

## GCSE Mathematics (9-1) Practice Tests Set 8 – Paper 1F mark scheme

Question	Working	Answer	Marks		Notes
1		0.07	1	B1	cao
2		$\frac{4}{5}$	1	B1	cao
3	840 ÷ 7 (=120) oe or $\frac{6}{7} \times 840$ oe or 0.14(2...) × 840 (=120) oe or 117.6	720	2	M1	
				A1	cao
4		11x	1	B1	
5		20ef	1	B1	
6		3	1	B1	
7 (a)		E	1	B1	Accept 0.2
(b)		D	1	B1	
(c)		C	1	B1	Accept 0.5
8 a		6.5	1	B1	
b		8000	1	B1	

Question	Working	Answer	Marks	Notes																				
9 a	<table border="1"> <thead> <tr> <th></th> <th>UK</th> <th>Africa</th> <th>USA</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th>Male</th> <td>14</td> <td>7</td> <td>2</td> <td>23</td> </tr> <tr> <th>Female</th> <td>16</td> <td>9</td> <td>2</td> <td>27</td> </tr> <tr> <th>Total</th> <td>30</td> <td>16</td> <td>4</td> <td>50</td> </tr> </tbody> </table>		UK	Africa	USA	Total	Male	14	7	2	23	Female	16	9	2	27	Total	30	16	4	50		3	B3 If not B3 then B2 for at least 4 correct entries If not B2 then B1 for at least 2 correct entries
	UK	Africa	USA	Total																				
Male	14	7	2	23																				
Female	16	9	2	27																				
Total	30	16	4	50																				
b	$\frac{9}{50}$ or 0.18	18	2	M1 A1	for selecting 9 (may be seen in a calculation)																			
10 a		17	1	B1																				
b		$7t + 6d$	2	B2	B1 for $7t$ or (+) $6d$																			
11 a		Kenya	1	B1																				
b	$67 - 27$ (may be seen on bar chart)	40	2	M1 A1	for $x - 27$ (can be implied by an answer of 39, 41) cao																			
c	$56 : 42$ oe or $3 : 4$ or $1 : \frac{4}{3}$ oe	4 : 3	2	M1 A1	or for an unsimplified ratio with one value correct e.g. $56 : 41$ , $66 : 42$ or for $53 : 41$ or for 3 and 4 in incorrect notation																			

Question	Working	Answer	Marks		Notes
d	$46 + 37 + 38 (=121)$ <b>or</b> $\frac{46}{m}, m > 46$	$\frac{46}{121}$	2	M1	cao
				A1	
<b>12</b>	$6 \times 1000 (=6000)$ <b>or</b> $475 \div 1000 (=0.475)$  $6 \times 1000 \div 475$ <b>or</b> $6 \div (475 \div 1000)$ <b>or</b> $12.6(3\dots)$ <b>or</b> $475 \times 12 (=5700)$ <b>or</b> $475 \times 13 (=6175)$	12	3	M1	or for repeated subtraction of 475 from 6000 <b>or</b> repeated addition of 475 (may work in grams or kg)  cao SC : B2 for an answer of 13
				M1	
				A1	
<b>13</b> (a)		(2, -1)	1	B1	
(b)		3.6	1	B1	Allow 3.4 to 3.8 and answers written as fractions in this range eg $3\frac{1}{2}$
(c)		D marked at (-1, -1)	1	B1	
<b>14</b> (a)		24	1	B1	Accept 32 or 40 or 48
(b)		2	1	B1	
(c)		No It is divisible by 3	1	B1	Only consider reason if No is given. Allow any reason that shows a clear understanding of why 57 is not prime, eg it is divisible by 19 <b>or</b> 3 <b>or</b> equal to $3 \times 19$ .

Question	Working	Answer	Marks		Notes
15 i		(triangular) prism	1	B1	
ii		5	1	B1	
iii		6	1	B1	
16 a	12, 24, 36... <b>and</b> 20, 40, 60, ... <b>or</b> 2, 2, 3 <b>and</b> 2, 2, 5 (may be on a factor tree oe)	60	2	M1	accept prime factors seen in factor tree <b>or</b> correct position in Venn diagram
				A1	for 60 <b>or</b> $2 \times 2 \times 3 \times 5$ oe
b	at least 3 of 2, 3, 4, 6, 8, 12 <b>and</b> at least 3 of 2, 4, 7, 8, 14, 28 <b>or</b> 2, 2, 2, 3 <b>and</b> 2, 2, 2, 7 (may be on a factor tree oe)	8	2	M1	accept prime factors seen in factor tree or correct position in Venn diagram
				A1	for 8 <b>or</b> $2 \times 2 \times 2$ oe
17	$\frac{180-80}{2}$ (= 50)		3	M1	could be marked correctly on diagram or in working with no contradiction
	360 – “50” – 90			M1	dep on first M1
		220		A1	cao

Question	Working							Answer	Marks		Notes
18	x	-2	-1	0	1	2	3		3	B3	For a correct line between $x = -2$ and $x = 3$
	y	-1	1	3	5	7	9			B2	For a correct straight line segment through at least 3 of $(-2, -1)$ $(-1, 1)$ $(0, 3)$ $(1, 5)$ $(2, 7)$ $(3, 9)$ <b>OR</b> for all of $(-2, -1)$ $(-1, 1)$ $(0, 3)$ $(1, 5)$ $(2, 7)$ $(3, 9)$ plotted but not joined
										B1	For at least 2 correct points plotted or stated (ignore incorrect points) <b>OR</b> for a line drawn with a positive gradient through $(0, 3)$ <b>and</b> clear intention to use a gradient of 2 (eg. a line through $(0, 3)$ and $(0.5, 5)$ ) <b>OR</b> a line drawn with a gradient of 2
19 a								Reflection in $x = -1$	2	B1	for reflection
										B1	for $x = -1$ NB. If more than one transformation then award no marks
b								$(3, -1)$ $(3, -5)$ $(5, -5)$	1	B1	condone missing label
c								Translation $\begin{pmatrix} -2 \\ 6 \end{pmatrix}$	1	B1	NB. If more than one transformation then award no marks

Question	Working	Answer	Marks		Notes
20 a		80 000	1	B1	
b	$0.5 \times 10^{5-8}$ or 0.0005 or $5 \times 10^n$ or $5.0 \times 10^n$	$5 \times 10^{-4}$	2	M1	
				A1	for $5 \times 10^{-4}$ or $5.0 \times 10^{-4}$
21 a		$y^{14}$	1	B1	
b		$16m^{12}$	2	B2	if not B2 then B1 for $am^{12}$ or $16m^b$ or $2^4m^{12}$ $b \neq 0, 12$ $a \neq 1, 16$
c	$5x + 15 = 3x - 4$ or $x + 3 = \frac{3x - 4}{5} - \frac{4}{5}$ e.g. $5x - 3x = -4 - 15$	$-\frac{19}{2}$ oe	3	M1	for removing bracket in a correct equation or dividing all terms by 5 in a correct equation
			2	M1	ft from $ax + b = cx + d$ for correctly isolating terms in $x$ on one side of equation and constant terms on the other side
				A1	dep on at least M1
22 ai		1, 2, 3, 4, 6, 12	1	B1	cao
aii		1, 3, 5, 7, 9, 10, 11	1	B1	cao
23 (a)	$ac = M + bd$ or $-ac = -M - bd$ or $\frac{M}{c} = a - \frac{bd}{c}$		2	M1	For a correct first stage
		$a = \frac{M + bd}{c}$		A1	oe, eg $a = \frac{M}{c} + \frac{bd}{c}$ , $a = \frac{-M - bd}{-c}$ [must have been seen with $a =$ to award accuracy mark]

Question	Working	Answer	Marks		Notes
(b)	$5x < 36 + 4$ oe		2	M1	Accept as equation or with the wrong inequality sign. Also award M1 for an answer with an = sign or the incorrect inequality sign.
		$x < 8$		A1	
(c)	eg $6e^2(3f^3 - 2ef)$ , eg $2f(9e^2f^2 - 6e^3)$ eg $ef(18ef^2 - 12e^2)$		2	M1	Any correct partially factorised expression with at least 2 terms in the common factor <b>or</b> for the correct common factor and a 2 term expression inside the brackets with just one error
		$6e^2f(3f^2 - 2e)$		A1	
24	(a)	$(x - 4)(x + 6)$		M1	for $(x + a)(x + b)$ where either $ab = -24$ <b>or</b> $a + b = +2$ e.g $(x - 6)(x + 4)$
				A1	
			1	B1	
	(b)	4, -6	1	B1	cao <b>or</b> ft from any $(x + p)(x + q)$
25	a	110	1	B1	for 108 – 112
	b	cross marked in correct position	3	M1	for arc drawn radius 7.8 cm – 8.2 cm centre $L$ <b>or</b> $P$ marked 7.8 cm – 8.2 cm from $L$ <b>or</b> $40 \div 5 (= 8)$
			M1	for bearing of $238^\circ - 242^\circ$ from $M$	
			A1	Overlay ( $P$ 7.8 cm – 8.2 cm from $L$ and on a bearing of $238^\circ - 242^\circ$ from $M$ )	

Question	Working	Answer	Marks		Notes
26 a	Two readings from graph 20°C apart  eg. readings from 0°C (30 – 34 °F) and 20°C (66 – 70 °F)	36	2	M1	accept answer in range 34 – 38
				A1	
b		No with explanation	1	B1	e.g. graph does not go through (0,0) (accept 0) <b>or</b> temperatures in °F are not proportional to temperatures in °C <b>or</b> gives counter example that doubling does not work <b>or</b> 60°C is the same as 140°F (135 – 145) <b>or</b> 15°C is not 43°F



Practice Tests Set 8 – Paper 1F

Question	Skills tested	Mean score	Max score	Mean %	Edexcel averages:	Mean score of students achieving grade				
					ALL	5	4	3	2	1
Q03	Fractions	1.32	2	66	1.32	1.76	1.62	1.41	1.05	0.67
Q04	Algebraic manipulation	0.82	1	82	0.82	0.96	0.92	0.84	0.77	0.56
Q05	Algebraic manipulation	0.77	1	77	0.77	0.93	0.88	0.79	0.76	0.50
Q06	Linear equations	0.89	1	89	0.89	0.99	0.99	0.95	0.87	0.59
Q07a	Probability	0.88	1	88	0.88	0.98	0.96	0.92	0.82	0.70
Q07b	Probability	0.97	1	97	0.97	1.00	0.99	0.99	0.97	0.91
Q07c	Probability	0.87	1	87	0.87	0.98	0.97	0.92	0.82	0.64
Q08a	Measures	0.71	1	71	0.71	0.89	0.83	0.71	0.62	0.47
Q08b	Measures	0.62	1	62	0.62	0.83	0.73	0.65	0.50	0.40
Q09a	Graphical representation of data	2.63	3	88	2.63	2.96	2.91	2.77	2.56	1.97
Q09b	Percentages	1.27	2	64	1.27	1.79	1.57	1.34	0.98	0.53
Q10a	Linear equations	0.89	1	89	0.89	0.99	0.96	0.92	0.88	0.69
Q10b	Algebraic manipulation	1.54	2	77	1.54	1.92	1.79	1.66	1.41	0.87
Q11a	Graphical representation of data	0.98	1	98	0.98	1.00	0.99	0.98	0.97	0.93
Q11b	Graphical representation of data	1.76	2	88	1.76	1.96	1.92	1.86	1.70	1.38
Q11c	Ratio and proportion	1.27	2	64	1.27	1.82	1.61	1.33	0.96	0.54
Q11d	Fractions	1.62	2	81	1.62	1.95	1.87	1.73	1.47	1.01
Q12	Measures	2.16	3	72	2.16	2.89	2.60	2.30	1.75	1.13
Q13a	Angles[comma] lines and triangles	0.83	1	83	0.83	0.96	0.91	0.87	0.77	0.57
Q13b	Angles[comma] lines and triangles	0.80	1	80	0.80	0.91	0.88	0.84	0.75	0.58
Q13c	Polygons	0.76	1	76	0.76	0.96	0.89	0.80	0.67	0.38
Q14a	Integers	0.90	1	90	0.90	0.99	0.98	0.92	0.86	0.74
Q14b	Integers	0.74	1	74	0.74	0.95	0.88	0.78	0.63	0.39
Q14c	Integers	0.44	1	44	0.44	0.73	0.63	0.45	0.25	0.06
Q15i	3D shapes and volume	0.64	1	64	0.64	0.80	0.75	0.67	0.56	0.41

Q15ii	3D shapes and volume	0.93	1	93	0.93	0.99	0.96	0.94	0.90	0.87
Q15iii	3D shapes and volume	0.53	1	53	0.53	0.70	0.64	0.50	0.48	0.37
Q16a	Powers and roots	0.90	2	45	0.90	1.52	1.18	0.90	0.62	0.24
Q16b	Powers and roots	1.15	2	57	1.15	1.63	1.44	1.23	0.90	0.45
Q17	Angles, lines and triangles	1.62	3	54	1.62	2.74	2.35	1.75	0.71	0.11
Q18	Graphs	1.48	3	49	1.48	2.68	2.31	1.43	0.68	0.09
Q19a	Transformation geometry	0.67	2	34	0.67	1.42	1.04	0.55	0.26	0.08
Q19b	Transformation geometry	0.41	1	41	0.41	0.82	0.62	0.39	0.15	0.06
Q19c	Transformation geometry	0.14	1	14	0.14	0.44	0.23	0.06	0.01	0.00
Q20a	Standard form	0.77	1	77	0.77	0.95	0.92	0.85	0.71	0.35
Q20b	Standard form	1.07	2	54	1.07	1.65	1.49	1.11	0.70	0.30
Q21a	Algebraic manipulation	0.68	1	68	0.68	0.92	0.88	0.73	0.55	0.24
Q21b	Algebraic manipulation	0.46	2	23	0.46	0.86	0.61	0.45	0.25	0.12
Q21c	Linear equations	1.05	3	35	1.05	2.38	1.64	0.87	0.34	0.09
Q22ai	Set language and notation	0.56	1	56	0.56	0.87	0.72	0.52	0.40	0.27
Q22aii	Set language and notation	0.24	1	24	0.24	0.51	0.31	0.18	0.14	0.10
Q23a	Expressions and formulae	0.23	2	12	0.23	0.83	0.29	0.11	0.03	0.00
Q23b	Inequalities	0.59	2	30	0.59	1.47	0.90	0.41	0.19	0.03
Q23c	Algebraic manipulation	0.30	2	15	0.30	0.92	0.43	0.18	0.05	0.00
Q24a	Quadratic equations	0.28	2	14	0.28	0.99	0.38	0.13	0.04	0.02
Q24b	Quadratic equations	0.04	1	4	0.04	0.22	0.03	0.01	0.01	0.00
Q25a	Angles, lines and triangles	0.22	1	22	0.22	0.46	0.30	0.19	0.10	0.05
Q25b	Measures	0.88	3	29	0.88	1.88	1.25	0.78	0.44	0.12
Q26a	Graphs	0.15	2	8	0.15	0.29	0.20	0.18	0.04	0.02
Q26b	Graphs	0.23	1	23	0.23	0.45	0.31	0.24	0.10	0.02
			<b>80</b>	<b>55</b>	<b>44.31</b>	<b>63.44</b>	<b>54.35</b>	<b>44.85</b>	<b>34.67</b>	<b>22.64</b>

**Suggested Grade Boundaries based on performance of students in Summer 2018**

<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
58	49	40	29	17