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			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	$4 \times -7 - 3 \times 5$ or -28 and -15			AO1	M1
			-43	2		A1
	e	$9 = 4r - 3 \times 8$ 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**			AO1,	M1 method to find area of part of floor
	11 × 7 (=77) **or** 5 × (7 − 3)(=20)			AO2	
	or 11 × 3(=33) **or** (11 − 5) × (7 − 3)(=24)				
	5 × 3 + 7 × (11 – 5)(=57) **or**				M1 complete method to find area
	11 × 7 − 5×(7 − 3)(=57) **or**				
	11 × 3 + (11 − 5) × (7 − 3)(=57)				
	'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		M1
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	$\frac{1}{2}(10 + 14) \times 9$ 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
	e.g. $5x - 2x = -10 - 35$ **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) 0.075 × '56000' (=4200) **or** 0.075 × 14000 (=1050) '56000' – '42000' **or** 14000 – '1050'	51 800	4	AO1	M1 NB. multiplication by 4 may occur before or after percentage decrease M1 M2 for 0.925 × '56000'**or** 0.925 × 14000 M1 (dep) A1
21 **a**		triangle with vertices (3, −1) (3, −4) (5, −4)	1	AO2	B1
b		Rotation centre (−3, 0) 90° anticlockwise	3	AO2	B1 B1 B1 accept +90°, 270° clockwise, −270° 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** $4 \times 15 - 19$		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 × 40000 (=800) **or** 1.02 × 40000 (=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
		42448.32	3		A1	
24	$3x + y = 13$ **or** $6x + 2y = 26$ $-\ 3x - 6y = 27$ $+\ x - 2y = 9$			AO1	M1	multiplication of one equation with correct operation selected **or** rearrangement of one equation with substitution into second
	eg. $3x - 2 = 13$ **or** $15 + y = 13$				M1	(dep) correct method to find second variable
		5, −2	3		A1	for both solutions dependent on correct working

M2 for 40000×1.02^3

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	