

## IGCSE (9–1) Maths - practice paper 6F mark scheme

Results Plus data on 86 of the 100 marks:

Paper 6

Edexcel averages:

Year	Paper	Qu. no	New qu. no.	Mean score	Max score	Mean %	ALL	A*	A	B	C	D	E	F	G	U
1701	2FR	Q03	Q01	2.75	4	68.8	2.75				3.45	2.60	1.68	1.33	0.00	0.00
1701	2FR	Q04	Q02	3.13	4	78.3	3.13				3.57	3.11	2.58	2.34	0.50	0.00
1701	2FR	Q05	Q03	3.94	5	78.8	3.94				4.50	4.09	3.32	1.51	1.00	2.00
1701	2FR	Q06	Q04	5.15	6	85.8	5.15				5.63	5.36	3.95	5.17	2.00	3.00
1706	2FR	Q07	Q05	3.77	6	62.8	3.77				4.81	3.78	2.91	2.92	1.54	0.66
1701	1FR	Q05	Q06	1.64	2	82.0	1.64				1.82	1.57	1.37	1.60	0.75	0.00
1701	2FR	Q08	Q07	1.90	4	47.5	1.90				2.33	1.96	1.10	0.66	0.25	0.00
1701	1FR	Q09	Q08	2.86	4	71.5	2.86				3.37	2.64	2.26	1.80	0.75	0.00
1701	2FR	Q10	Q09	2.82	3	94.0	2.82				2.97	2.79	2.68	2.50	2.25	0.00
1701	2FR	Q11	Q10	3.34	4	83.5	3.34				3.83	3.25	2.73	2.00	1.50	0.00
1706	2F	Q13	Q11	1.63	4	40.8	1.63				2.76	1.36	0.49	0.22	0.07	0.00
1701	1FR	Q12	Q12	1.06	2	53.0	1.06				1.45	0.89	0.47	0.00	0.25	0.00
1701	1FR	Q13	Q13	1.69	3	56.3	1.69				2.33	1.29	0.68	1.00	0.00	0.00
1701	1FR	Q14	Q14	2.29	5	45.8	2.29				3.49	1.00	0.84	1.00	0.25	0.00
1701	2F	Q18a	Q15	1.84	3	61.3	1.84				2.67	2.24	1.42	0.56	0.21	0.16
1706	2FR	Q19	Q16	1.37	2	68.5	1.37				1.73	1.35	1.33	0.87	0.50	0.17
1701	1FR	Q17	Q17	2.59	5	51.8	2.59				3.55	1.75	1.42	0.80	0.75	1.00
1701	1F	Q19	Q18	0.75	3	25.0	0.75				1.60	0.55	0.25	0.22	0.04	0.00
1706	2FR	Q22b	Q19	1.59	4	39.8	1.59				2.87	1.06	0.96	0.22	0.00	0.00
1701	1F	Q20	Q20	2.25	7	32.1	2.25				4.30	2.17	0.93	0.76	0.08	0.00
Sp ppr	1F	Q18d	Q21		3											
1506	4H	Q12	Q22	2.32	3	77.3	2.32	2.82	2.48	2.07	1.51	0.83	0.39			0.25
Sp ppr	1F	Q20	Q23		6											
1601	4HR	Q11	Q24	2.11	3	70.3	2.11	2.62	2.11	1.32	0.70	0.23	0.00			0.00
SAMs	1F	Q25	Q25		5											
				<b>52.79</b>	<b>86</b>	<b>61.4</b>	<b>52.79</b>				<b>65.24</b>	<b>45.87</b>	<b>33.76</b>	<b>27.48</b>	<b>12.69</b>	<b>7.24</b>

Q	Working	Answer	Mark	Notes
<b>1</b>	(a)(i)		9	B1
	(a)(ii)		20	B1
	(a)(iii)		Correct line of symmetry	B1
	(b)		Obtuse angle marked	B1
				<b>Total 4 marks</b>

<b>2</b>	(a)		8.65	1	B1
	(b)		7.27	1	B1
	(c)(i)		7.235 marked on diagram	2	B1
	(c)(ii)		7		B1
					<b>Total 4 marks</b>

<b>3</b>	(a)		(4, 5)	1	B1
	(b)		(-4, 1)	1	B1
	(c)		Pentagon	1	B1
	(d)		6.4	1	B1 Allow 6.3 to 6.5 inclusive
	(e)		39	1	B1 Allow 37 - 41 inclusive
					<b>Total 5 marks</b>

<b>4</b>	(a)		13	1	B1
	(b)		Add 3	1	B1 Accept +3, 3 more, jumped forward by 3, difference = 3 oe or $3n + 1$
	(c)	$4 + 11 \times 3$ or $4 + 12 \times 3$ or $3n + 1$ Or 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37			M1 Allow $4 + 12 \times 3$ or 34 or 40 List should show a clear intention of adding 3 with at least 5 terms (including 16). Condone 1 arithmetic error.
			37	2	A1
	(d)	$67 - 1$ or $3x + 1 = 67$			M1
			22	2	A1 cao
					<b>Total 6 marks</b>

<b>5</b>	(a) (i)		centimetres	1	B1 cm allow any unambiguous spelling
	(ii)		kilograms	1	B1 kg allow any unambiguous spelling
	(iii)		Square metres	1	B1 $m^2$ allow any unambiguous spelling
	(b)	$3 \times 150$ or $3 \times 0.15$  $2000 - 3 \times 150$ or 1550 or $2 - 3 \times 0.15$ or 1.55		3	M1 or for $2 \times 1000$ or 2000 or $150 \div 1000$ or 0.15 or $450 \div 1000$ or 0.45  M1  A1  SCB1 for 1850 ml/ or 1.85 l
					<b>Total 6 marks</b>

<b>6</b>	a		23 or 29 or 31 or 37	1	B1 accept one or more of 23, 29, 31, 37 with no incorrect numbers
	b		343	1	B1
					<b>Total 2 marks</b>

<b>7</b>	(a)	224 - 14	210	1	B1
	(b)	Numbers in order 14, 160, 166, 190, 192, 224			M1 Ascending or descending order. Condone 1 omission.
			178	2	A1
	(c)		Correct explanation	1	B1 Eg 14 affects the mean or 14 does not affect the median.
					<b>Total 4 marks</b>

<b>8</b>	a		9.9	1	B1 accept 9.8 - 10
	b		73	1	B1 accept 72 - 74
	c	eg. 100 HKD = 8.2 and 8.2×10			M1 complete method
			82	2	A1 accept 80 - 85
					<b>Total 4 marks</b>

<b>9</b>		$20 - 6 \times 2.96$			M2 For a complete method M1 for $6 \times 2.96$ or 17.76
			£2.24	3	A1 SCM1 for 17.04
					<b>Total 3 marks</b>

<b>10</b>	(a)		$\frac{23}{100}$	1	B1
	(b)	Eg 0.533(33...), 0.555(55....), 0.59, 0.6, 0.61	$\frac{8}{15}, \frac{5}{9}, 0.59, \frac{3}{5}, 61\%$	3	<p>B3 Accept correct decimal/percentage equivalents in ascending order</p> <p>If not B3 then award B2 For 4 numbers in the correct order or For <math>\frac{8}{15}, \frac{5}{9},</math> or <math>\frac{3}{5}</math> correctly converted to decimals or %s (at least 3 SF rounded or truncated) or For all five numbers in correct descending order.</p> <p>If not B2 then B1 for: 2 fractions correctly converted to decimals or %s (at least 3 SF rounded or truncated)</p>
					<b>Total 4 marks</b>

<b>11</b>	(a)	$\frac{105}{360} \times 240$ oe			M1
			70	2	A1 cao
	(b)	$\frac{120}{300} \times 360$ oe			M1
			144	2	A1 cao
					<b>Total 4 marks</b>

<b>12</b>	$\left(\frac{4+8}{2}, \frac{11+3}{2}\right)$			M1 for $\frac{4+8}{2}$ or $\frac{11+3}{2}$ or (6, y) or (x, 7) or (7, 6)
		(6, 7)	2	A1
				<b>Total 2 marks</b>

<b>13</b>	$15 \div 60 (=0.25)$ or $13.25$ or $13 \times 60 + 15 (=795)$ or $13 \times 3600 + 15 \times 60 (=47700)$			M1
	$8740 \div "13.25"$ or $8740 \div "795" \times 60$ or $8740 \div "47700" \times 3600$			M1 accept $8740 \div 13.15$ or an answer of 664 - 665
		660	3	A1 accept 659.6 – 660
				<b>Total 3 marks</b>

<b>14</b>	$80 \div (3 + 1) (=20)$ or 20 or 60	67	5	M1	
	$0.15 \times (3 \times "20") (=9)$			M1	M1 for $0.85 \times (3 \times "20") = 51$
	"20" $\div$ 5 (=4)			M1	M1 for $\frac{4}{5} \times "20" (=16)$
	$80 - "9" - "4"$			M1	M1 for "16" + "51"
				A1	
	or				
<b>14</b>	$\frac{3}{4} \times \frac{15}{100} (= \frac{9}{80}$ or 0.1125)	67	5	M1	M1 $\frac{3}{4} \times \frac{85}{100} (= \frac{51}{80}$ or 0.6375)
	$\frac{1}{4} \times \frac{1}{5} (= \frac{1}{20}$ or 0.05)			M1	M1 $\frac{1}{4} \times \frac{4}{5} (= \frac{1}{5}$ or 0.2)
	" $\frac{9}{80}$ " + " $\frac{1}{20}$ " ( $= \frac{13}{80}$ ) or "0.1125" + "0.05" (=0.1625)			M1	M1 $\frac{51}{80} + \frac{1}{5}$
	$(1 - \frac{13}{80}) \times 80$ or $(1 - "0.1625") \times 80$ or $\frac{67}{80}$			M1	M1 $(\frac{51}{80} + \frac{1}{5}) \times 80$ oe or $\frac{67}{80}$
				A1	
				<b>Total 5 marks</b>	

<b>15</b>	$1 - 0.4 - 0.2 - 0.1$ or 0.3	0.15	3	M1	
	$\frac{1 - 0.4 - 0.2 - 0.1}{2}$ or " $\frac{0.3}{2}$ "			M1	dep
				A1	
				<b>Total 3 marks</b>	

<b>16</b>		14.37028405	2	M1	102.66 or 1.843(9...) or 7.143(9..)
				A1	Accept 14.37(028.....) rounded or truncated to at least 4SF
				<b>Total 2 marks</b>	

17 a	$224 \div 8$ oe	28	2	M1 A1
b	$523 - 411 (=112)$ or $\frac{523}{411} (=1.273\dots)$ or $\frac{523}{411} \times 100 (=127.3\dots)$ <hr/> $\frac{"112"}{411} \times 100$ or $100 \times "1.273" - 100$ or $"127.3" - 100$	27.3	3	M1 <hr/> M1 dep <hr/> A1 27.25 – 27.3
				<b>Total 5 marks</b>



18	$\frac{17}{3} - \frac{19}{5}$		3	M1 for correct improper fractions (subtraction sign not necessary) <b>OR</b> two improper fractions with a common denominator with at least one of the fractions correct
	E.g. $\frac{85}{15} - \frac{57}{15}$ or $\frac{17 \times 5 - 3 \times 19}{15}$ oe			M1 for correct fractions with a common denominator a multiple of 15 i.e. in form $\frac{85a}{15a} - \frac{57a}{15a}$
		shown		A1 dep on M2 for correct conclusion to $1\frac{13}{15}$ from correct working <b>with</b> sight of the result of the subtraction e.g. $\frac{28}{15}$
	Alternative method			
	$(5)\frac{10}{15} - (3)\frac{12}{15}$		3	M1 for two correct fractions with a common denominator a multiple of 15
	$-\frac{2}{15}$			M1
		shown		A1 dep on M2 for correct conclusion to $1\frac{13}{15}$ from correct working <b>with</b> sight of the result of the subtraction e.g. $\frac{28}{15}$ or $2 - \frac{2}{15}$
	Alternative method			
	E.g. $5\frac{10}{15} - 3\frac{12}{15}$		3	M1 for two correct fractions with a common denominator a multiple of 15
	E.g. $4\frac{25}{15} - 3\frac{12}{15}$			M1 for a complete correct method
		shown		A1 dep on M2 for correct conclusion to $1\frac{13}{15}$ from correct working
				<b>Total 3 marks</b>

19 (a)		$30 < d \leq 40$	1	B1 Accept 30 – 40
19 (b)	$5 \times 5 + 15 \times 12 + 25 \times 17 + 35 \times 20 + 45 \times 6$ or $25 + 180 + 425 + 700 + 270$ or 1600	26.7	4	M2 $f \times d$ for at least 4 products with correct mid- interval values <b>and</b> intention to add.  If not M2 then award M1 for $d$ used consistently for at least 4 products within interval (including end points) <b>and</b> intention to add <b>or</b> for at least 4 correct products with correct mid-interval values with no intention to add
	$\frac{25+180+425+700+270}{5+12+17+20+6} \text{ or } \left( = \frac{1600}{60} \right)$		M1 dep on M1 (ft their products) NB: accept their 60 if addition of frequencies is shown	
			A1 Accept 26.6 – 26.7 inclusive Accept 27 if M3 awarded Do not accept fractions or mixed numbers, eg $\frac{80}{3}$ or $26\frac{2}{3}$	
				<b>Total 5 marks</b>

<b>20</b>	(a)	(-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4) (5, -6)	Correct line between $x = -1$ and $x = 5$	4	B4 For a correct line between $x = -1$ and $x = 5$
					B3 For a correct line through at least 3 of (-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4) (5, -6) <b>OR</b> for all of (-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4) (5, -6) plotted but not joined.
					B2 For at least 2 correct points plotted
					B1 For at least 2 correct points stated (may be in a table) or seen in working <b>OR</b> for a line drawn with a negative gradient through (0, 4) <b>OR</b> for a line with the correct gradient.
	(b)			3	M1 for $y = -4$ drawn; accept full or dashed line NB A shaded rectangle implies a choice of lines so M0
					M1 for $x = 1$ drawn; accept full or dashed line NB A shaded rectangle implies a choice of lines so M0
			For correct region identified		A1ft for correct region identified. Condone no label if region clear. ft from an incorrect straight line in part (a)
					<b>Total 7 marks</b>

<b>21</b>	$6x - 5 = 2(x + 1)$ or $6x - 5 = 2x + 2$				M1
	$6x - 2x = 2 + 5$				M1
		1.75	3		A1 oe eg. $\frac{7}{4}$ dep on at least M1 scored
					<b>Total 3 marks</b>

22	eg $\frac{16}{100} \times 65000$ oe or 10400	65000 $\times 0.84^3$			M1 For $\frac{16}{100} \times 65000$ oe or 10400	(M2 for $65000 \times 0.84^3$ ) <b>or</b> (M1 for $65000 \times 0.84$ or 54600 or $65000 \times 0.84^2$ or 45864 or $65000 \times 0.84^4$ or 32361.63..)
	$\frac{16}{100} \times (65000 - \text{"10400"})$ $= 8736$ $\frac{16}{100} \times (65000 - \text{"10400"} - \text{"8736"})$ $= 7338.24$  $65000 - \text{"10400"} - \text{"8736"} -$ $\text{"7338.24"}$			3	M1 For completing Method	
					Accept (1 – 0.16) as equivalent to 0.84 throughout	
					<b>SC:</b> If no other marks gained, award M1 for $65000 \times 0.48$ oe (=31200) or $65000 \times 0.52$ oe (=33800)	
			38525.76		A1 for 38525 – 38526	
					<b>Total 3 marks</b>	

<b>23</b>	a	$0.03 \times 180\,000 (=5400)$			M1	M2 for $1.03 \times 180\,000$
		“5400” + 180 000			M1 dep	
			185 400	3	A1	
	b	$6630 = 85\% \text{ oe or } \frac{6630}{85} (= 78)$			M1	M2 for $6630 \div 0.85$
		$6630 \div 85 \times 100$ or “78” $\times 100$			M1 dep	
			7800	3	A1	
						<b>Total 6 marks</b>

<b>24</b>	$\pi \times (20 - 2 \times 4) \text{ oe or } \pi \times 12 \text{ oe or } 2 \times \pi \times 6 \text{ or } 37.6\dots \text{ or } 37.7 \text{ or}$		3	M1	for a correct method to find the circumference or half of the circumference	
	$\frac{1}{2} \times \pi \times (20 - 2 \times 4) \text{ oe or } \frac{1}{2} \times \pi \times 12 \text{ oe or } \pi \times 6 \text{ or } 18.8\dots$					
	$4 + 10 + 20 + 10 + 4 + \frac{1}{2} \times “37.6\dots”$ or $4 + 10 + 20 + 10 + 4 + “18.8\dots”$			M1	(dep on previous M1) for complete method	
		66.8		A1	66.8 – 66.9	
						<b>Total 3 marks</b>

Question	Working	Answer	Mark	AO	Notes
25	$\sqrt{9.5^2 - 7.6^2}$ or $\sqrt{90.25 - 57.76}$ or $\sqrt{32.49}$ or $\sqrt{32.5}$ (BC =) 5.7 $\frac{1}{2} \times 7.6 \times '5.7'$ or 21.6(6) or 21.7  $\frac{1}{2} \times \pi \times \left(\frac{'5.7'}{2}\right)^2$ or 12.7(587...) <b>or 12.8</b>	34.4	5	AO2	M1  A1  M1 dep on first M1  or eg. $ACB = \sin^{-1}\left(\frac{7.6}{9.5}\right)$ (=53.1...) <b>and</b>  $\frac{1}{2} \times 9.5 \times '5.7' \times \sin'53.1'$  M1 dep on first M1  A1 for answer rounding to 34.4 ( $\pi \rightarrow 34.4187... 3.14 \rightarrow 34.4123...$ )