

1MA1 Practice papers Set 3: Paper 1F (Regular) mark scheme – Version 1.1					
Question		Working	Answer	Mark	Notes
1.			$\frac{2}{5}, \frac{1}{2}, \frac{3}{5}, \frac{3}{4}$	3	M1 for correct method to change two fractions to marks or percentages or fractions with a common denominator or decimals with at least one conversion correct. M1 for correct method to change two fractions to marks or percentages or fractions with a common denominator or decimals with all conversions correct A1 for the correct order.
2.		$1000 \div 80$	12	3	P1 for working in consistent units with correct operation (maybe repeated subtraction from £10 or repeated addition to get to £10) P1 for 12.5 or 12 with remainder 4 A1 cao
3.	(a)		$4m$	1	B1
	(b)		$3a$	1	B1
	(c)		$4xy$	1	B1
4.	(a)		Four thousand, one hundred and seventeen	1	B1 for four thousand, one hundred and seventeen oe
	(b)		4100	1	B1 for 4100 in figures or words or 41 hundred

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Question		Working	Answer	Mark	Notes
5.	(a)		(1 A) (2 A) (6 A) (1 C) (2 C) (6 C) (1 E) (2 E) (6 E)	2	B2 for all 9 (no extras, ignore repeats) (B1 for at least 5 correct)
	(b)		$\frac{1}{9}$	2	M1 ft from (a) for denominator of '9' or numerator of 'number of outcomes including 2 and E' seen A1 cao OR M1 for $\frac{1}{3} \times \frac{1}{3}$ A1 cao
6.			No and e.g. £4.10, £4 or 10p	3	M1 for adding at least 3 of 1.25, 1.15, 85, 85 A1 for 4.1(0) or 410 C1 ft (dep on M1) for correct statement comparing £4 and their total (units must be given and correct) or for correct statement referring to difference e.g. 10p short (units must be given and correct) OR M1 for finding at least one difference between coins and costs e.g. $2 - 0.85 - 0.85$ or $1.15 - 1$ or $1.25 - 1$ A1 for 0.10 or 10 C1 ft (dep on M1) for correct statement referring to total difference units (must be given and correct) (SC : B1 for correct figures with no working e.g. £4.10 and £4 or 10p)

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7.	(a)		3 : 1	1	B1
	(b)		$\frac{1}{4}$	1	B1
	(c)		$\frac{31}{40}$	1	B1

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8.			0.6 is bigger than $\frac{2}{5}$	3	<p>M1 for 0.4 or 40% or fraction equivalent to $\frac{2}{5}$ with denominator = 10,15,20... OR 60% or $\frac{3}{5}$ or a fraction equivalent to $\frac{3}{5}$ with denominator = 10,15,20...</p> <p>A1 for two comparable figures</p> <p>e.g. (0.6) ,0.4 or 40% , 60% or $\frac{3}{5}$, $\left(\frac{2}{5}\right)$ or $\frac{6}{10}$, $\frac{4}{10}$ etc</p> <p>C1 (dep on M1) ft for correct statement from their figures</p> <p>OR</p> <p>M1 for a correct method involving shading or calculation e.g. drawing a rectangle 2 by 5 and shading 6 squares or 4 squares or correct method to find $\frac{2}{5}$ or 0.6 of a number</p> <p>A1 correct comparable figures e.g. two 2×5 rectangles, one with 4 squares shaded, one with 6 squares shaded or $\frac{2}{5} \times 20 = 8$ and $0.6 \times 20 = 12$</p> <p>C1 (dep on M1) ft for correct statement from their figures</p> <p>OR</p> <p>M1 $\frac{2}{5} < \text{half}$ or $0.6 > \text{half}$</p> <p>A1 $\frac{2}{5} < \text{half}$ and $0.6 > \text{half}$</p> <p>C1 (dep on M1) ft for correct statement from their figures</p>

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9.	(a)		4	1	B1 cao
	(b)	$14 - 4 - 8 = 2$	2	3	M1 for $4 \times 2 (=8)$ blue counters M1 for $14 - "8" - 4$ or $10 - "8"$ A1 cao OR M1 for $P(B) = 2 \times \frac{4}{14}$ oe ($= \frac{8}{14}$ oe) M1 for $1 - \frac{"8"}{14} - \frac{4}{14}$ oe or $P(Y) = \frac{2}{14}$ oe or $\frac{2}{14} \times 14$ oe A1 cao
10.	(a)		Trapezium	1	B1
	(b)		60	1	B1 for 60 ± 2
	(c)		obtuse	1	B1

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11.	(a)		08 50	1	B1 for 08 50 or 8 50 (am) or 10 to 9
	(b)	13 43 – 13 29	14	1	B1 cao
	(c)	e.g. HL to SC: 11 02 – 11 41 Visit (at least 3 hours) SC to HL: 15 16 – 15 49 [Note : there are 9 possible solutions]	A fully correct plan showing departure times and arrival times of the two bus journeys	4	B1 for a departure time of 08 02 or 09 04 or 10 12 or 11 02 from HL M1 (indep) for a correct arrival time at SC and a correct departure time from SC (or Cartbridge St) which allows for a stay of at least 3 hours in SC (the differencing does not have to be seen) OR for correctly adding 3 hours to a their arrival time at SC B1 for a departure time from SC of 13 20 (13 11 from CS) or 14 24 (14 14 from CS) or 15 16 (15 07 from CS) C1 (dep on M1) for a complete correct plan which includes the departure and arrival times of the two bus journeys [Note: bus departure times may be identified by their starting times. E.g. the 15 07 from Cartbridge Street would be acceptable for the identification of the bus which arrives a HL at 15 49]
12.	(a)		120	2	M1 4×30 A1 cao
	(b)		Tuesday 125 miles > 120 miles 200 km > 192 km	3	M1 for $200 \div 8 \times 5$ or “120” $\div 5 \times 8$ A1 for 125 or 192 or ft from “a” C1 (dep M1) Correct conclusion for their calculated figure with its correct units stated. of “125” <u>miles</u> and “a” miles or “192” <u>km</u> and 200 km

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13.	(a)			1	B1 cao
	(b)	<div>4 13</div> <div>10 31</div> <div>25 76</div>	<div>13</div> <div>31</div> <div>25</div>	3	B3 all three entries correct or ft “13” with 31 and 25 [B1 one correct entry, ft “13”]
	(c)		$3n + 1$	2	M1 for $3n + a$ where a is an integer $\neq 1$ or $n=3n+1$ A1 for $3n + 1$

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Question	Working	Answer	Mark	Notes	
14.	<p>Acton after 24, 48, 72, 96, 120</p> <p>Barton after 20, 40, 60, 80, 100, 120</p> <p>LCM of 20 and 24 is 120</p> <p>9:00am + 120 minutes</p> <p>OR</p> <p>Acton after 24, 48, 1h 12 m,</p> <p>1h 36m, 2h</p> <p>Barton after 20, 40, 1 h, 1h 20m, 1h 40m, 2h</p> <p>LCM is 2 hours</p> <p>9:00am + 2 hours</p> <p>OR</p> <p>Times from 9:00am when each bus leaves the bus station</p> <p>Acton at 9:24, 9:48, 10:12, 10:36, 11:00</p> <p>Barton at 9:20, 9:40, 10:00, 10:20, 10:40, 11:00</p> <p>OR</p> <p>$20 = 2 \times 2 \times 5$</p> <p>$24 = 2 \times 2 \times 2 \times 3$</p> <p>$2 \times 2 \times 2 \times 3 \times 5 = 120$</p>	11:00 am	3	<p>M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes</p> <p>(condone one addition error in total in first 3 numbers in lists)</p> <p>A1 identify 120 (mins) or 2 (hours) as LCM</p> <p>A1 for 11:00 (am) or 11(am) or 11 o'clock</p> <p>OR</p> <p>M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list</p> <p>(condone one addition error in total in first 3 times after 9am in lists)</p> <p>A1 for correct times in each list up to and including 11:00</p> <p>A1 for 11:00 (am) or 11(am) or 11 o'clock</p> <p>OR</p> <p>M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3</p> <p>(condone one error)</p> <p>A1 identify 120 as LCM</p> <p>A1 for 11:00 (am) or 11(am) or 11 o'clock</p>	

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15.	(a)	$2x + 6y + 4x - 4y$	$6x + 2y$	2	M1 for $2x + 6y$ or $4x - 4y$ or $6x$ or $2y$ A1 for $6x + 2y$ [accept $2(3x + y)$]
	(b)	$2 \times 4 \times p - 3 \times 4 \times p \times q$	$4p(2 - 3q)$	2	B2 cao [B1 for $2p(4 - 6q)$ or $p(8 - 12q)$ or $4(2p - 3pq)$ or $2(4p - 6pq)$ or $4p(a + bq)$ where $a \neq 0$ and $b \neq 0$]
16.	(a)	$30 = 2 \times 3 \times 5$ $42 = 2 \times 3 \times 7$ $\text{HCF} = 2 \times 3$	6	2	M1 for 30 or 42 written correctly as a product of prime factors or attempt to list the factors of 30 and 42 (at least 4 for each including 6) A1 for $\text{HCF} = 6$
	(b)	30, 60, 90, ... 45, 90, 135, ...	90	2	M1 for listing multiples of 30 and 45 (at least 60 and 90) or $2 \times 3 \times 5 \times 3$ A1 for $\text{LCM} = 90$ SC B1 for 210
17.		$2 \times 2 \times 2 = 8$ $8 \div 2 = 4$	4 cm^3	3	M1 for $2 \times 2 \times 2 \div 2$ oe or $1 + 1 + 0.5 + 0.5 + 0.5 + 0.5$ oe A1 cao B1 (indep) for cm^3

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Question		Working	Answer	Mark	Notes
18.			20	3	<p>M1 for $330 \div 120 (= 2.75)$ or $200 \div 60 (= 3 \frac{1}{3})$ or $450 \div 180 (= 2.5)$ M1 for $450 \div 180 (= 2.5)$ AND $8 \times "2.5" (= 20)$ A1 cao</p> <p>OR</p> <p>M1 for $120 \div 8 (= 15)$ or $60 \div 8 (= 7.5)$ or $180 \div 8 (= 22.5)$ M1 for $330 \div (120 \div 8) (= 22)$ or $200 \div (60 \div 8) (= 26.6\dots)$ or $450 \div (180 \div 8) (= 20)$ A1 cao</p> <p>OR</p> <p>M1 for multiples of 120:60:180, e.g. 240:120:360 M1 for multiples linked to 450 and $8+8+4$ or scaling 2.5 oe A1 cao</p>
19.	(a)		0.6	2	B1 for 0.6 in correct position on tree diagram
			0.7, 0.3, 0.7		B1 for 0.7, 0.3, 0.7 in correct positions on tree diagram
	(b)	$0.4 \times 0.3 =$	0.12	2	<p>M1 for 0.4×0.3 oe or a complete alternative method ft from tree diagram A1 for 0.12 oe</p>

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20.	$2.25 \times 60 \div 100 = 1.35$ $1.35 + 0.80 = 2.15$ $1.5 \times 60 \div 100 = 0.90$ $0.90 + 1.90 = 2.80$	Railtickets with correct calculations	4	<p>NB. All work may be done in pence throughout</p> <p>M1 for correct method to find credit card charge for one company e.g. $0.0225 \times 60 (= 1.35)$ oe or $0.015 \times 60 (= 0.9)$ oe</p> <p>M1 (dep) for correct method to find total additional charge or total price for one company e.g. $0.0225 \times 60 + 0.80$ or $0.015 \times 60 + 1.90$ or 2.15 or 2.8(0) or 62.15 or 62.8(0)</p> <p>A1 for 2.15 and 2.8(0) or 62.15 and 62.8(0)</p> <p>C1 (dep on M1) for a statement deducing the cheapest company, but figures used for the comparison must also be stated somewhere, and a clear association with the name of each company</p> <p>OR</p> <p>M1 for correct method to find percentage of (60+booking fee) e.g. $0.0225 \times 60.8 (= 1.368)$ oe or $0.015 \times 61.9 (= 0.9285)$</p> <p>M1 (dep) for correct method to find total cost or total additional cost e.g. '1.368' + 60.8(= 62.168) or '1.368' + 0.8 (= 2.168) or '0.9285' + 61.9 (= 62.8285) or '0.9285' + 1.9 (= 2.8285)</p> <p>A1 for 62.168 or 62.17 AND 62.8285 or 62.83 OR 2.168 or 2.17 AND 2.8285 or 2.83</p> <p>C1 (dep on M1) for a statement deducing the cheapest company, but figures used for the comparison must also be stated somewhere, and a clear association with the name of each company</p>

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		OR $2.25 - 1.5 = 0.75$ $0.075 \times 60 \div 100 = 0.45$ $0.80 + 0.45 = 1.25$ $1.25 < 1.90$			OR M1 for correct method to find difference in cost of credit card charge e.g. $(2.25 - 1.5) \times 60 \div 100$ oe or 0.45 seen M1 (dep) for using difference with booking fee or finding difference between booking fees e.g. $0.80 + \text{“0.45”}$ (=1.25) or $1.90 - \text{“0.45”}$ (=1.45) or $1.90 - 0.8$ (=1.1(0)) A1 1.25 and 1.9(0) or 0.45 and 1.1(0) C1 (dep on M1) for a statement deducing the cheapest company, but figures used for the comparison must also be stated somewhere, and a clear association with the name of each company QWC: Decision and justification should be clear with working clearly presented and attributable
21.	(a)		3.85×10^{-3}	1	B1 cao
	(b)		729 100	1	B1 cao
	(c)		4×10^{11}	2	M1 for $2.4 \div 6 \times 10^{10-2}$ oe or $4(.0) \times 10^n$ or 4000 000 000 000 A1 cao
22.	(a)	$8.2 \times 10000 \div 100$	820	2	M1 for $8.2 (\pm 0.2) \times 10000 \div 100$ oe A1 for 800 – 840 (SC B1 for $8.2 (\pm 0.2) \times 10^n$, where $n \geq 1$, e.g. 82)
	(b)		130	1	B1 for 128 – 132

National performance data from Results Plus

	Source of questions							Mean scores of students achieving grade:					
Qu No	Spec	Paper	Session	Qn	Topic	Max score	Mean % all	ALL	C	D	E	F	G
1	5AM1	1F	1411	Q03b	Fractions	3	64	1.91	2.95	2.26	1.56	0.93	0.29
2	NEW QUESTION				Money calculations	3	No data available						
3	5MM1	1F	1411	Q03	Simplifying expressions	3	97	2.54	2.91	2.75	2.58	2.22	2.19
4	1380	1F	906	Q08	Rounding to dp or sf	2	88	1.75	1.93	1.88	1.76	1.51	1.16
5	5MM1	1F	1111	Q15	Sample space diagrams	4	67	2.69	3.71	3.05	2.61	1.70	0.97
6	1MA0	1F	1306	Q13	Money calculations	3	74	2.22	2.68	2.53	2.37	2.10	1.67
7	NEW QUESTION				Ratio	3	No data available						
8	5MM1	1F	1306	Q07	Fractions, percentages, decimals	3	46	1.39	2.67	2.09	1.31	0.54	0.18
9	5MM1	1H	1111	Q04	Probability	4	90	3.61	3.39	3.47	1.00		
10	2540	1F	811	Q07	Properties of 2D shapes	3	60	1.81	2.40	1.99	1.52	1.06	0.58
11	1MA0	1F	1211	Q14	Time calculations	6	60	3.60	4.80	4.16	3.50	2.75	2.06
12	1MA0	1F	1311	Q18	Compound measures	5	48	2.42	3.67	2.76	2.19	1.60	1.09
13	5MM1	1F	1106	Q08	Pattern sequences	6	48	2.86	4.40	3.46	2.75	2.35	1.90
14	1MA0	1H	1206	Q07	Time calculations	3	67	2.00	1.87	1.20	0.58		
15	5MM1	1H	1106	Q08	Simplify expressions	4	68	2.71	2.44	1.45	1.00		
16	5MM1	1H	1206	Q12	HCF and LCM	4	70	2.79	2.29	1.72	1.27		
17	1380	1F	1011	Q24	Volume	3	29	0.86	1.63	0.89	0.45	0.21	0.16
18	1MA0	1F	1511	Q19	Ratio	3	39	1.17	1.55	1.25	0.95	0.67	0.46
19	1MA0	1H	1206	Q19	Probability tree diagrams	4	60	2.40	1.82	1.15	0.57		
20	1MA0	1H	1206	Q10	Percentages	4	55	2.19	1.78	0.54	0.16		
21	5MM1	1H	1506	Q13	Standard form	4	59	2.36	1.62	0.82	0.60		
22	1380	1F	1106	Q15	Bearings	3	17	0.52	1.12	0.64	0.31	0.14	0.09
						80							