Mark Scheme (Results)

January 2018

Pearson Edexcel International GCSE
Mathematics A (4MA0)
Foundation Paper 1FR

edexcel

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at www.edexcel.com.

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

www.edexcel.com/contactus

Pearson: helping people progress, everywhere

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

January 2018
Publications Code 4MA0_1FR_1801_MS
All the material in this publication is copyright
© Pearson Education Ltd 2018

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.
- 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
- 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.
  Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks.
  If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
  If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.
  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 of the question CANNOT be awarded in another.

Question	Working	Answer	Mark	Notes
1 (a)		8024	1	B1
(b)		38, 540, 623, 5043	1	B1
(c)(i)		300	2	B1
(ii)		76000		B1
2 (a)		8 cm or 80 mm or 3.1 inches	2	B1 for 7.8 – 8.2 or 78 – 82 or 3 – 3.2 B1 correct units
(b)(i)		acute	1	B1
(ii)		50	1	B1 ± 2
3	3 × 28 (= 84) **or** 28 ÷ 2 (=14) ‘14’ + ‘84’ + 28	126	3	M1 M1 for a complete method A1
4 (a)		19	1	B1
(b)		39	1	B1
(c)		Reason	1	B1 e.g. all the terms must be odd (but 102 is even)

Question	Working	Answer	Mark	Notes
5 (a)		12	1	B1
(b)		S drawn	2	M1 Any square or non-square shape with area 16 cm^2 A1 Square 4 by 4
6	51 − −11 or 51 + 11 or −11 − 51	62	2	M1 A1 (accept −62)
7 (a)		160	1	B1 (accept 160 000)
(b)	270 000 − 80 000	190	2	M1 subtract two areas (at least one correct), allowing suppression of 000s A1 (accept190 000)
(c)		Correct bar	1	B1
(d)	$140000 \times \frac{7}{100}$	9800	2	M1 A1
8 (a)	0.375, 0.38, 0.146, 0.33(3..)	0.146, $\frac{1}{3}, \frac{3}{8}$, 38%	2	M1 converts to common form (at least one correct) A1 (SC B1 for any three in the correct order)
(b)	1, 2, 3, 4, 6, 8, 12, 24	12 and 6	2	B2 12 and 6 (B1 $x + y = 18$ where one of x, y is a factor of 24 or any two factors of 24 which do not sum to 18)

Question	Working	Answer	Mark	Notes
9 (a)(i)	18, 22, 23, 26, 27,31,31,34,41, 47	29	2	M1 order and identify middle pair A1
(ii)		50%	1	B1 ft answer to (i)
(b)	(22+18+31+31+41+26+27+47+34+23) ÷ 10	30	2	M1 A1
(c)	18 + 32	50	2	M1 A1
10 (a)		B	1	B1
(b)		$\frac{1}{7}$	1	B1
(c)		$\frac{5}{7}$	1	B1
(d)	$0.5 = \frac{5}{10}$ so 3 grey tiles with **C** Total of 4 grey tiles	$\frac{4}{10}$	2	M1 for $\frac{5}{10}$ or 3 A1 oe

Question	Working	Answer	Mark	Notes
11 (a)		16	1	B1
(b)		3	1	B1
(c)	$4t = 18$	4.5	2	M1 A1
12 (a)		70	1	B1 ft '55'
(b)	$(180 - 70) \div 2$ or $(360 - 2 \times 70) \div 4$	55	2	M1 A1 allow ft on their *FPA*
13 (a)		60	1	B1
(b)	$2 \times 8 + 3 \times 5$	31	2	M1 A1
(c)	$BC = 2x$, $CD = x + 5$ $x+'2x'+'x+5'$	$4x + 5$	3	M1 for *BC* or *CD* M1 for the sum of 3 lengths with at least one of *BC*, *CD* correct A1

Question	Working	Answer	Mark	Notes
14	2 × 0.30 (= 0.60) **or** 6 × 0.30 (= 1.80) 3.55 − 3 × '0.60' (= 1.75) **or** 3.55 – '1.80' (= 1.75) 1 kg costs '1.75' ÷ 2.5	0.70	4	M1 M1 for 3.55 − 3 × '0.60 ' M1 for '1.75' ÷ 2.5 A1 (accept 0.7)
15	$\angle ADE = 180 - 124$ (= 56) or $\angle ADE = \frac{360 - 2 \times 124}{2}$ (=56) $\angle DAE = \angle ADE$ = '56' $\angle AEC$ = 2 × '56'	112	4	M1 M1 M1 for 2 × '56' **or** for $\angle AED$ = 180 − 2 × '56' (=68) **and** $\angle AEC$= 180 – '68' A1
16 **ALT**	210 ÷ 9.72 (= (€)21.60..) '21.60..' × 1.10 (= ($)23.765) 79 − 23.765.. 79 ÷ 1.1 × 9.72 (= 698.7..) **OR** 79 ÷ 1.1 (= 71.81...) **and** 210 ÷ 9.72 (= 21.60...) '698' – 210 (= 488.7...) **OR** '71.8' – '21.6' (= 50.21...) '488' ÷ 9.72 × 1.1 **OR** '50.2' × 1.1	55 55	4 4	M1 for 210 ÷ 9.72 **or** ($)1 = 9.72 ÷ 1.10 (= 8.836.. (EGP)) oe M1 for'21.60..' × 1.10 **or** 210 ÷ '8.836..' (= 23.765..) oe M1 A1 (Accept answer in the range 55 – 55.3) M1 convert $79 into pounds **OR** convert $79 into euros **and** 210 pounds into euros M1 (dep) for subtraction '698' – 210 **or** '71.8' – '21.6' M1 for conversion of answer into dollars A1 (Accept answer in the range 55 – 55.3)

Question	Working	Answer	Mark	Notes
17 (a)	$5x+5y-3x+3y$	$2x + 8y$	2	M1 A1
(b)		t^{10}	1	B1
(c)		m^{12}	1	B1
18 (a)	<table><tr><td>x</td><td>−2</td><td>−1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>−6</td><td>−2</td><td>2</td><td>6</td><td>10</td><td>14</td></tr></table>	Correct line	3	B3 for a correct line between $x = -2$ and $x = 3$ If not B3 then award B2 for a correct line through at least 3 of (−2, −6) (−1, −2) (0, 2) (1, 6) (2, 10) (3, 14) **OR** for all of (−2, −6) (−1, −2) (0, 2) (1, 6) (2, 10) (3, 14) plotted, not joined **OR** line through (0, 2) and clear attempt to use a gradient of 4 eg line through (0, 2) and (1, 10) If not B2 then award B1 for at least 2 correct points stated or plotted (may be in a table) **OR** for a line drawn with a positive gradient through (0, 2) **OR** for a line with a gradient of 4
(b)	$4p + 2 = 50$	12	2	M1 $4p + 2 = 50$ A1

Question	Working	Answer	Mark	Notes
19	$\frac{(24+30)}{2}\times 12 (= 324)$ $\sqrt{'324'}\ (= 18)$ $4 \times '18'$	72	4	M1 for a complete method for the area M1 M1 A1
20	$\pi \times 80\ (= 251.327....)$ $\pi \times 80 - 2 \times 80\ (= 91.327...)$	91.3	3	M1 oe M1 for a complete method A1 $91.2 - 91.43$
21	$\frac{3}{4} \times 24\ (= 18)$ **or** $\frac{1}{4} \times 24\ (= 6)$ '18' × 30 (= 540) **or** '6' × 20 (= 120) $\frac{'540' + '120' - 400}{400} \times 100\ (= 65)$ oe	65%	4	M1 M1 M1 for a complete method A1 SC: B3 for an answer of 165%
22	50 000 × 30 (= 1500000) **or** 50 000 ÷ (100 × 1000) (= 0.5) **or** 30 ÷ (100 × 1000) (= 0.0003) '1500000' ÷ (100 × 1000) **or** '0.5'× 30 **or** '0.0003' × 50000	15	3	M1 for a correct first step **or** an answer with the digits 15 eg 0.0015, 1500 M1 for a complete method A1

Question	Working	Answer	Mark	Notes
23	$\frac{5}{8}\times\frac{3}{4}\left(=\frac{15}{32}\right)$ $\left(1-\frac{5}{8}\right)\times\frac{2}{3}\left(=\frac{6}{24}\right)$ '$\frac{15}{32}$' + '$\frac{6}{24}$' oe	$\frac{5}{8}\times 320$ (= 200) **or** $\left(1-\frac{5}{8}\right)\times 320$ (= 120) $\frac{3}{4}\times$'200' (= 150) oe **and** $\frac{2}{3}\times$ '120' (= 80) oe $\frac{\text{'150'+'80'}}{320}$ oe	$\frac{23}{32}$	4	M1 M1 M1 for a complete method A1 oe
24 (a)		2, 3, 4, 6, 8, 9, 10, 12	1	B1
(b)		5, 7, 11, 13	2	B2 (B1 any set of 4 elements which satisfies exactly one of $A\cap C=\varnothing$, $B\cap C=\varnothing$ **or** just 2 or 3 of 5, 7, 11, 13 **or** all four correct values and one incorrect value eg 1, 5, 7, 11, 13)
25	$20^2-10^2(=300)$ $BD=\frac{\sqrt{'300'}}{2}$ (= 8.66…) $AD^2 = 10^2 + (0.5 \times \text{their } BC)^2$	13.2	4	M1 M1 M1 (indep) A1 for answer in the range 13.2 − 13.25