Mark Scheme (Results)

January 2019

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

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

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
  - 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, 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

Apart from Questions 17b and 19, where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question	Working	Answer	Mark		Notes
1 (a)		19	1	B1	cao
(b)		24	1	B1	cao
(c)		2	1	B1	cao
(d)		2 correct lines	2	B2	2 correct lines and no incorrect lines B1 for 1 correct line, ignore incorrect lines
2 (a)		6 hundredths	1	B1	Or 6/100 or 0.06 or hundredths
(b)		21	1	B1	cao
(c)		160 002	1	B1	cao
(d) (i)		80	2	B1	cao
(d)(ii)		4630		B1	cao
3 (a)	Correct labels on horizontal axis All bars correct height	Completely correct bar chart	2	B1 B1	
(b)		13	1	B1	ft their bar
(c)	18 : 4		2	M1	For 18 : 4 or correct ratio but not simplified or for 2 : 9 or 1 : 4.5 **or** 9 and 2 seen with incorrect notation
		9 : 2		A1	Allow 4.5 : 1

	Question	Working	Answer	Mark	Notes
4	(a)		0.023	1	B1 cao
	(b)		$5\dfrac{2}{3}$	1	B1 cao
	(c)	$\dfrac{63}{252}, \quad \dfrac{90}{252}, \quad \dfrac{84}{252}, \quad \dfrac{56}{252}$ $\dfrac{1}{4} = 0.25, \dfrac{5}{14} = 0.357..., \dfrac{1}{3} = 0.33..., \dfrac{2}{9} = 0.22....$	$\dfrac{2}{9}, \dfrac{1}{4}, \dfrac{1}{3}, \dfrac{5}{14}$	2	B2 oe B1 for at least 3 fractions written as decimals or with the same common denominator or for 3 fractions in the correct order.
	(d)	$\dfrac{4}{6 \times 7}$		2	M1
			$\dfrac{2}{21}$		A1
5	(a) (i)		metres	2	B1
	(a)(ii)		millilitres		B1
	(b)	2 kg = 2000 g or 150 g = 0.15 kg		3	M1
		'2000'÷ 150 or 2 ÷ "0.15" (= 13.33...)			M1
			13		A1
6	(a)		5*h*	1	B1 cao
	(b)		3*d*²	1	B1 cao
	(c)		9*m* – 4*p*	2	B2 B1 for 9*m*, B1 for −4*p*
	(d) (i)		2	2	B1 cao
	(d)(ii)		19		B1 cao

Question	Working	Answer	Mark	Notes
7	13.60 – 2.20 – 3 (= 8.4(0)) '8.4' ÷ 3	 2.8(0)	3	M1 M1 A1
8		HB, HR, HG, EB, ER, EG	2	B2 All correct with no repeats or B1 for at least 4 correct or all correct with repeats SCB1 if they do 12 (repeat each one, the other way round)
9 (a) (b) (c)	 (107 – 17) ÷ 5 18	536 13	1 1 2	B1 cao B1 cao M1 A1
10 (a) (b) (c)	$4y = -7 + 13$ oe $4 \times 3 - 7 \times 2\ (12 - 14)$	 1.5 $5h + 35$ -2	2 1 2	M1 A1 oe e.g.6/4 B1 cao M1 A1

Question	Working	Answer	Mark	Notes	
11		17 20	2	M1	A method to add on 2 hours 45 mins using 60 mins in an hour may be evidenced by 20 mins
				A1	or 5.20 pm
12	For 360 – (90 + 150 + 45) oe eg. 10 people = 30° or 1 person = 3° **or** 90 ÷ 30 150 ÷ (90 ÷ 30) eg 360 – (90 + 150 + 45) and 150 ÷ (90 ÷ 30)	50, 15, 25,75	3	M1 M1 A1	Method for finding number of people or missing angle Method for finding number of people and missing angle Fully correct table
13 (a)		3	2	M1 A1	for 10.5th or 10th or listing of numbers cao
(b)	(0 × 1) + 1 × 3 + 2 × 4 + 3 × 5 + 4 × 7 (=54) '54' ÷ 20	2.7	3	M1 M1 A1	(allow one error)
14 (a)		58	1	B1	
(b)	180 – (58 + ("180 – 114")) or 114 − 58	56	2	M1 A1	

Question		Working	Answer	Mark	Notes	
15	(a)	$0.07 \times 560 \ (=39.2(0))$ oe $560 + "39.2"$ 	599.2(0)	3	M1 M1 A1	M2 for 1.07×560 SC: If no marks awarded, award B1 for an answer of 520.8(0)
	(b)	$42 \div 7 \ (= 6)$ oe or $42 \div "39.2"(=1.07(14...))$ $(42 \div 7) \times 100$ oe or $"1.07..." \times 560$ 	600	3	M1 M1 A1	oe e.g. $42 \div 0.07$ or ft from (a)
16		$\pi \times 15^2 \ (= 225\pi = 706(.858...))$ **or** 707 **or** $2 \times \pi \times 15^2 \ (= 450\pi = 1413(.7...))$ **or** 1414 $110 \times 55 \ (= 6050)$ $"6050" - 2 \times "706..."$	4640	4	M1 M1 M1 A1	for area of one or two circles both values must come from a correct method for 4635 - 4640
17	(a)	$1 - (0.17 + 0.1 + 0.13 + 0.15)$ oe 	0.45	2	M1 A1	
	(b)	0.1×360 	36	2	M1 A1	

Question	Working	Answer	Mark	Notes
18 (a)	(3, 6), (6, 9), (9, 9), (9, 3), (6, 3)	(3, 6), (6, 9), (9, 9), (9, 3), (6, 3)	2	B2 for a fully correct enlargement If not B2 then award B1 for an enlargement SF 3 with shape in correct orientation but incorrect position **or** for a correct enlargement of SF 2 or SF 4 with centre O **or** for 4 out of 5 vertices correct
(b)		Rotation, Centre $(1, -1)$ 90° clockwise	3	B1 Rotation B1 $90°$ clockwise **or** $-90°$ **or** $270°$ anticlockwise B1 (centre) $(1, -1)$ NB: no marks if more than one type of transformation mentioned.
19 (a)		1.2	1	B1 cao
(b)(i)		1.9895(14474....)	2	B2 B1 for 23.1075 or 11.61464...
(b)(ii)		1.99	1	B1 ft as long as at least 3 dp in (b)(i)
20	e.g. $630 = 2 \times 315 = 2 \times 3 \times 105 = 2 \times 3 \times 3 \times 35$		2	M1 for at least 2 correct steps in repeated factorisation (may be seen in a tree diagram or 'ladder')
		$2 \times 3 \times 3 \times 5 \times 7$		A1 dep on M1 or for $2 \times 3^2 \times 5 \times 7$

Question	Working	Answer	Mark	Notes	
21 (a)	2, −1, _, _, 2, 7	correct table	2	B2	if not B2 then award B1 for 2 or 3 correct *y* values
(b)		correct graph	2	M1	for plotting at least 4 points correctly from their table (dep on B1 earned in (a))
				A1	fully correct curve
22	540 or $5 \times \left(180 - \dfrac{360}{5}\right)$ **or** 3×180 oe		3	M1	for 540 or a correct calculation for angles in a pentagon
	e.g. $2x + 37 + 3x + 90 + 130 + 3x - 5 = n$ **or** $8x = $ "540" $- 252$ $(= 288)$			M1	for equation or correct calculation for *x* NB: *n* can be any value provided *n* > 360
		36		A1	cao

Question	Working	Answer	Mark	Notes
23	$760 \div (2 + 3 + 5)$ $(=76)$ for at least 2 of: $2 \times$ "76"$(=152)$, $3 \times$ "76"$(=228)$, $5 \times$"76"$(=380)$ $\frac{1}{2} \times$ "152" oe $(=76)$ **or** $\frac{2}{3} \times$ "228" oe $(=152)$ **or** $\frac{30}{100} \times$ "380" oe $(=114)$ $\frac{1}{2} \times$ "152" $+ \frac{2}{3} \times$ "228" $+ \frac{30}{100} \times$ "380" oe **or** "76" + "152" + "114"	 342	5	M1 or $\frac{2}{10}, \ \frac{3}{10}, \ \frac{5}{10}$ oe e.g. 20%, 30%, 50% M1 or for $\frac{1}{2} \times \frac{2}{10} \left(= \frac{1}{10} \right)$ oe **or** $\frac{2}{3} \times \frac{3}{10} \left(= \frac{2}{10} \right)$ oe **or** $0.3 \times \frac{5}{10} \left(= \frac{15}{100} \right)$ oe M1 or $"\frac{1}{10}" + "\frac{2}{10}" + "\frac{15}{100}"$oe $= 10\% + 20\% + 15\% = 45\%$ M1 $\frac{45}{100} \times 760$ oe A1
24 (a)		c^8	1	B1 cao
(b)		x^{12}	1	B1 cao
(c)	$8x - 12y - 6x - 2y$ 	 $2x - 14y$	2	M1 for 3 correct terms A1

Q1d