GCSE
MATHEMATICS

NEW PRACTICE PAPER SET 1 Foundation Tier Paper 1
Mark Scheme (Published September 2015)

8300/1F

Version 1.0

Principal Examiners have prepared these mark schemes for specimen papers. These mark schemes have not, therefore, been through the normal process of standardising that would take place for live papers.

Further copies of this Mark Scheme are available from aqa.org.uk

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[*a*, *b*]	Accept values between *a* and *b* inclusive.
3.14 …	Allow answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Q	Answer	Mark	Comments
1(a)	20%	B1	
1(b)	90%	B1	
2	$\frac{3}{5}$	B1	
3	$4x - 3$	B1	
4	Linear scale from zero used for frequency	B1	
	Bars at correct heights and equal widths with equal gaps	B1	
	Bars labelled	B1	
	Vertical axis labelled	B1	eg Number of students, frequency Vertical axis can be horizontal for a horizontal bar chart
5	Arrow at 0 labelled B	B1	
	Arrow at $\frac{1}{6}$ labelled C	B1	
6	20	B1	
	3.7	B1ft	ft 23.7 – their 20 SC1 169.6
7	2.03 2.3 2.303 2.33	B1	
8	$\frac{17}{25}$ or 25 – 12 – 5 or 8	M1	oe
	$\frac{8}{25}$	A1	oe

Q	Answer	Mark	Comments
9	**Alternative method 1**		
	110 ÷ 6	M1	
	18.3(…) or 18 remainder (2) or 18	A1	May be implied
	19	A1ft	ft their 18.3(…) rounded up
	Alternative method 2		
	Lists multiples of 6 up to at least 96 or counts down in 6s to at least 14	M1	Allow one error
	18 × 6 = 108 or 19 × 6 = 114	A1	May be implied
	19	A1ft	
10	180 – 27 – 41	M1	oe
	112	A1	

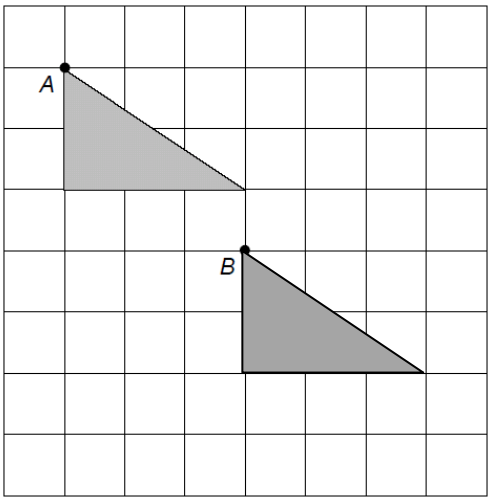
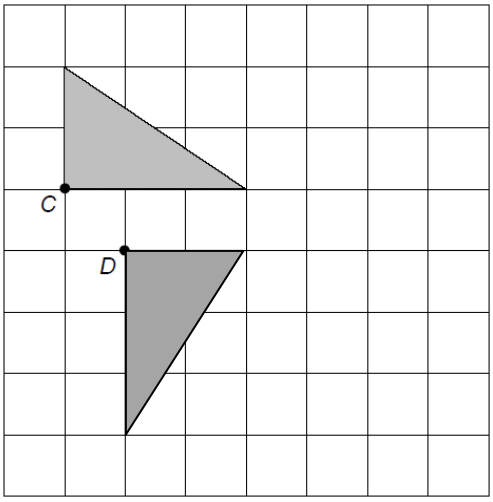
Q	Answer	Mark	Comments
11	**Alternative method 1**		
	Plots at least 2 points correctly	M1	
	Plots 3 correct points and Isosceles	A1	SC1 correct type for their 3 points
	Alternative method 2		
	Two from $\begin{pmatrix}-3\\-8\end{pmatrix}$ or $\begin{pmatrix}3\\8\end{pmatrix}$ and $\begin{pmatrix}-8\\-3\end{pmatrix}$ or $\begin{pmatrix}8\\3\end{pmatrix}$ and $\begin{pmatrix}5\\-5\end{pmatrix}$ or $\begin{pmatrix}-5\\5\end{pmatrix}$	M1	oe
	$\begin{pmatrix}-3\\-8\end{pmatrix}$ or $\begin{pmatrix}3\\8\end{pmatrix}$ and $\begin{pmatrix}-8\\-3\end{pmatrix}$ or $\begin{pmatrix}8\\3\end{pmatrix}$ and $\begin{pmatrix}5\\-5\end{pmatrix}$ or $\begin{pmatrix}-5\\5\end{pmatrix}$ and Isosceles	A1	oe
	Alternative method 3		
	$(3 - 0)^2 + (5 - -3)^2$ or $3^2 + 8^2$ or 73 or $(0 - -5)^2 + (-3 - 2)^2$ or $5^2 + 5^2$ or 50 or $(3 - -5)^2 + (5 - 2)^2$ or $8^2 + 3^2$ or 73	M1	oe
	73, 50 and 73 and Isosceles	A1	oe

Q	Answer	Mark	Comments
12(a)	16	B1	
12(b)	125	B1	
12(c)	14	B1	
13	$4x = 5 + 17$ or $4x = 22$	M1	
	5.5	A1	oe SC1 3
14	**Alternative method 1**		
	352 – 78 or 274 or 3.52 – 0.78 or 2.74	M1	
	1.37	A1	
	Alternative method 2		
	(352 + 78) ÷ 2 or 215 or (3.52 + 0.78) ÷ 2 or 2.15	M1	
	1.37	A1	
15	**Alternative method 1**		
	$\begin{array}{r} 37 \\ \times 23 \\ \hline 111 \\ 740 \end{array}$ or $\begin{array}{r} 23 \\ \times 37 \\ \hline 161 \\ 690 \end{array}$	M1	At least one row correct, with the 0 correct for multiplication by the multiple of 10
	their 111 + their 740 or their 161 + their 690	M1dep	
	851	A1	
	651 × 8 + 200 × 6	M1	oe ft their 851
	5208 + 1200	M1dep	ft their 851
	Close and 6408	A1ft	ft their 851

Q	Answer	Mark	Comments

15	**Alternative method 2**		
	<table><tr><td></td><td>30</td><td>7</td></tr><tr><td>20</td><td>600</td><td>140</td></tr><tr><td>3</td><td>90</td><td>21</td></tr></table>	M1	At least three correct, with the 00 and the 0s correct for multiplication by the multiples of 10
	their 600 + their 140 + their 90 + their 21	M1dep	
	851	A1	
	651 × 8 + 200 × 6	M1	oe ft their 851
	5208 + 1200	M1dep	ft their 851
	Close and 6408	A1ft	ft their 851
	Alternative method 3		
	<table><tr><td colspan="2">2</td><td colspan="2">7</td><td></td></tr><tr><td>1</td><td>2</td><td>4</td><td>2</td><td>6</td></tr><tr><td>1</td><td>6</td><td>5</td><td>6</td><td>8</td></tr></table>	M1	At least 3 of the 2-digit numbers correct
	Total calculated for each diagonal	M1dep	
	851	A1	
	651 × 8 + 200 × 6	M1	oe ft their 851
	5208 + 1200	M1dep	ft their 851
	Close and 6408	A1ft	ft their 851

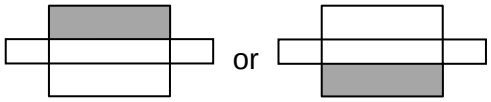
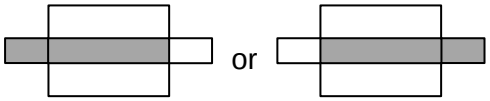
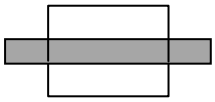
Q	Answer	Mark	Comments
15	**Alternative method 4**		
	(23 × 8 =) 184 or (37 × 8 =) 296	B1	
	their 184 × 37 or their 296 × 23	M1dep	
	851	A1	
	651 × 8 + 200 × 6	M1	oe ft their 851
	5208 + 1200	M1dep	ft their 851
	Close and 6408	A1ft	ft their 851
16(a)	085°	B1	
16(b)	[8, 8.4]	B1	May be implied by correct answer
	[640, 672]	B1ft	ft their [8, 8.4] × 50
17(a)	2 : 5	B1	
17(b)	$\frac{3}{3+12}$ (× 100) or $\frac{3}{15}$ (× 100) or $\frac{1}{5}$ (× 100)	M1	
	20	A1	
18	No and shows a multiple of 20 correctly divided by 2	B1	eg No and 20 ÷ 2 = 10

Q	Answer	Mark	Comments
19(a)	Correct translation drawn 	B1	
19(b)	Correct rotation drawn 	B2	B1 for correct rotation but incorrect position on grid.

20	$\frac{1}{2} \times 11^2 \times 6$ or 726 or 60.5	M1	oe
	363	A1	

Q	Answer	Mark	Comments
21	**Alternative method 1**		
	Lists the multiples of two of 12, 10, 6 12, 24, 36… 60… 10, 20, 30… 60… 6, 12, 18… 60…	M1	Writes out all the multiples to at least 60
	60	A1	May be implied by correct number of boxes
	5 and 6 and 10	B1ft	ft their multiple of 60
	Alternative method 2		
	Lists the prime factors of two of 12, 10, 6 12 = 2 × 2 × 3 10 = 2 × 5 6 = 2 × 3	M1	
	2 × 2 × 3 × 5	A1	May be implied by correct number of boxes
	5 and 6 and 10	B1ft	ft their multiple of 60

Q	Answer	Mark	Comments
22	**Alternative method 1**		
	$\frac{16}{40}$ or $\frac{25}{40}$ or $\frac{20}{40}$	M1	
	Valid comparison eg $\frac{16}{40}$ and $\frac{25}{40}$ and $\frac{20}{40}$ or $\frac{4}{40}$ and $\frac{5}{40}$	M1	oe
	$\frac{2}{5}$	A1	Must see working
	Alternative method 2		
	0.4 or 0.625 or 0.5	M1	40(%) or 62.5(%) or 50(%)
	0.4 and 0.625 and 0.5 or 0.1 and 0.125	M1	40(%) and 62.5(%) and 50(%) or 10(%) and 12.5(%)
	$\frac{2}{5}$	A1	Must see working
23(a)	$\frac{3}{10}$ or 0.3 or 30%	B1	
23(b)	strong positive	B1	
23(c)	Straight ruled line of best fit	B1	Through (30, 1) to (35, 1) and (60, 6) to (65, 6)
	4	B1	
23(d)	Refers to danger when extrapolating outside the range of the data given or Refers to difficulty of interpolation at certain points eg 35 lessons suggests 1 or 2 tests	B1	oe eg line of best fit might not continue eg 20 lessons suggests 0 tests

Q	Answer	Mark	Comments
24(a)	Correct rectangle shaded 	B1	
24(b)	Correct two rectangles shaded 	B1	
24(c)	Correct three rectangles shaded 	B1	
24(d)	$2ab + ad + 2cd$	B1	oe eg unsimplified eg $d(a + 2c) + 2ab$
25(a)	Ben and valid reason	B1	eg shortest time took 4.5 minutes
25(b)	Makes 4 correct statements Must refer to all 3 boys	B4	Max B3 for only referring to 2 boys Max B2 for only referring to 1 boy B1 for each valid statement Valid statements could include: Alan started in the lead (Ben 2nd, Carl 3rd) After 2.5 minutes / 500 m Ben slowed down After 3.5 minutes / 600 m Ben increased speed After 4 minutes / 600 m Carl increased speed After 3 minutes / 800 metres Alan stopped (for 0.25 minutes) After 3.25 minutes Alan set off again Alan and Carl both finish in 5 minutes Ben and Carl both finish at the same speed Finishing order: Ben wins, Alan and Carl tie for 2nd

Q	Answer	Mark	Comments
26	7×2 or 14 and 6×2 or 12	M1	
	their $14 - 11$ or 3 or their $12 + 8$ or 20	M1	
	(3, 20)	A1	
27	$3x - 38 = 2x + 15$	M1	oe
	$3x - 2x = 15 + 38$	M1dep	Collects terms oe
	53	A1	
28	$(2x + 3y = 15.5)$ $2x + 2y = 12$ / $(2x + 3y = 15.5)$ $3x + 3y = 18$	M1	Equates coefficients
	$y = 3.5$ or $x = 2.5$	A1	oe
	$x = 2.5$ and $y = 3.5$	A1	
29	$\frac{14 \times BD}{2} = 56$	M1	oe
	$BD = \frac{56 \times 2}{14}$ or 8	M1dep	
	6^2 + their 8^2 or 100	M1	oe
	10	A1	SC2 $\sqrt{52}$ or $\sqrt{67.36}$ oe