1MA1 Practice papers Set 2: Paper 2F (Regular) mark scheme – Version 1.0				
Question	**Working**	**Answer**	**Mark**	**Notes**
1.		$\dfrac{13}{1000}$	1	B1 cao
2.		64	1	B1 cao
3.		8	1	B1 cao
4.		2401	1	B1 cao
5. (a)		8, 10	1	B1 cao
(b)		24	1	B1 cao
(c)		reason	1	B1 for a valid reason that demonstrates the understanding that the number of triangles is twice the pattern number
6.	$3.80 \times (23 + 21)$ $= 87.4 + 79.8 = 167.20$ $5.99 \times (28 + 27) =$ $167.72 + 161.73 =$ 329.45 $7.14 \times (19 + 32) =$ $135.66 + 228.48 =$ $\underline{364.14}$ 860.79 $5.99 \times (23 + 21 + 28 +$ $27 + 19 + 32) = 898.50$	No, Parcel Express is cheaper	5	M1 for a correct method to find cost of Parcel Express for either month or for the two months for one of the weight ranges M1 for method to find cost of Parcels R Go for either one month or for two months A1 for 860.79 A1 for 898.5(0) C1 (dep on M2) for a correct conclusion from their comparable calculations; units must be included

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Question	**Working**	**Answer**	**Mark**	**Notes**
7.		Accurate drawing	2	M1 for one angle of triangle drawn as 50º A1 for accurate drawing
8.	(i)	Label A at 1	1	B1
	(ii)	Label B at 1 cm to 2.5 cm from 0	1	B1
	(iii)	Label C at 0.5	1	B1
9.		30	2	M1 for finding the middle value or indication of 0, 29, 29.5, 30.5, 31, 31.5, 32 or writing "10th value" (or equivalent) A1 cao
10.	(b)	23	3	B1
	(b)	$1200 \div 8 \times 12$		M1 $1200 \div 8 \times 12$ (or equivalent)
		1800		A1

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Question		**Working**	**Answer**	**Mark**	**Notes**
11.	(a)	RB, RG, RY, RP BG, BY, BP GY, GP YP (RR, BB, GG, YY, PP)	Correct 10 outcomes	2	B2 for all 10 correct outcomes with no incorrect pairs or repeats or additional reversed pairs condone replacement (B1 for at least 6 pairs ignoring any incorrect pairs, repeats or additional reversed pairs)
	(b)		$\frac{1}{10}$	1	B1 for $\frac{1}{10}$ or ft from their incorrect number of outcomes from part (a)

Question		Working	Answer	Mark	Notes
12.	(a)	$(79 + 39) \times 1.2$ 118×1.2 **OR** $79 \times 1.2 + 39 \times 1.2$ $94.80 + 46.80$ **OR** $\frac{20}{100} \times (79 + 39) = 23.60$ $118 + 23.60$ **OR** $\frac{20}{100} \times 79 = 15.80$ $\frac{20}{100} \times 39 = 7.80$ $15.80 + 7.80 + 118$	141.60	3	M1 for 79×1.2 or 39×1.2 (or equivalent) M1 for $79 \times 1.2 + 39 \times 1.2$ (or equivalent) A1 for 141.6(0) **OR** M1 for $\frac{20}{100} \times 79$ (= 15.8) and $\frac{20}{100} \times 39$ (= 7.8) M1 for $\frac{20}{100} \times 79 + 79 + \frac{20}{100} \times 39 + 39$ A1 for 141.6(0) **OR** M1 for $\frac{20}{100} \times (79 + 39)$ (= 23.6) (or equivalent) M1 for $\frac{20}{100} \times (79 + 39) + 79 + 39$ (or equivalent) A1 for 141.6(0)
	(b)	$20\,000 \times 0.8 = 16\,000$ $16\,000 \times 0.9 = 14\,400$ **OR** $\frac{20}{100} \times 20\,000 = 4000$ $20\,000 - 4000 = 16\,000$ $10\% \times 16\,000 = 1600$ $16\,000 - 1600 =$	14 400	3	M1 for $20\,000 \times 0.8$ (or equivalent) or 16 000 seen M1 for '16 000' $\times$ 0.9 (or equivalent) A1 for 14 400 **OR** M1 for $20\,000 - 0.2 \times 20\,000$ (or equivalent) or 16 000 seen M1 for '16 000' $- 0.1 \times$ '16 000' (or equivalent) A1 for 14 400

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Question	Working	Answer	Mark	Notes
13.		Correct elevation	2	B2 for sketch of trapezium (B1 for trapezium with a rectangle or a parallelogram added at top or side or lines drawn from vertices)
14. (a)		$2 \times 2 = 4$	1	B1
(b)		explanation	2	C2 Complete explanation e.g. negative × negative = positive then negative × positive = negative (C1 Start to explanation eg. negative × negative = positive)
15.		6 : 3 : 1	2	M1 Writes down any one ratio correctly, e.g. 2:1 or 3: 1 A1
16.		explanation	1	C1, e.g. both fractions are bigger than ½ so answer should be greater than 1 but answer is less than 1

Question		Working	Answer	Mark	Notes
17.			148°	4	M1 for (angle *BDC* =) 360 – 250 (=110) M1 (dep) for 180 – (180 – '110' – 38) (= 148) or for '110' + 38 (= 148) C2 (dep on M2) for <u>x = 148</u> with full reasons, relevant to the complete correct method used, for example: Angles at a <u>point</u> add up to <u>360°</u> **and** <u>angles</u> in a <u>triangle</u> add up to <u>180°</u> **and** <u>angles</u> on a straight <u>line</u> add up to <u>180°</u>; Or Angles at a <u>point</u> add up to <u>360°</u> **and** <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> or (C1 (dep on at least M1) for one reason relevant to correct method)

Question	Working	Answer	Mark	Notes
18.		Straight line from (–2, –7) to (3, 3)	4	**(Table of values)** C1 for axes scaled and labelled M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = -2$ and $x = 3$ **(No table of values)** C1 for axes scaled and labelled M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 2x - 3$ drawn A1 for correct line between $x = -2$ and $x = 3$ **(Use of $y = mx + c$)** C1 for axes scaled and labelled M1 for line drawn with gradient of 2 OR line drawn with a y intercept of –3 M1 for line drawn with gradient 2 **and** with a y intercept of –3 A1 for correct line between $x = -2$ and $x = 3$

Working table for Q18:

–2	–1	0	1	2	3
–7	–5	–3	–1	1	3

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Question	Working	Answer	Mark	Notes
19.	$19.5 \times 1000 \div 210$ $= 19500 \div 210 =$ $92.8(5714\ldots)$ or 92×210 $= 19320 = 19.32\ l$ $93 \times 210 =$ $19530 = 19.53\ l$ or $19500 \div 92 = 211.95$ $19500 \div 93 = 209.67$	explanation	3	M1 for converting between ml and l correctly or for 0.21 or 19500 seen M1 for "19500" ÷ "210" or 92 × "210" or 93 × "210" or "19500" ÷ 92 A1 for a worded explanation with correct calculations
20.	$a = \text{cost(p) of an apple}$ $p = \text{cost(p) of a pear}$ $3a + 4p = 184$ $5a + 2p = 176$ $7a = 2 \times 176 - 184 = 168$	24, 28	4	B1 $3a + 4p = 184$ and $5a + 2p = 176$ (or equivalent) M1 correct process to eliminate a or p M1(dep on M1): substitute found value of a or p to find other variable A1 cao

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Question	**Working**	**Answer**	**Mark**	**Notes**
21.	$\dfrac{3}{4} \times 120 = 90,$ $\dfrac{1}{4} \times 120 = 30$ $\dfrac{2}{3} \times 90 = 60,$ $\dfrac{20}{100} \times 30 = 6$ $60 : 6$	$10 : 1$	5	M1 for $\dfrac{3}{4} \times 120$ (or equivalent) or 90 or $\dfrac{1}{4} \times 120$ (or equivalent) or 30 M2 (indep) for $(1 - \dfrac{1}{3}) \times$ '90' (or equivalent) (or 60) AND $\dfrac{100-80}{100\times30}$ (or equivalent) (or 6) (M1 (indep) for $(1 - \dfrac{1}{3}) \times$ '90' (or equivalent) or 60 OR $\dfrac{100-80}{100\times30}$ (or equivalent) or 6 OR both $\dfrac{1}{3} \times 90$ (= 30) and $\dfrac{80}{100} \times 30$ (= 24) M1 (dep on at least M2) for '60' : '6' or 1 to 10 or 6 to 60 (or equivalent) or reversed ratio 6:60 A1 10:1 cao

Question		Working	Answer	Mark	Notes
22.	(a)		17.50	1	B1 for 17.5(0)
	(b)		1.25	1	B1 cao
	(c)	<table><tr><td>**Days**</td><td>**SaU**</td><td>**StY**</td></tr><tr><td>3</td><td>13.75</td><td>9</td></tr><tr><td>4</td><td>15.00</td><td>12</td></tr><tr><td>**5**</td><td>**16.25**</td><td>**15**</td></tr><tr><td>**6**</td><td>**17.50**</td><td>**18**</td></tr><tr><td>7</td><td>18.75</td><td>21</td></tr></table>	Comparison made	3	M1 for drawing line for Saws to You (StY) through the origin or for line with gradient 3 C2 for a correct line and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more (C1 (depM1) for making any correct comparison from their graphs) **Or** M1 for any three correct costs for Saws to You C2 for correct figures for 5 days and 6 days for both companies and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more (C1 (depM1) for making any correct comparison from their calculations for the two companies)
23.		$8.4^2 + 8.4^2$ $\sqrt{70.56 + 70.56} = \sqrt{141.12}$	11.9 cm	3	M1 $8.4^2 + 8.4^2$ (or equivalent) M1 $\sqrt{70.56 + 70.56}$ or $\sqrt{141.12}$ A1 11.85 – 11.9

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Question		**Working**	**Answer**	**Mark**	**Notes**

Question		**Working**	**Answer**	**Mark**	**Notes**
24.		$\pi(6)^2 - \pi(5)^2$ $= 113(.0973\ldots) -$ $78.5(398\ldots)$ $=34.55751919$	34.6	3	M1 for $\pi(6)^2$ (or equivalent) or $\pi(5)^2$ (or equivalent) or 113… or 78.5… M1 for $\pi(6)^2 - \pi(5)^2$ (or equivalent) A1 for 34.5 – 34.6
25.		$\tan x = 14 \div 7.5$ $= 1.86666\ldots$ $\tan^{-1} 1.8666\ldots$	62	3	M1 for $\tan x = 14 \div 7.5$ (= 1.86666…) M1 for $\tan^{-1}(14 \div 7.5)$ A1 for answer in the range 61.7 to 62
26.				3	M1 $1500 \div (100 \times 100)$ (=0.15) M1 $28 \times$ "0.15"
			4.2		A1
27.	(a)		0.7, 0.3 0.9, 0.1, 0.9, 0.1	2	B1 for 0.7, 0.3 in correct position B1 for 0.9, 0.1, 0.9, 0.1 in correct position
	(b)			2	M1 0.7×0.9 ft from tree diagram
			0.63		A1

National performance data from Results Plus

Qu No	Spec	Paper	Session	Qu	Topic	Max score	Mean % all	ALL	C	D	E	F	G
1				NEW	Fractions and decimals	1		No data available					
2				NEW	Conversions	1		No data available					
3				NEW	Faces, edges, vertices	1		No data available					
4				NEW	Index notation	1		No data available					
5	1MA0	2F	1303	Q02	Pattern sequences	3	86	2.58	2.88	2.75	2.60	2.36	1.92
6	5AM2	2F	1306	Q13	Money calculations	5	67	3.36	4.57	3.93	2.63	1.65	0.61
7	5AM2	2F	1506	Q07	Constructions	2	58	1.15	1.71	1.29	0.88	0.62	0.25
8	4MA0	2F	1305	Q03	Probability	3	67	2.02	2.45	2.08	1.73	1.18	0.95
9	2540	2F	0811	Q21	Stem-and-leaf diagrams	2	54	1.08	1.62	1.26	0.70	0.27	0.15
10	4MA0(R)	2F	1501	Q15	Percentages	3	70	2.09	2.33	2.00	1.50	0.50	
11	5AM2	2F	1506	Q10	Sample space diagrams	3	62	1.87	2.33	2.13	1.75	1.36	0.77
12	5AM1	1F	1211	Q21	Percentages - VAT	6	40	2.42	4.61	3.10	1.80	0.23	0.16
13	1380	2F	0911	Q23b	Plans and elevations	2	70	1.39	1.72	1.48	1.25	1.05	0.75
14				NEW	Algebraic proof	3		No data available					
15				NEW	Probability	2		No data available					
16				NEW	Fractions	1		No data available					
17	1MA0	2F	1411	Q15	Angles	4	38	1.50	2.60	1.87	1.07	0.40	0.10
18	1MA0	2H	1411	Q12	Graphs of linear equations	4	47	1.88	2.39	1.24	0.27		
19	1380	2H	1011	Q18	Compound measures	3	62	1.85	1.67	0.96	0.50		
20	5AM1	1H	1406	Q11	Simultaneous equations	4	71	2.83	1.94	0.67	0.13		
21	5MM2	2H	1111	Q06	Ratio	5	60	3.02	2.15	1.26	1.33		
22	5AM1	1F	1411	Q23	Conversion graphs	5	22	1.10	1.95	1.26	0.67	0.80	0.29
23	5MM2	2F	1206	Q27	Pythagoras in 2D	3	11	0.34	1.21	0.34	0.08	0.01	0.03
24	1380	2H	1106	Q05	Area of a circle	3	59	1.78	0.92	0.24	0.07		
25	5MM2	2H	1306	Q15	Trigonometry	3	56	1.68	1.02	0.42	0.13		
26				NEW	Compound measures	3		No data available					
27a	2MB01	1H	1411	Q08	Probability trees	2	67	1.33	2.00	1.75	1.48	1.22	1.33
27b	2MB01			NEW	Probability	2		No data available					
						80							