

GCSE Mathematics (9–1) Practice Tests Set 9 – Paper 3F mark scheme

Question	Working	Answer	Mark	Notes
1		10	1	B1
2		30	1	B1
3		0.18	1	B1
4	5×8 or $\frac{360}{9}$	40	2	B1
5 (a)		66	1	B1
(b)		subtract 6	1	B1 –6, minus 6, take 6, oe
(c)		18	1	B1
6 (a)		5.4	1	B1 Allow 5.2 – 5.6
(b)		110	1	B1 Allow 108 – 112
7 (a)		6	1	B1
(b)		1.53	1	B1
(c)	$0.84 \times 0.5 (=0.42)$ or $0.92 \times 0.75 (=0.69)$ $5 - (0.84 \times 0.5 + 0.92 \times 0.75)$ or $5 - 1.11$	3.89	3	M1 could work in euros or cents M1 A1

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8	(a)		C	1	B1
	(b)		275	1	B1
	(c)		123	1	B1
	(d)	$57 + 85 + h = 180$ or $h = 180 - 57 - 85$ or $"123" = 85 + h$ or $h = "123" - 85$	38	2	M1 ft from (c) A1
9	(a)		6	1	B1
	(b)		-48	1	B1
	(c)		16	1	B1

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10	(a)		$2g$	1	B1
	(b)		3	1	B1
	(c)	$46 - 3 \times 2 \times 5$		2	M1 for $3 \times 2 \times 5 (=30)$
	(d)	$43 = 4e + 3 \times 7$ $43 - 3 \times 7 = 4e$ or $4e = 22$	16	3	A1 M1 M1
			$5\frac{1}{2}$		A1 Accept 5.5, $\frac{22}{4}$ oe
11	$120 \times 7/8 = 105$			3	M1
	$105 \times 3/4$				M1
		70			A1
	$31500 \div 42000$			2	M1
	75%	75			A1
12	e.g. $\frac{27}{8} \div \frac{9}{4}$, $\frac{27}{8} \div \frac{18}{8}$	$1\frac{1}{2}$	3	M1	for two correct improper fractions

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	$\frac{27}{8} \times \frac{4}{9}$ or $\frac{4 \times 27}{8 \times 9}$ or $\frac{108}{72}$ or $\frac{27}{8} \div \frac{18}{8}$			<p>M1 accept division of any two correct fractions with a common denominator which is a multiple of 8</p>
				<p>A1 for correct working leading to $1\frac{1}{2}$ must show correct cancelling of fractions before multiplication or a correct mixed number eg $1\frac{36}{72}$, $1\frac{9}{18}$ or a correct improper fraction eg. $\frac{108}{72}$</p>

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Question	Working	Answer	Mark	Notes
13 (a)		3.9	1	B1
(b)		1296	1	B1
(c)	$(26.72K)^2$ or $\frac{15775.36}{22.09}$	714.1(40335)	2	M1 for 26.72... or 15775.36 or 22.09 A1
(d)		714	1	B1 ft if at least 4 sig figs are given in (c)
14 (a)	$(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$	line $y = 4 - 2x$ drawn	3	B3 for a correct line between $x = -1$ and $x = 3$ If not B3 then award B2 for a straight line segment through at least 3 of $(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$ OR for all of $(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$ plotted and not joined OR for a line drawn through $(0, 4)$ with a clear attempt at a gradient of -2 (eg a line through $(0, 4)$ and $(0.5, 2)$ If not B2 then award B1 for at least 2 correct points stated or plotted (may be in a table); ignore any incorrect points either plotted or evaluated OR for a line drawn with negative gradient through $(0, 4)$ OR for a straight line with gradient -2
(b)		$(1\frac{1}{2}, 1)$	1	B1 ft from (a) providing either $y = 1$ or $y = 4 - 2x$ is correct

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Question	Working	Answer	Mark	Notes
15 (a)	32 : 24	4 : 3	2	M1 SC B1 3 : 4
(b)	E.g. $\frac{x}{60} = \frac{12}{16}$ oe or $12 : 16 = x : 60$ oe or $\frac{12 \times 60}{16}$ oe or $\frac{24 \times 60}{32}$ oe	45	2	A1 M1 for a correct equation (accept ratios) or a correct calculation A1 cao

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Question	Working	Answer	Mark	Notes
16 (a)	$\frac{360}{n} = 24$ oe or $\frac{360}{24}$ or $180 - \frac{180(n-2)}{n} = 24$ oe or $\frac{180(n-2)}{n} = 156$ oe	15	2	M1 for a correct equation or a correct calculation A1 cao
(b)	$(2 \times 5 - 4) \times 90 (=540)$ or $(5 - 2) \times 180 (=540)$ $540 - (90 + 137 + 90 + 128)$ or $540 - 445$ Alternative scheme – using exterior angles $2 \times (180 - 90) + (180 - 137) + (180 - 128) + (180 - t) = 360$ or $90 + 43 + 90 + 52 + 180 - t = 360$ oe $455 - 360 (= t)$ or $90 + 43 + 90 + 52 + 180 - 360 (= t)$ oe	95	3	M1 Complete method to find sum of interior angles. M1 dep A1 cao SC : If no marks awarded then award B1 for $137 + 128 + 90 + 90 + t = m$ oe or $m - (137 + 128 + 90 + 90)$ or $m - 445$ where $m > 360$ M1 for a correct equation using exterior angles M1 (dep) for isolating t on one side of the equation A1 cao

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17 (a)		4 – 6	1	B1
(b)	$2 \times 5 + 5 \times 12 + 8 \times 10 + 11 \times 4 + 14 \times 1$ or $10 + 60 + 80 + 44 + 14 (= 208)$	6.5 6.5	4 4	<p>M2 for at least 4 correct products added (need not be evaluated) If not M2 then award M1 for consistent use of value within interval (including end points) for at least 4 products which must be added OR correct mid-points used for at least 4 products and not added</p> <p>M1 dep on at least M1 Allow division by their $\sum f$ provided addition or total under column seen</p> <p>A1 for 6.5 or $6\frac{1}{2}$ allow 6 or 7 if 6.5 oe seen or $208 \div 32$ seen</p>
	$\frac{2 \times 5 + 5 \times 12 + 8 \times 10 + 11 \times 4 + 14 \times 1}{5 + 12 + 10 + 4 + 1} \left(= \frac{208}{32} \right)$			

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Question	Working	Answer	Mark	Notes
18 (a)		Reflection in the line with equation $x = 6$	2	B1 for reflection B1 for $x = 6$ NB. Award no marks if more than one transformation given
(b)		trapezium with vertices (4, -2) (4, -4) (7, -6) (7, -2)	2	B2 If not B2 then award B1 for trapezium in correct orientation or a trapezium with 3 vertices correct

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Question	Working	Answer	Mark	Notes
19	(a) $\frac{1}{2}(8 \times 6)$	24	2	M1 A1
	(b) 24×25	600	2	M1 ft 24 from (a) for $(a) \times 25$ A1 ft 24 from (a) for $(a) \times 25$
	(c) $2 \times "24" + 10 \times 25 + 6 \times 25 + 8 \times 25$	648	3	M2 for a complete method if not M2 then award M1 for at least 3 correct areas A1

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Question	Working	Answer	Mark	Notes
20 (a)		<i>B</i>	1	B1 cao
(b)		Description	2	<p>M1 for reference to both</p> <ul style="list-style-type: none"> length greater than 20cm weigh more than 1 kg <p>or for identifying \cup as 'or'</p> <p>A1 for a complete correct statement eg 'fish that have length greater than 20cm OR weigh more than 1 kg (or both) (accept and/or)</p>

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Question	Working	Answer	Mark	Notes
21 (a) (i)	$(4x+1) + (4x+1) + (2x+2) + (2x+2) (= 12x+6)$		1	B1 for a correct expression, may not be simplified, but if simplified it must be correct
(a) (ii)	$(x+3) + (x+3) + 2x (= 4x+6)$		1	B1 for a correct expression, may not be simplified, but if simplified it must be correct
(b)	$(4x+1) + (4x+1) + (2x+2) + (2x+2) =$ $2[(x+3) + (x+3) + 2x]$ oe E.g $6 = 4x$ E.g. $4x + 6 = 12$ oe or $12x - 6 = 8x$ oe	$1\frac{1}{2}$ oe	4	M1 fit from (a) if at least B1 awarded OR one perimeter correct and $2 \times$ (perimeter of triangle) M2 (dep on M1) fit for an equation in the form $ax = b$ If not M2 then award M1 (dep on M1) for correct simplification of all x terms OR correct simplification of all number terms A1 for 1.5 or $\frac{6}{4}$ or $\frac{3}{2}$ or $1\frac{1}{2}$ from correct algebraic working

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Question	Skill tested	Mean score	Max score	Mean %	Mean score of students achieving grade:					
					ALL	5	4	3	2	1
Q01		0.74	1	74	0.74	-	0.97	-	-	0.15
Q02		0.81	1	81	0.81	-	0.93	-	-	0.25
Q03		0.94	1	94	0.94	-	0.97	-	-	0.70
Q04		0.83	1	83	0.83	-	0.95	-	-	0.55
Q05a		0.93	1	93	0.93	-	0.99	-	-	0.70
Q05b		0.91	1	91	0.91	-	0.95	-	-	0.55
Q05c		0.69	1	69	0.69	-	0.86	-	-	0.35
Q06a		0.84	1	84	0.84	-	0.92	-	-	0.50
Q06b		0.39	1	39	0.39	-	0.61	-	-	0.00
Q07a		0.94	1	94	0.94	-	0.99	-	-	0.75
Q07b		0.62	1	62	0.62	-	0.81	-	-	0.40
Q07c		1.46	3	49	1.46	-	2.38	-	-	0.10
Q08a		0.71	1	71	0.71	-	0.85	-	-	0.40
Q08b		0.69	1	69	0.69	-	0.95	-	-	0.15
Q08c		0.72	1	72	0.72	-	0.95	-	-	0.20
Q08d		1.60	2	80	1.60	-	1.94	-	-	0.30
Q09a		0.91	1	91	0.91	-	0.97	-	-	0.85
Q09b		0.97	1	97	0.97	-	0.99	-	-	0.90
Q09c		0.94	1	94	0.94	-	0.97	-	-	0.90
Q10a		0.71	1	71	0.71	-	0.93	-	-	0.30
Q10b		0.85	1	85	0.85	-	0.99	-	-	0.35
Q10c		1.47	2	74	1.47	-	1.81	-	-	0.00
Q10d		1.89	3	63	1.89	-	2.84	-	-	0.00
Q11a		0.69	1	69	0.69	-	0.90	-	-	0.20
Q11b		0.92	1	92	0.92	-	0.99	-	-	0.65
Q12		1.76	2	88	1.76	-	1.96	-	-	0.95
Q13a		0.60	1	60	0.60	-	0.82	-	-	0.25
Q13a		2.05	3	51	1.55	-	2.79	-	-	0.15
Q13b		0.36	1	36	0.36	-	0.72	-	-	0.00
Q13b		1.43	2	72	1.43	-	1.86	-	-	0.30
Q13c		0.56	2	28	0.56	-	1.18	-	-	0.00

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Question	Skill tested	Mean score	Max score	Mean %	Mean score of students achieving grade:					
					ALL	5	4	3	2	1
Q13d		1.06	2	53	1.06	-	1.64	-	-	0.60
Q15a		0.94	2	47	0.94	-	1.62	-	-	0.10
Q15b		0.49	3	16	0.49	-	1.28	-	-	0.00
Q16a		0.71	2	36	0.71	-	1.34	-	-	0.00
Q16b		1.74	3	58	1.74	-	2.39	-	-	0.75
Q17a		0.77	1	77	0.77	-	0.88	-	-	0.45
Q17b		0.63	2	32	0.63	-	0.91	-	-	0.15
Q18a		0.56	2	28	0.56	-	1.21	-	-	0.00
Q18b		0.51	4	13	0.51	-	1.39	-	-	0.00
Q19a		0.47	1	47	0.47	-	0.70	-	-	0.05
Q19b		1.42	4	36	1.42	-	2.74	-	-	0.00
Q19c		1.06	3	35	1.06	-	2.02	-	-	0.05
Q20a		1.32	3	44	1.32	-	2.08	-	-	0.51
Q20b		1.17	2	59	1.17	-	1.66	-	-	0.43
Q21a		0.71	2	36	0.71	-	1.19	-	-	0.17
Q21b		0.82	2	41	0.82	-	1.38	-	-	0.14
		44.31	80	55	43.81		62.17			15.25

Suggested Grade Boundaries based on performance of students in Summer 2018

5	4	3	2	1
68	54	38	22	10