

Mark Scheme (Results)

January 2019

Pearson Edexcel International GCSE
In Mathematics A (4MA1) Foundation Tier
Paper 1FR

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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
  - 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 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.

Apart from questions 16, 21, 23 and 24 (b) (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Manchester	1	B1
	(b)		80	1	B1
	(c)		105	1	B1
2	(a)		$\frac{1}{10}\ \frac{1}{6}\ \frac{1}{2}\ \frac{3}{4}$	1	B1
	(b)		0.25	1	B1
	(c)		20	1	B1
	(d)		$\frac{3}{8}$	1	B1 accept 0.375
3	(a)		3.5	1	B1 3.3 - 3.7
	(b)		*Q* marked	2	B2 for a correct point (B1 for angle or distance correct)

Question	Working	Answer	Mark	Notes
4 (a)		9.2	1	B1
(b)	8.4 − 3.8	4.6	2	M1 At least one correct A1
(c)		Bar correct height	1	B1 1.6 - 1.8 drawn
5 (a)		18	1	B1
(b)		15 18	2	B1, B1
(c)		Any correct pair	1	B1 14 and 15 or 15 and 16 or 15 and 22
6 (a)		(6, 2)	1	B1
(b)		*D* plotted	1	B1
(c)		Isosceles	1	B1
(d)	$\frac{2+4}{2}, \frac{2+7}{2}$	(3, 4.5)	2	M1 or one coordinate correct or (4.5, 3) A1

Question	Working	Answer	Mark	Notes
7	$\frac{60}{100} \times 53.50$ (= 32.1(0)) **or** $\frac{60}{100} \times 53.50 \times 2$ (= 64.2(0))	28.8(0)	4	M1 oe
	2 × 53.50 + 2 × "32.10" (= 171.2(0)) **or** 2 × 53.50 + "64.20" (= 171.2(0))			M1
	200 – "171.20"			M1
				A1
8 (a)		$4x + 3y$	2	B2 (B1 for $4x$ or $+ 3y$)
(b)	$2t = 12 - 3$	4.5	2	M1 or for $t + \frac{3}{2} = \frac{12}{2}$
				A1 oe
9 (a)		Pattern	1	B1
(b)		13	1	B1
(c)		15	1	B1
(d)	3 + 49 ×2 **or** 2n + 1 **or** 2 × 50 + 1	101	2	M1
				A1

Question	Working	Answer	Mark	Notes
10 (a)		$\frac{7}{20}$	1	B1 oe
(b)	20 − 7 − 11 (= 2) **and** "2" + 7 (= 9) **OR** 20 – 11 (= 9)		2	M1 for a complete method to find the number of beads that are either red or yellow- may be seen in probabilities
		$\frac{9}{20}$		A1 oe
(c)	eg $\frac{1}{2} \times 26$ (= 13)		3	M1 for a method to calculate the number of pink counters
	eg 10 − ("13" − 5) (= 2) **or** 26 – (26 – 10 – 5) – "13" (= 2)			M1 for a complete method to find the final number of blue counters
		$\frac{2}{26}$		A1 oe

Question	Working	Answer	Mark	Notes
11 (a)		**T** in correct place	2	B2 (B1 for a correct reflection in a line $x = k, k \neq 5$ or in $y = 5$)
(b)			1	B1 for **U** correct (ft)
(c)		Translation	2	B1 Translation (ft)
		$\begin{pmatrix} -6 \\ 0 \end{pmatrix}$		B1 correct vector (ft) NB Award no marks if more than one transformation is given

Question		Working	Answer	Mark	Notes
12		e.g.16s + 28s + 35s (= 79s) 6 min + 4 min + 4 min + "79s" (= 15 min 19s) 20min – "15min 19s"	4 41	3	M1 Complete method to find the time taken by the three songs M1 (dep) A1
13	(a)	−9, (−7), −5, −3, (−1), (1), 3	Table	2	B2 all correct (B1 2 or 3 correct)
	(b)		Correct line	2	M1 for at least 5 of their points plotted correctly (ft if at least B1 earned in (a)) A1
	(c)		× P in a correct place	2	M1 for a point marked above their line **or** for a point marked to the left of $x = 2$ A1 for a point marked above their line **and** marked to the left of $x = 2$ (SC B1 for the correct region identified but no point plotted)
14	(a)		48	1	B1
	(b)		14 641	1	B1

Question	Working	Answer	Mark	Notes
15	$45 \times 80 \times h$ or $3600h$ or 45×80 (= 3600) $9 \times 1000 \times 20$ (= 180 000) "180 000" ÷ (45 × 80)	50	4	M1 M1 M1 A1
16	$\frac{5}{3}+\frac{11}{4}$ $\frac{20}{12}+\frac{33}{12}$ $\frac{53}{12}=4\frac{5}{12}$ **Alternative method** $\frac{2}{3}+\frac{3}{4}=\frac{8}{12}+\frac{9}{12}$ $\frac{17}{12}=1\frac{5}{12}$ $1\frac{5}{12}+1+2=4\frac{5}{12}$	Shown Shown	3	M1 converts to improper fractions M1 converts to fractions with the same common denominator A1 Dep on M2 M1 correct method to add proper fractions M1 A1 Dep on M2

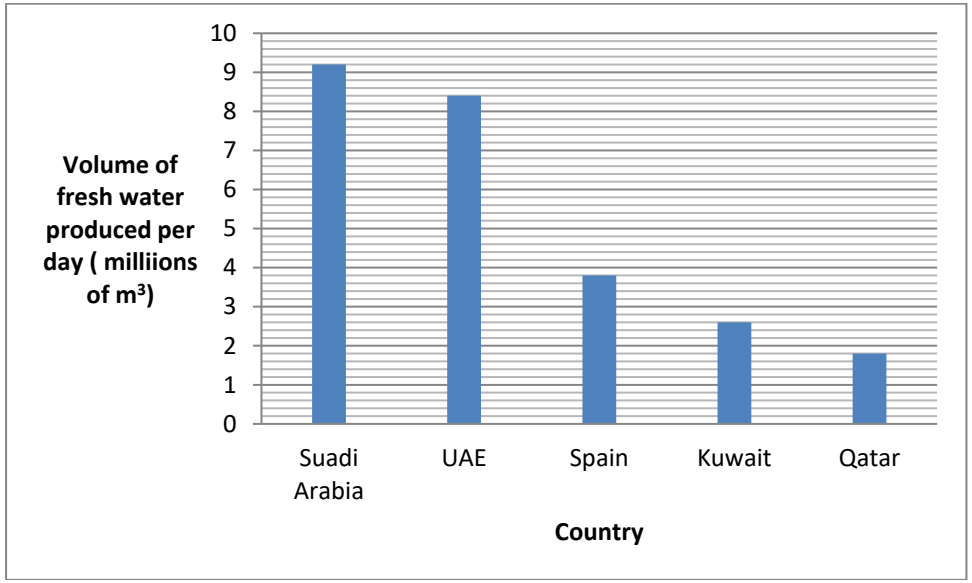
Question	Working	Answer	Mark	Notes
17	$\frac{3}{4}\times 60\ (=45)$ **or** $\frac{1}{4}\times 60(=15)$ **OR** $\frac{3}{4}\times\frac{3}{5}\left(=\frac{9}{20}\right)$ $\frac{3}{5}\times"45"(=27)$ **or** $\frac{4}{5}\times"15"\ (=12)$ **OR** $\frac{1}{4}\times\frac{4}{5}\left(=\frac{4}{20}\right)$ $\frac{"27"+"12"}{60}$ **OR** $"\frac{9}{20}"+"\frac{4}{20}"$	$\frac{13}{20}$	4	M1 M1 M1 For a complete method A1 oe
18	$14^2-10^2\ (=96)$ "96"+ 5^2 (= 121) $\sqrt{"121"}$	11	4	M1 M1 M1 A1
19	(a =) 40 − 14 (=26) e.g. $\frac{"26"+b}{2}=30$ **or** 30 + (30 – "26")	26 34	3	M1 Method to find a M1 Method to find b A1

Question	Working	Answer	Mark	Notes
20	$30.5 \div 8$ (= 3.8125) **OR** $60 \div 8$ (= 7.5) "3.8125" × 60 **OR** 30.5 × "7.5"	228.75	3	M1 M2 for $30.5 \div \frac{8}{60}$ oe M1 A1 accept 229, 228.8
21	$3x + 10 = x + 52$ $3x - x = 52 - 10$ **or** $2x = 42$ **or** $x = 21$ $y = 180 - 2 \times ("21" + 52)$ **or** $y = 180 - 2 \times (3 \times "21" + 10)$ **or** $y = 180 - ("21" + 52) - (3 \times "21" + 10)$	34	4	M1 for equating the expressions for angle *P* and angle *Q* M1 for isolating the terms in *x* M1 for a complete method A1 dep on M2
22	eg $\frac{187}{147}$ **or** $\frac{147}{187}$ **or** $\frac{90}{187}$ **or** $\frac{187}{90}$ eg $90 \div \frac{187}{147}$ **or** $90 \times \frac{147}{187}$ **or** $147 \times \frac{90}{187}$ **or** $147 \div \frac{187}{90}$	71	3	M1 for an appropriate scale factor, candidates may work in either cm or m M1 for a complete method, candidates may work in either cm or m A1 70.7 – 71

Question	Working	Answer	Mark	Notes
23	eg $8x + 4y = 18 +$ **or** $4x + 2y = 9 -$ $x - 4y = 9$ $4x - 16y = 36$ **or** $4(9 + 4y) + 2y = 9$ eg $4 \times$ "3" $+ 2y = 9$ **or** $4x + 2 \times$ "−1.5" $= 9$ **or** $x = 9 + 4 \times$ "−1.5"	$x = 3$, $y = -1.5$	3	M1 correct method to eliminate x or y: coefficients of x or y the same **and** correct operation to eliminate the selected variable (condone any one arithmetic error in multiplication) **or** writing x or y in terms of the other variable and correctly substituting M1 (dep) correct method to find second variable using their value from a correct method to find first variable or for repeating above method to find second variable A1 oe, dep first M1
24 (a)		4.8×10^{11}	1	B1
(b)		$2^{14} \times 3 \times 5^{10}$	3	B3 for the correct answer B2 for an answer in the form $2^m \times 3 \times 5^n$, where m and n are positive integers B1 for at least 2 correct steps in repeated prime factorisation (including tree diagram)
(c)		29 296 875	1	B1 Accept 3×5^{10}, 2.9296875×10^7

25	$\pi\times\left(\frac{12}{2}\right)^2$ (=113….) or $\pi\times\left(\frac{12}{2}-2\right)^2$ (= 50.2…) or $\pi\times\left(\frac{12}{2}\right)^2\div 2$ (=56.5...) or $\pi\times\left(\frac{12}{2}-2\right)^2\div 2$ (= 25.1…) eg $(\pi\times 6^2-\pi\times 4^2)\div 2$ oe	10π	3	M1 M1 for a complete method A1
26	$12\times 5.5=66$ "66" + 18 = 84 "84" ÷ 20	4.2	3	M1 M1 for a complete method A1

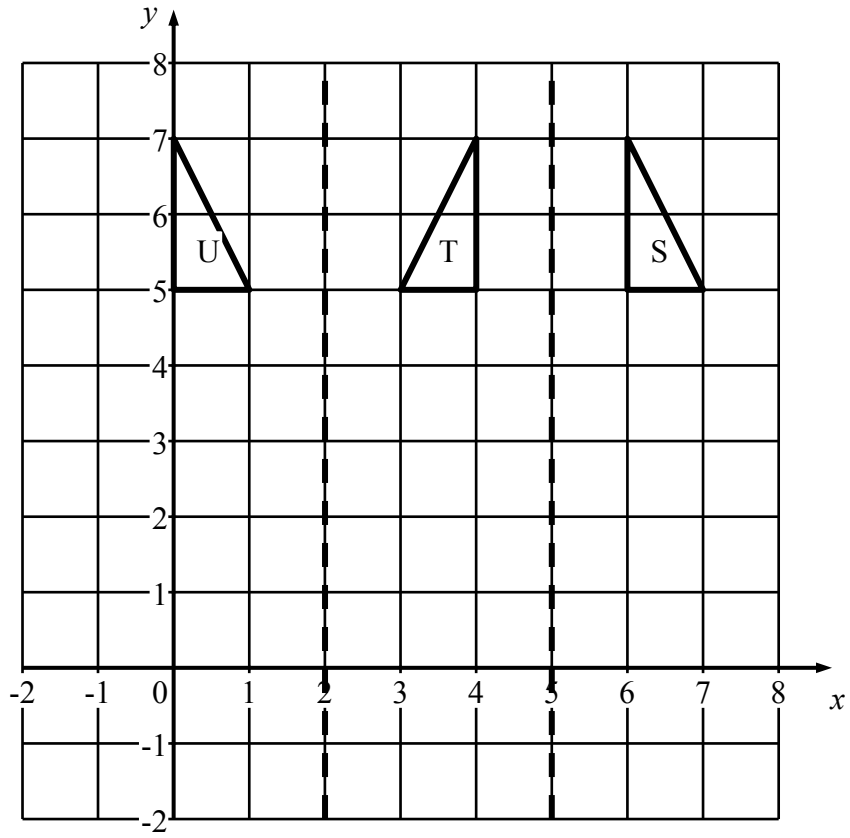
4


Volume of fresh water produced per day (milliions of m³)
10
9
8
7
6
5
4
3
2
1
0
Suadi Arabia
UAE
Spain
Kuwait
Qatar
Country

9



11



13

