International GCSE in Mathematics A - Paper 2F mark scheme

Question		Working	Answer	Mark	AO		Notes
1	a		1407	1	AO1	B1	
	b		2095	1	AO1	B1	
	c		60	1	AO1	B1	accept tens, sixty
	d		1000	1	AO1	B1	
2	a		× at 1	1	AO3	B1	
	b		× at 0.5	1	AO3	B1	
3	a		Berlin	1	AO1	B1	
	b		1	1	AO1	B1	
	c		-7	1	AO1	B1	
	d	(2 + −8) ÷ 2 oe			AO1	M1	method to find midpoint
			−3	2		A1	
4	ai		$\frac{1}{30}$ oe	1	AO3	B1	
	aii		0	1	AO3	B1	
	b		$\frac{7}{10}$ oe	1	AO3	B1	
5	a		9	1	AO1	B1	
	b		11.8	1	AO1	B1	
	c		0.6	1	AO1	B1	

Question		Working	Answer	Mark	AO	Notes
6	**a**		B, G	1	AO2	B1
	b		F	1	AO2	B1
	c		D	1	AO2	B1
7		Line from P at 50° to base **or** arc from Q of length 7.5 cm			AO2	M1
			correct triangle	2		A1
8	**a**		6.8	1	AO1	B1
	b		729	1	AO1	B1
	c		2.7	1	AO1	B1
9	**a**		$4m$	1	AO1	B1
	b		$18kp$	1	AO1	B1
	c		4	1	AO1	B1
	d	$4\times-7-3\times5$ **or** -28 and -15			AO1	M1
			-43	2		A1
	e	$9 = 4r - 3\times8$ **or** $9 = 4r - 24$			AO1	M1
		$9 + 24 = 4r$				M1 isolate term in r
			8.25 oe	3		A1
	f		$5(c + 6)$	1	AO1	B1

Question		Working	Answer	Mark	AO		Notes
10	**a**	360 × 7 (=2520)			AO1	M1	
		(4500 – '2520')÷9				M1	dep
			220	3		A1	
	b				AO2	M1	clear evidence of method to work out time interval
			3 hours 20 mins	2		A1	accept 200 minutes
11	**a**	80 ÷ 30 (=2.66…)			AO3	M1	
		80 ÷ 30 × 195				M1	
			520	3		A1	
	b	$\frac{120}{800} \times 360$ oe			AO3	M1	
			54	2		A1	
12		5 × 3 (=15) **or** 7 × (11 – 5)(=42) **or** 11 × 7 (=77) **or** 5×(7-3)(=20) **or** 11×3(=33) **or** (11-5)×(7-3)(=24)			AO1, AO2	M1	method to find area of part of floor
		5 × 3 + 7 × (11 – 5)(=57) **or** 11 × 7 − 5×(7-3)(=57) **or** 11 × 3 + (11-5)×(7-3)(=57)				M1	complete method to find area
		'57' ÷ 2 (28.5)				M1	dep on at least M1
		'29' × 24.8				M1	
			719.20	5		A1	

Question	Working	Answer	Mark	AO		Notes
13	345 ÷ 200 (=1.725) **or** 345 × 100 (=34500)			AO2	M1	Division by 200 or conversion of units
	'1.725' × 100 **or** '34500' ÷ 200				M1	Division by 200 and conversion of units
		172.5	3		A1	
14	(6 + 8) ÷ 2 (=7) **or** (−5 + 3) ÷2 (= −1)			AO1	M1	
		(−1, 7)	2		A1	
15 **a**	900 ÷ 6 × 15 oe			AO1	M1	
		2250	2		A1	
b	3 × 1000 ÷ 750 × 6			AO1	M1	
		24	2		A1	
16	2 × 2 × 5 or 2 × 3 × 5 or 3 × 3 × 5			AO1	M1	for one of 20, 30, 45 written as product of prime factors or
	or two of					list of at least 3 multiples of any two of 20, 30, 45
	20, 40, 60 …					
	30, 60, 90 …					
	45, 90, 105					
	2 × 2 × 5 and 2 × 3 × 5 and 3 × 3 × 5				M1	
	or all of					
	20, 40, 60 , 80 … 180					
	30, 60, 90 … 180					
	45, 90, 105 … 180					
		180	3		A1	for 180 or 2 × 2 × 3 × 3 × 5 oe

Question		Working	Answer	Mark	AO		Notes
17					AO1	M1	for 7n + k (k may be zero)
			7n – 5 oe	2		A1	
18		$\frac{1}{2}\times(10+14)\times 9$ oe (= 108)			AO2	M1	for area of cross section
		'108' × 6 (=648)				M1	(dep on previous M1) for volume of prism
		'648' × 0.7				M1	(independent)
			453.6	4		A1	accept 454
19	**a**		p^9	1	AO1	B1	
	b		m^{-12}	1	AO1	B1	
	c		1	1	AO1	B1	
	d	5x + 35 = 2x – 10 or $x+7=\frac{2x}{5}-\frac{10}{5}$			AO1	M1	for removing bracket or dividing all terms by 5
		eg. 5x – 2x = −10 – 35 or $7+\frac{10}{5}=\frac{2x}{5}+x$				M1	for isolating x terms in a correct equation
			−15	3		A1	dep on M1

Question		Working	Answer	Mark	AO		Notes
20		14000 × 4 (=56000)			AO1	M1	NB. multiplication by 4 may occur before or after percentage decrease
		0.075 × '56000' (=4200) **or** 0.075 × 14000 (=1050)				M1	M2 for 0.925 × '56000' **or** 0.925 × 14000
		'56000' – '42000' **or** 14000 – '1050'				M1	(dep)
			51 800	4		A1	
21	**a**		triangle with vertices (3, -1) (3, -4) (5, -4)	1	AO2	B1	
	b		Rotation		AO2	B1	
			centre (-3, 0)			B1	
			90^{o} anticlockwise	3		B1	accept $+90^{0}$, 270^{o} clockwise, -270^{o} NB. If more than one transformation then no marks can be awarded

Question	Working	Answer	Mark	AO	Notes
22 **a**	4×15 (=60) **or** $\frac{a+b+c+d}{4}=15$ **or** $4\times15 - 39$		2	AO3	M1
		21			A1
b	$d - a = 10$ **or** $a = 11$ **or** $a =$ "21" $- 10$ **or** $b + c = 39 - 11 = 28$		2	AO3	M1 ft from (a) (can be implied by 11, b, c, 21 **OR** a, b, c, d with $b + c = 28$)
		14			A1 cao
23	$0.02 \times 40\,000$ (=800) **or** $1.02 \times 40\,000$ (=40800) **or** 2400 "40800"×0.02(=816) **and** "41616"×0.02(=832.32) **OR** 2448.32			AO1	M1 M1 (dep) method to find interest for year 2 **and** year 3 } M2 for $40\,000 \times 1.02^3$
		42448.32	3		A1
24	$3x + y = 13$ **or** $6x + 2y = 26$ $-\ 3x - 6y = 27$ $+\ x - 2y = 9$ eg. $3x - 2 = 13$ **or** $15 + y = 13$			AO1	M1 multiplication of one equation with correct operation selected **or** rearrangement of one equation with substitution into second M1 (dep) correct method to find second variable
		5,−2	3		A1 for both solutions dependent on correct working

Question		Working	Answer	Mark	AO		Notes
25	**a**	e.g. $\frac{10}{18}+\frac{3}{18}$ **or** $\frac{30}{54}+\frac{9}{54}$			AO1	M1	for two fractions with common denominator with at least one numerator correct
			answer given	2		A1	correct answer from correct working
	b	$\frac{14}{3}\div\frac{32}{9}$			AO1	M1	
		$\frac{14}{3}\times\frac{9}{32}$ **or** $\frac{126}{27}\div\frac{96}{27}$ **or** $\frac{42}{9}\div\frac{32}{9}$				M1	
			answer given	3		A1	correct answer from correct working
26		(6 – 2) × 180 (=720)			AO2	M1	complete method to find sum of interior angles
		'720' – (86 + 123 + 140 + 105) (=266) **or** '720' – 454 (=266)				M1	dep on 1st method mark
		'266' ÷ 2				M1	dep on 1st method mark
			133	4		A1	