Award of this mark implies the first C1 |
| 15 | (a) <br> (b) | Correct evaluation <br> Correct or corrected reasoning given | C1 $\mathrm{C} 1$ | for explanation eg $x$ is not a base angle or states $x=54^{\circ}$ <br> eg (because) alternate angles are equal, or Allied angles / Co-interior angles add up to 180 or they are not corresponding (they are alternate) OR selects correct reason used by William |  |




| Paper: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Question |  | Answer | Mark | Mark scheme | Additional guidance |
| 20 | (a) | $m^{7}$ | B1 | cao |  |
|  | (b) | $125 n^{3} p^{9}$ | B2 |  | Allow multiplication signs |
|  |  |  | (B1 | for 2 of 3 terms correct in a single product) | $125 n^{3} p^{x}$ or $125 n^{x} p^{9}$ where $x \neq 0$ or $a n^{3} p^{9}$ where $a$ is a number |
|  | (c) | $8 q^{6} r^{3}$ | B2 |  | Allow multiplication signs |
|  |  |  | (B1 | for 2 of 3 terms correct in a single product) | $8 q^{6} r^{x}$ or $8 q^{x} r^{3}$ where $x \neq 0$ or $a q^{6} r^{3}$ where $a$ is a number |
| 21 |  | 280 | M1 | for listing at least 3 multiples of both 40 and 56 OR finds the prime factors of both 40 and 56 | $40,80,120, \ldots 56,112,168, \ldots$ <br> OR 2,2,2,5 and 2,2,2,7 |
|  |  |  | A1 | cao |  |
|  | (b) | 60 | B1 | 60 or $2^{2} \times 3 \times 5$ oe | $2^{2}, 3,5$ not enough ie must be a product |
| 22 |  | $y=3 x-6$ | M1 | for a correct method to find the gradient of the line, or $m=3$ OR identifies -6 as the intercept in words or in a partial equation OR $y-b=m(x-a)$ where $m \neq 3$ and $(a, b)$ is a correct coordinate | Just ringing -6 is insufficient |
|  |  |  | M1 | for $y=3 x+c$ or ( $\mathrm{L}=3 x-6$ or $y=$ " 3 " $x-6$ OR $y-y_{1}=3\left(x-x_{1}\right)$ or $y-b=" 3 "(x-a)$ where $(a, b)$ is a correct coordinate | Award of this mark implies the first M1 $c$ must be seen either as a letter or a number |
|  |  |  | A1 | accept $y=3 x+-6$ oe |  |



| Paper: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Question |  | Answer | Mark | Mark scheme | Additional guidance |
| 25 |  | No (supported) | P1 | For a process to calculate the initial or new pressure, eg $(70+10) \div(20+10)(=2.6$ to 2.7$)$ or $80 \div 30 \quad(=2.6$ to 2.7$)$ or $70 \div 20(=3.5)$ | Accept any value in the range 2.6 to 2.7 if unsupported by working |
|  |  |  | P1 | For a complete process to make a comparison eg. $0.8 \times$ " 3.5 " ( $=2.8$ ) <br> OR $\frac{(" 3.5 "-" 2.6 ")}{" 3.5 "} \times 100$ ( $=22$ to 26) <br> OR " 3.5 " $\times 0.2(=0.7)$ and $80 \div 30(=2.6$ to 2.7$)$ <br> OR $\frac{" 2.6 "}{4.5 "}(\times 100)(=0.74$ to 0.78 or 74 to 78$)$ |  |
|  |  |  | A1 | for a correct conclusion supported by accurate figures eg 2.8 and 2.6(6...) <br> OR decrease is $24 \%$ (or $22 \%$ to $26 \%$ ) <br> OR 0.7 and 2.6 to 2.7 and 3.5 <br> OR 0.7 and 0.9 <br> OR 0.76 (or 0.74 to 0.78 ) <br> OR $76 \%$ (or $74 \%$ to $78 \%$ ) | Allow truncation or rounding of figures |


| Paper: 1MA1/2F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Question |  | Answer | Mark | Mark scheme | Additional guidance |
| 26 |  | 280 | P1 | for starting to use Pythagoras to find the missing side eg $8.4^{2}-7.2^{2}(=18.72)$ | Award P1 for a correct Pythagorean statement eg $x^{2}+7.2^{2}=8.4^{2}$ |
|  |  |  | P1 | for a complete process to find the missing side eg $\sqrt{70.56-51.84}$ or $\sqrt{18.72}(=4.32 \ldots)$ | 4.3 truncated or rounded can imply P2 |
|  |  |  | P1 | (dep P1) for a process to find the area of the triangular face eg [length of base] $\times 7.2) \div 2(=15.57 .$. <br> OR the volume of the cuboid eg [length of base] $\times 7.2 \times 18(=560.7$..) | Uses a figure they show as the length of the base of the right angled triangle but dep on P1 Allow 15.57.. truncated or rounded if unsupported |
|  |  |  | P1 | for a complete process to find the volume of the prism eg " $15.5 . . " \times 18$ or " $560.7 . . " \div 2$ |  |
|  |  |  | A1 | answer in the range 278-281 | If an answer is given in the range 278 to 281 but then incorrectly given to 3 sig fig this mark can still be awarded. |

## 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: $\pm 5$ 응
Measurements of length: $\pm 5 \mathrm{~mm}$

| Paper: 1MA1/2F |  |  |  |
| :---: | :---: | :---: | :---: |
| Question |  | Modification | Mark scheme notes |
| 7 |  | 9 rows have been added to the table. Wording added 'You may not need to use all the rows.' | Standard mark scheme |
| 8 |  | Horizontal lines added to the information. | Standard mark scheme |
| 11 | (a) | MLP only: x changed to t | Standard mark scheme but for MLP $x$ changed to $t$ |
| 11 | (c) | Braille only: f changed to m | Standard mark scheme but for Braille $f$ changed to $m$ |
| 12 |  | Diagram enlarged. 10 degree markings and a dot at the centre have been added to the pie chart. | Standard mark scheme |
| 14 |  | Diagram enlarged. Wording added 'There are six spaces to fill.' Braille will label the answer spaces as shown below. <br> (iii) <br> (i) <br> (iv) <br> 45 <br> (v) <br> (ii) <br> (vi) | Standard mark scheme |


| Paper: 1MA1/2F |  |  |  |
| :---: | :---: | :---: | :---: |
| Question |  | Modification | Mark scheme notes |
| 15 | (a) | Diagram enlarged. <br> Angles moved outside of the angle arcs, and the arcs have been made smaller. Lines have been made longer. Wording added 'The diagram shows triangle ABC. $\mathrm{AC}=\mathrm{BC}$ Angle $\mathrm{ABC}=63^{\circ}$ Angle ACB is marked x .' | Standard mark scheme |
| 15 | (b) | Diagram enlarged. <br> Angles moved outside of the angle arcs, and the arcs have been made smaller. <br> Arrows have been made longer <br> Wording added 'In the diagram, DE is parallel to FGH. Angle DEG $=57^{\circ}$ Angle FGE is marked y.' | Standard mark scheme |
| 16 |  | Wording added 'There is one space to fill.' Braille will label the answer space (i). | Standard mark scheme |
| 17 |  | Horizontal lines added to the information. | Standard mark scheme |
| 18 |  | Diagram enlarged. Shading changed to dotty shading. $y$ axis cut to go from -2 to 5. Shapes labelled 'shape A' and 'shape B'. | Standard mark scheme |
| 19 |  | Diagram enlarged | Standard mark scheme |
| 22 |  | Diagram enlarged | Standard mark scheme |
| 24 | (a) | Table has been turned to vertical format and left aligned. Wording added 'There are five spaces to fill.' Braille will label answer spaces (i) to (v) from left to right. | Standard mark scheme |
| 24 | (b) | Diagram enlarged | Standard mark scheme |


| Paper: 1MA1/2F |  |  |  |
| :---: | :---: | :---: | :---: |
| Question |  | Modification | Mark scheme notes |
| 26 |  | Model provided for all candidates. Diagram enlarged and also provided for MLP. Dashes made longer and thicker. Edges of the prism have been labelled A to F. Wording added 'They show a right angled triangular prism. $\mathrm{AB}=7.2 \mathrm{~cm} \mathrm{BC}=8.4 \mathrm{~cm} \mathrm{CD}=18 \mathrm{~cm}$ Angle BAC is a right angle.' | Standard mark scheme |

