

IGCSE (9–1) Maths - practice paper 2F mark scheme

Results Plus data on 93 of the 100 marks:

Paper 2							Edexcel averages:									
Year	Paper	Qu. no	New qu. no.	Mean score	Max score	Mean %	ALL	A*	A	B	C	D	E	F	G	U
1706	2F	Q01	Q01	4.07	5	81.4	4.07				4.68	4.30	3.73	2.78	1.92	1.10
1706	2F	Q02	Q02	4.14	7	59.1	4.14				5.32	4.08	3.18	2.28	1.71	1.43
1706	2F	Q03	Q03	4.75	5	95.0	4.75				4.92	4.83	4.74	4.55	4.16	2.61
1706	2F	Q05	Q04	4.23	5	84.6	4.23				4.68	4.40	4.08	3.28	2.45	1.23
1706	2F	Q07	Q05	4.95	7	70.7	4.95				6.34	5.26	3.58	2.52	1.35	0.73
1706	2F	Q08	Q06	3.65	5	73.0	3.65				4.41	3.76	3.12	2.22	1.57	0.67
1706	2F	Q11	Q07	2.32	3	77.3	2.32				2.70	2.34	2.02	1.78	1.44	0.72
1706	2F	Q12	Q08	3.41	6	56.8	3.41				5.11	3.34	1.72	0.79	0.33	0.09
1706	2F	Q15	Q09	2.75	7	39.3	2.75				4.21	2.47	1.37	0.83	0.37	0.07
1706	2F	Q16	Q10	3.85	5	77.0	3.85				4.63	4.14	3.32	2.22	1.35	0.53
1706	2F	Q17	Q11	0.63	2	31.5	0.63				1.00	0.52	0.31	0.12	0.06	0.05
1706	2F	Q18	Q12	1.87	5	37.4	1.87				2.75	1.64	1.13	0.73	0.35	0.23
1706	2F	Q19	Q13	1.43	3	47.7	1.43				2.09	1.40	0.80	0.44	0.17	0.02
1706	2FR	Q18	Q14	1.52	4	38.0	1.52				2.53	1.36	0.84	0.28	0.25	0.00
SAMs	2F	Q16	Q15		3											
1506	3H	Q03	Q16	1.27	3	42.3	1.27	2.19	1.16	0.60	0.31	0.13	0.07			0.02
SAMs	2F	Q21	Q17		4											
1706	2F	Q21	Q18	0.36	3	12.0	0.36				0.75	0.12	0.03	0.03	0.03	0.00
1706	2F	Q22	Q19	1.58	4	39.5	1.58				2.73	1.24	0.48	0.16	0.07	0.00
1706	2F	Q23	Q20	0.55	3	18.3	0.55				1.09	0.24	0.09	0.07	0.02	0.00
1506	4H	Q07de	Q21	3.07	4	76.8	3.07	3.75	3.26	2.71	2.05	1.31	0.57			0.09
1306	3HR	Q10	Q22	3.41	4	85.3	3.41	3.83	3.64	2.97	1.95	0.87	0.00			
1701	3H	Q10	Q23	1.77	3	59.0	1.77	2.88	2.39	1.63	0.99	0.37	0.09			0.02
				55.58	93	59.8	55.58				65.24	48.12	35.27	25.08	17.60	9.61

Q	Working	Answer	Mark	Notes
1 (a)		-8, -4, -1, 3, 7	1	B1 cao
(b)		0.007, 0.078, 0.4, 0.407, 0.8	1	B1 cao
(c)		0.6	1	B1 cao
(d)		90	1	B1 cao
(e)		0.35	1	B1 cao
				Total 5 marks

2 (a)		cone	1	B1 Accept circular based pyramid
(b) (i)		prism	1	B1 accept triangular based prism
(b) (ii)		6	1	B1 cao
(b) (iii)		9	1	B1 cao
(c)		12 cm ³		B2 If not B2 for 12 then allow B1 for 6 or 8 or 10
			3	B1 for cm ³ (indep)
				Total 7 marks

3 (a)		Blues	1	B1 cao
(b)		Jets	1	B1 cao
(c) (i)	8 ÷ 2 × 3 or 1 circle is 4 goals or 3 × 4			M1 can be implied by one correct answer
		12	2	A1 cao
(c) (ii)		10	1	A1 cao
				Total 5 marks

4	(a)	$3 \times 1.59 + 2 \times 0.85 + 5 \times 0.45 (=8.72)$ or $4.77 + 1.7(0) + 2.25$			M1	Condone 1 error only in numbers of items or if subtotals only seen, allow 1 error
		$20 - "8.72"$			M1	
			11.28	3	A1	[SC B1 for 17.11]
	(b)	$50 \div 2.40$ or 20.83...			M1	
			20	2	A1	
						Total 5 marks

5	(a)		$\frac{12}{18}$	1	B1	cao
	(b)	$840 \div 7 \times 3$ or $\frac{3}{7} \times 840$ oe			M1	Allow $840 \times 0.42(85\dots)$
			360	2	A1	cao
	(c)	$\frac{96}{240}$ oe e.g. $\frac{48}{120}, \frac{24}{60}, \frac{8}{20}$, etc			M1	
			$\frac{2}{5}$	2	A1	cao
	(d)	$8 \div 2 \times 9$ or $\frac{9}{2} \times 8$ oe			M1	
			36	2	A1	cao
						Total 7 marks

6	(a)(i)		unlikely	1	B1	cao
	(a)(ii)		evens	1	B1	cao
	(b) (i)		$\frac{1}{12}$	1	B1	or 0.083(3...)
	(b) (ii)		$\frac{9}{12}$	1	B1oe	$\frac{3}{4}$ or 0.75 or 75%
	(b) (iii)		0	1	B1oe	NB. Penalise incorrect notation once only in (b) by deducting one mark
Total 5 marks						

7	(a)		(-2, 4)	1	B1	
	(b)		point plotted	1	B1	Unambiguous
	(c)		$x = 3$ drawn	1	B1	Minimum 2 cm long
Total 3 marks						

8	(a)	$11 \times 18 (=198)$ or $10 \times 11 (=110)$ or $18 \times 5 (=90)$ or $5 \times 8 (=40)$ or $10 \times 6 (=60)$ or $6 \times 8 (=48)$			M1	method to find area of any rectangle
		$11 \times 18 - 8 \times 6$ or $10 \times 11 + 8 \times 5$ or $18 \times 5 + 10 \times 6$			M1	complete method
			150	3	A1	cao
	(b)	$9 \times 5 (=45)$ or $9 \times 5 \times h = 360$ or $360 \div 9 (=40)$ or $360 \div 5 (=72)$			M1	As part of working
		$360 \div (9 \times 5)$ or “40” $\div 5$ or “72” $\div 9$			M1	(dep)
			8	3	A1	cao
Total 6 marks						

9	(a)	$2 \times (-3)^2 - 7 \times (-3)$ oe e.g. $2(9) - (-21)$ or $2 \times 9 + 21$ or $18 + 21$			M1	Brackets must be round $(-3)^2$
			39	2	A1	
	(b)	$4x + 12 = 9x - 10$ or $x + 3 = \frac{9x}{4} - \frac{10}{4}$ oe			M1	for $4x + 12$ (may not be in an equation) or for dividing RHS by 4
		$12 + 10 = 9x - 4x$ or $-9x + 4x = -12 - 10$ or $22 = 5x$ or $-5x = -22$ or $3 + 2.5 = 2.25x - x$ or $1.25x = 5.5$			M1	(ft from $4x + b = 9x + 10$) for all terms in x isolated on one side and numbers on other side
			4.4	3	A1	for 4.4 oe eg. $\frac{22}{5}$, $4\frac{2}{5}$ dep on at least M1
	(c)		-1, 0, 1, 2, 3	2	B2	B1 for -2, -1, 0, 1, 2 or list with one error or omission: e.g. -2, -1, 0, 1, 2, 3 ; -1, 0, 1, 2 ; -1, 1, 2, 3, etc
						Total 7 marks

10	(a)	250×97			M1	Completely correct method or figures 2425(0), e.g. 242.5
			24 250	2	A1	
	(b)	$4 \times 500 (=2000)$ or $500 \div 93.5 (=5.34759\dots)$			M1	
		" 4×500 " $\div 93.5$ or " $5.34\dots$ " $\times 4$			M1	
			21	3	A1	21 – 21.4
						Total 5 marks

11		$\frac{-4+1}{2}$ or $\frac{9+5}{2}$			M1	or for $(-1.5, y)$ or $(x, 7)$ or $(7, -1.5)$
			$(-1.5, 7)$	2	A1	oe
						Total 2 marks

12	(a)	20×0.3			M1	Or for an answer of $\frac{6}{20}$	
			6	2	A1	condone '6 out of 20'	
	(b)	$0.3 + x + 3x = 1$			M1	oe, e.g. $4x = 0.7$	M1 for $(20 - "6") \div 4 (=3.5)$
		$(1 - 0.3) \div 4$ or 0.175 or $(1 - 0.3) \times 0.75$			M1	complete method to find x or $3x$	M1 for $\frac{3 \times "3.5"}{20}$
			0.525	3	A1	oe, e.g. $\frac{21}{40}$, 52.5%	A1 or 0.525 oe
							Total 5 marks

13				$T = 6m + 9g$	3	B3	Or $T = 3(2m + 3g)$ [award B2 if $T = 6m + 9g$ is incorrectly simplified](condone $T = 6 \times m + 9 \times g$) if not B3 then B2 for $T = 6m + kg$ or $T = km + 9g$ (k may be zero) or $6m + 9g$ if not B2 then B1 for $6m$ or $9g$ or $T = am + bg$ (where $a \neq 0$ or 6 and $b \neq 0$ or 9)
							Total 3 marks

14	(a) (i)		5, 15	1	B1	
	(ii)		5, 7, 9, 10, 11, 13, 15	1	B1	
	(b)		4, 6, 8, 10, 12, 14	2	B2	B2 for all correct and none incorrect. If not B2 then B1 for 4 or more correct and no more than 1 incorrect.
						Total 4 marks

Question	Working	Answer	Mark	AO	Notes
15	$2 \times 2 \times 5$ or $2 \times 3 \times 5$ or $3 \times 3 \times 5$ or two of 20, 40, 60 ... 30, 60, 90 ... 45, 90, 105 $2 \times 2 \times 5$ and $2 \times 3 \times 5$ and $3 \times 3 \times 5$ or all of 20, 40, 60, 80 ... 180 30, 60, 90 ... 180 45, 90, 105 ... 180	180	3	AO1	M1 for one of 20, 30, 45 written as product of prime factors or list of at least 3 multiples of any two of 20, 30, 45 M1 A1 for 180 or $2 \times 2 \times 3 \times 3 \times 5$ oe

16 (a)		$4n + 1$	2	M1 $4n + k$ (k may be zero)
				A1 oe eg. $5 + (n - 1) \times 4$ NB: $n = 4n + 1$ oe scores M1 A0
(b)		$4n + 5$	1	B1 ft from (a) if (a) is of the form $4n + k$ oe NB: Accept $4(n + 1) + 1$ oe
				Total 3 marks

Question	Working	Answer	Mark	AO	Notes
17		triangle with vertices (3, -1) (3, -4) (5, -4)	1	AO2	B1
		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

18	180 - 156 (=24) or $180(n - 2) = 156n$ oe or $90(2n - 4) = 156n$ oe				M1
	$360 \div \text{"24"}$ or $(180 \times 2) \div (180 - 156)$ or $\frac{90 \times 4}{2 \times 90 - 156}$				M1 complete method
			15	3	A1
					Total 3 marks

19	$420 \div (4 + 5 + 3) (=35)$ [or Manu = 140 or Liam = 175]			M1	M2 for
	"35" $\times 3 (=105)$			M1 or Ned = 105	$\frac{3}{12} \times 420$ oe
	$\frac{"105"+75}{420} \times 100$ oe			M1	
		43	4	A1	42.85 – 43
				Total 4 marks	

20	e.g. $4x = 16$ or $-20y = 40$ or $20y = -40$ or $3(14 + 5y) + 5y = 2$			M1	First stage of method to eliminate one variable – allow one error only in multiplication
	eg. $3 \times 4 + 5y = 2$ or $3x + 5 \times -2 = 2$			M1	(dep on M1) method to find second variable
		4, -2	3	A1	for both 4 and -2 dep on at least M1
				Total 3 marks	

21	(a)	$y^2 + 10y - 2y - 20$		2	M1	for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $y^2 + 8y + c$ for any non-zero value of c or for ... + $8y - 20$	
					A1	cao	
	(b)		$4e^2f(5e^3f - 4)$		2	B2	B1 for a correct but incomplete factorised answer with a minimum of 2 out of 4, e^2 or f outside the bracket, ie $4e^2(5e^3f^2 - 4f)$, $4f(5e^3f - 4e^2)$, $e^2f(20e^3f - 16)$, $4ef(5e^4f - 4e)$, $2e^2f(10e^3f - 8)$ or $4e^2f$ (a two term algebraic expression)
							Total 4 marks

22	$\pi \times 36.6^2$ (= 4208.35..) $85 \times 2 \times 36.6$ (=6222) “4208.35..” + “6222” (=10430.35..)	10400	4	M1 or $\times 36.6^2 \div 2$ (=2104.17..) M1 M1 dep on both previous method marks A1 awrt 10400 (accept correct answers given in an alternative form eg. 1.04×10^4 ; 104×10^2) SC: B2 for an awrt 7320
				Total 4 marks

23	$0.82x = 25.83$ or $82\% = 25.83$		3	M1 or for use of 0.82 in a calculation
	$\frac{25.83}{0.82}$ or $\frac{25.83}{82} \times 100$			M1
		31.5(0)		A1
				Total 3 marks