

1MA1 Practice papers Set 2: Paper 2F (Regular) mark scheme – Version 1.0

Question		Working	Answer	Mark	Notes
1.			$\frac{13}{1000}$	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 $7.14 \times (19 + 32) =$ $135.66 + 228.48 =$ <u>364.14</u> 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 50° 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)	$1200 \div 8 \times 12$	1800		M1 $1200 \div 8 \times 12$ (or equivalent) 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)

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12.	<p>(a) $(79 + 39) \times 1.2$ 118×1.2</p> <p>OR $79 \times 1.2 + 39 \times 1.2$ $94.80 + 46.80$</p> <p>OR $\frac{20}{100} \times (79 + 39) = 23.60$ $118 + 23.60$</p> <p>OR $\frac{20}{100} \times 79 = 15.80$ $\frac{20}{100} \times 39 = 7.80$ $15.80 + 7.80 + 118$</p>	141.60	3	<p>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)</p> <p>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)</p> <p>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)</p>
	<p>(b) $20\ 000 \times 0.8 = 16\ 000$ $16\ 000 \times 0.9 = 14\ 400$</p> <p>OR $\frac{20}{100} \times 20\ 000 = 4000$ $20\ 000 - 4000 = 16\ 000$ $10\% \times 16\ 000 = 1600$ $16\ 000 - 1600 =$</p>	14 400	3	<p>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</p> <p>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</p>

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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 \times negative = positive then negative \times positive = negative (C1 Start to explanation eg. negative \times 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 $\frac{1}{2}$ so answer should be greater than 1 but answer is less than 1

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Question		Working	Answer	Mark	Notes
17.			148°	4	<p>M1 for (angle $BDC =$) $360 - 250 (=110)$</p> <p>M1 (dep) for $180 - (180 - '110' - 38) (= 148)$ or for $'110' + 38 (= 148)$</p> <p>C2 (dep on M2) for $x = 148$ with full reasons, relevant to the complete correct method used, for example:</p> <p><u>Angles</u> 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>;</p> <p>Or</p> <p><u>Angles</u> 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</p> <p>(C1 (dep on at least M1) for one reason relevant to correct method)</p>

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Question	Working	Answer	Mark	Notes												
18.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td> </tr> <tr> <td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td> </tr> </table>	-2	-1	0	1	2	3	-7	-5	-3	-1	1	3	Straight line from $(-2, -7)$ to $(3, 3)$	4	<p>(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 $x = 3$</p> <p>(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 $x = 3$</p> <p>(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 $x = 3$</p>
-2	-1	0	1	2	3											
-7	-5	-3	-1	1	3											

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Question	Working	Answer	Mark	Notes
19.	$19.5 \times 1000 \div 210$ $= 19500 \div 210 =$ $92.8(5714\dots)$ or 92×210 $= 19320 = 19.32 \text{ l}$ $93 \times 210 =$ $19530 = 19.53 \text{ l}$ 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” \div “210” or $92 \times$ “210” or $93 \times$ “210” or “19500” \div 92 A1 for a worded explanation with correct calculations
20.	$a = \text{cost}(p) \text{ of an apple}$ $p = \text{cost}(p) \text{ of a pear}$ $3a + 4p = 184$ $5a + 2p = 176$ $7a = 2 \times 176 - 184 = 168$	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.	$\frac{3}{4} \times 120 = 90,$ $\frac{1}{4} \times 120 = 30$ $\frac{2}{3} \times 90 = 60,$ $\frac{20}{100} \times 30 = 6$ $60 : 6$	10 : 1	5	<p>M1 for $\frac{3}{4} \times 120$ (or equivalent) or 90 or $\frac{1}{4} \times 120$ (or equivalent) or 30</p> <p>M2 (indep) for $(1 - \frac{1}{3}) \times '90'$ (or equivalent) (or 60)</p> <p>AND $\frac{100 - 80}{100 \times 30}$ (or equivalent) (or 6)</p> <p>(M1 (indep) for $(1 - \frac{1}{3}) \times '90'$ (or equivalent) or 60</p> <p>OR $\frac{100 - 80}{100 \times 30}$ (or equivalent) or 6</p> <p>OR both $\frac{1}{3} \times 90 (= 30)$ and $\frac{80}{100} \times 30 (= 24)$</p> <p>M1 (dep on at least M2) for '60' : '6' or 1 to 10 or 6 to 60 (or equivalent) or reversed ratio 6:60</p> <p>A1 10:1 cao</p>

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Question	Working	Answer	Mark	Notes																	
22.	(a)	17.50	1	B1 for 17.5(0)																	
	(b)	1.25	1	B1 cao																	
	(c)	<table border="1"> <thead> <tr> <th align="center">Days</th> <th align="center">SaU</th> <th align="center">StY</th> </tr> </thead> <tbody> <tr> <td align="center">3</td> <td align="center">13.75</td> <td align="center">9</td> </tr> <tr> <td align="center">4</td> <td align="center">15.00</td> <td align="center">12</td> </tr> <tr> <td align="center">5</td> <td align="center">16.25</td> <td align="center">15</td> </tr> <tr> <td align="center">6</td> <td align="center">17.50</td> <td align="center">18</td> </tr> <tr> <td align="center">7</td> <td align="center">18.75</td> <td align="center">21</td> </tr> </tbody> </table>	Days	SaU	StY	3	13.75	9	4	15.00	12	5	16.25	15	6	17.50	18	7	18.75	21	3
Days	SaU	StY																			
3	13.75	9																			
4	15.00	12																			
5	16.25	15																			
6	17.50	18																			
7	18.75	21																			
23.	$8.4^2 + 8.4^2$ $\sqrt{70.56 + 70.56} = \sqrt{141.12}$	11.9 cm	3	<p>M1 $8.4^2 + 8.4^2$ (or equivalent)</p> <p>M1 $\sqrt{70.56 + 70.56}$ or $\sqrt{141.12}$</p> <p>A1 11.85 – 11.9</p>																	

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24.	$\pi(6)^2 - \pi(5)^2$ $= 113(.0973\dots) -$ $78.5(398\dots)$ $= 34.55751919$	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.	$\tan x = 14 \div 7.5$ $= 1.86666\dots$ $\tan^{-1} 1.8666\dots$	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.		187	3	M1 $1500 \div (100 \times 100)$ (=0.15) M1 $28 \div "0.15"$ 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)	0.63	2	M1 0.7×0.9 ft from tree diagram 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							