GCSE
MATHEMATICS

PRACTICE PAPER SET 3

Foundation Tier Paper 2

Mark Scheme

8300/2F

Version 1.0

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.
[*a*, *b*)	Accept values $a \leq$ value $< b$
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

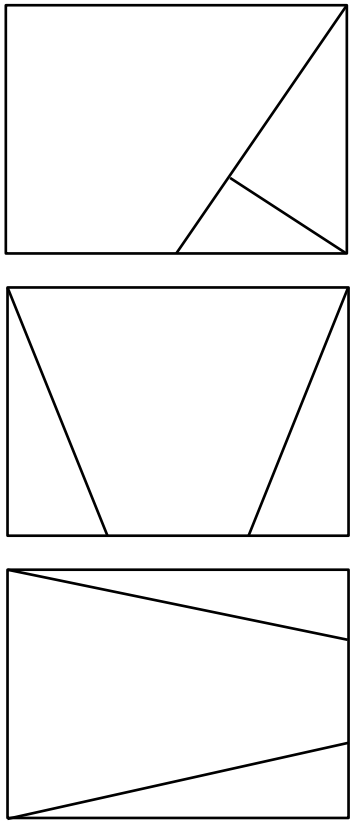
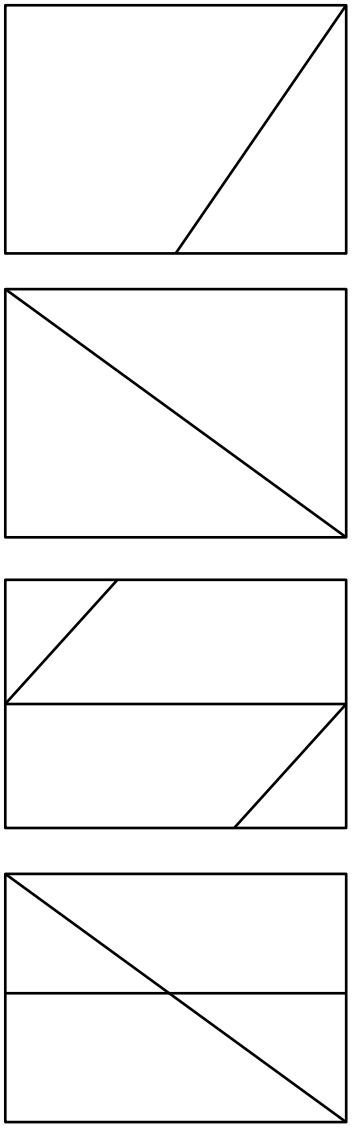
Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Continental notation

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the candidate intended it to be a decimal point.

Q	Answer	Mark	Comments
1	8	B1	
2	circumference	B1	
3	–8	B1	
4	grams	B1	
5	99, 100, 101, 110, 112, 113, 114, 115, 116, 117, 118 and 119	B2	B1 for list with 1, 2 or 3 errors or omissions
	Additional Guidance		
6	South West or SW or 225(°)	B2	B1 for East or 90° shown or implied as a result of the first turn SC1 South East or SE
	Additional Guidance		
	Directions may be seen on a diagram The SC1 is for confusing clockwise and anti-clockwise		
7	(£)287.25	B1	
	(£)274.85	B1	
	(£)213.01	B1ft	ft their (£)274.85 – 61.84
	Additional Guidance		
8(a)	$2a + 11b$	B2	B1 for $2a$ or (+) $11b$ Do not ignore fw for B2
	Additional Guidance		
	$11b + 2a$		B2
	$2a + 11b = 13ab$		B1

Q	Answer	Mark	Comments
8(b)	$8d + 20$	B2	B1 for $8d$ or (+) 20 Do not ignore fw for B2
	Additional Guidance		
	$20 + 8d$		B2
	$8d + 20 = 28d$		B1
8(c)	$3(5x + 6y)$	B1	oe
	Additional Guidance		
9	25(%) seen or used	B1	May be implied
	2×4 or 8 or $2 \div 25$ or 0.08 or $5\% = 2 \div 5$ or 0.4 (0)	M1	oe $2 \div 0.25$
	their $8 \div 100 \times 40$ or 3.2(0) or their $8 \div 100 \times 60$ or 4.8	M1dep	oe
	4.80	A1	
	Additional Guidance		
	$2 \div 0.25 \times 0.6$		B1M1M1

Q	Answer	Mark	Comments
10	Fully correct diagram with one trapezium and two right-angled triangles Examples of fully correct answer 	B2	Mark intention B1 One trapezium or two right-angled triangles B1 examples 
	Additional Guidance		
	Drawing the diagonals of the rectangle scores zero Using more than two lines can score B1 If the answer diagram is blank, mark the practice diagram		

Q	Answer	Mark	Comments
11	132 ÷ 4 or 33	M1	
	their 33 × 3 or 132 – their 33 or 99	M1dep	
	their 33 × 2.45 or 80.85	M1	their 33 cannot be 132
	their 99 × (2.45 × 2) or their 99 × 4.9(0) or 485.1(0)	M1	their 99 cannot be 132
	their 80.85 + their 485.1(0)	M1	
	565.95	A1	
	Additional Guidance		
	231 × 2.45		M5
12	1, 2, 3, 4, 5, 6	B2	B1 for all six correct and one incorrect or five correct or five correct and one incorrect
	Additional Guidance		
	0, 1, 2, 3, 4, 5, 6		B1
	1, 2, 3, 4, 5		B1

Q	Answer	Mark	Comments
13	**Alternative method 1**		
	400 × 0.37 or 4 × 37 or 148 or 1.37 seen	M1	oe
	548	A1	
	Alternative method 2		
	400 ÷ 10 × 3 + 400 ÷ 10 ÷ 2 + 400 ÷ 100 × 2 or 40 × 3 + 20 + 4 × 2 or 148	M1	oe
	548	A1	
	Alternative method 3		
	400 ÷ 10 × 4 – 400 ÷ 100 × 3 or 40 × 4 – 4 × 3 or 160 – 12 or 148	M1	oe
	548	A1	
	Additional Guidance		
14	4	B1	
15(a)	180 – 115 or 65 or 180 – 40 – (180 – 115) or 180 – 40 – 65 or 115 – 40	M1	
	75	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
15(b)	x will be (2°) smaller	B1	oe x will be 73°
	Additional Guidance		
	If they give a numerical answer, it should be 2° less than their answer to (a)		
16(a)	**Alternative method 1**		
	27 576 × 24 or 661 824	M1	
	their 661 824 ÷ 42 600 or 15.5…	M1	
	15	A1	
	Alternative method 2		
	42 600 ÷ 27 576 or 1.54…	M1	
	24 ÷ their 1.54… or 15.5…	M1	
	15	A1	
	Alternative method 3		
	27 576 ÷ 42 600 or 0.647…	M1	
	their 0.647 × 24 or 15.5…	M1	
	15	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
16(b)	**Alternative method 1**		
	27 576 ÷ 60 ÷ 60 or 7.66	M1	
	their 7.66 × 1000	M1dep	
	7660	A1	
	Alternative method 2		
	27 576 × 1000 or 27 576 000	M1	
	their 27 576 000 ÷ 60 ÷ 60	M1dep	
	7660	A1	
	Alternative method 3		
	1000 ÷ (60 × 60) or 0.277… or 0.28	M1	
	their 0.277… × 27 576	M1dep	
	7660	A1	
	Additional Guidance		
17(a)	$\frac{16}{20}$ or 6 × 7.5 or 45	M1	oe
	$\frac{16}{20} \times 6 \times 7.5$ or $\frac{16}{20} \times 45$ or 6 × 6	M1dep	oe
	36	A1	
	Additional Guidance		
17(b)	Valid improvement implying more dots	B1	
	Additional Guidance		
	Repeat the experiment		B0

Q	Answer	Mark	Comments
18(a)	£172	B1	
18(b)	Correctly totals two readings for the same day	M1	May be on the diagram eg Friday 140 + 200 = 340 Saturday 172 + 180 = 352
	Saturday	A1	
	Additional Guidance		
	Tuesday 140 + 172 = 312 Wednesday 120 + 132 = 252 Thursday 124 + 160 = 284		
18(c)	Chooses Monday or Wednesday with a valid reason	B2ft	eg Monday has the lowest profit for a single day (week 1) Wednesday has the lowest total profit (over the two weeks) ft for B2 ft for B2 totals for all five missing days given in (b) and the day with the lowest total chosen B1 for Monday or Wednesday with unclear reason
	Additional Guidance		

Q	Answer	Mark	Comments
18(d)	No and valid reason	B2	eg Broken (axis) 200 is not double 140 $140 \times 2 = 280$ and $200 \div 2 = 100$ B1 for 140 and 200 seen or $140 \times 2 = 280$ or $200 \div 2 = 100$ or 60 more
	Additional Guidance		
	No and no reason		B0
19	9 cm	B1	
20	Any valid statement about the coefficient	B1	e.g. 5 should be 6 he has added 3 and 2 (instead of multiplying) he should have multiplied 3 and 2
	Any valid statement about the power	B1	e.g. 20 should be 9 he has multiplied 5 and 4 (instead of adding) he should have added 5 and 4
	Additional Guidance		
	$6n^9$ identified as the correct answer		B1B1
	It should be 6 and 9		B1
	It should be $6n^{20}$		B1
	It should be $5n^9$		B1
	It should be 6		B0
	It should be 9		B0

Q	Answer	Mark	Comments
21(a)	$\frac{4}{3} \times \pi \times 9 \times 9 \times 9$	M1	oe
	[3052, 3054.1] or 3050 or 972π	A1	
	Additional Guidance		
21(b)	$\frac{4}{3} \times \pi \times 9 \times 9 \times 9 \times 7.8$ or their [3052, 3054.1] × 7.8 or 3050 × 7.8 or $972\pi \times 7.8$	M1	oe
	[23 805, 23 822] or $\frac{37\,908}{5}\ \pi$ or 23 790 or 23 800	A1ft	oe ft their (a)
	Additional Guidance		
22(a)	£1500 × 1.016^2	B1	

Q	Answer	Mark	Comments
22(b)	**Alternative method 1**		
	[1548.38, 1548.39]	B1ft	ft their part (a)
	1500 × 1.018 or 1527	M1	oe
	1500 × 1.018 × 1.013 or 1527 × 1.013 or [1546.85, 1546.86]	M1dep	oe
	[1548.38, 1548.39] and [1546.85, 1546.86] and Dev's	A1ft	oe ft their part (a)
	Alternative method 2		
	1.016^2 or 1.032(256) or 1.0323	M1	
	1.018 or 1.013 seen	M1	
	1.018 × 1.013 or 1.031(234)	M1dep	
	1.032(256) and 1.031 and Dev's	A1	
	Additional Guidance		
	Note incorrect answers from part (a) for Alt 1 £1500 × 1.6 × 2 = £4800 £1500 × 1.6^2 = £3840 £1500 × 1.016 × 2 = £3048		
23(a)	$x^2 - 4x + 5x - 20$	M1	Allow one error
	$x^2 + x - 20$	A1	
	Additional Guidance		
23(b)	8 and –7	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
24	3 (×) 75 or 5 (×) 45 or 3 (×) 3 (×) 25 or 5 (×) 5 (×) 9 or 3, 3, 5, 5	M1	May be seen on a factor tree
	$3 \times 3 \times 5 \times 5$ or $3^2 \times 5^2$	A1	In any order oe ie $3 \times 3 \times 5^2$ $3^2 \times 5 \times 5$
	Additional Guidance		

Q	Answer	Mark	Comments
25	**Alternative method 1**		
	States or implies that 2 is one third of 6 and States or implies that 5 is one third of 15 and $180 \div 3 = 60$ or $60 \times 3 = 180$ and Yes	B2	B1 for states or implies that 2 is one third of 6 or states or implies that 5 is one third of 15 or $180 \div 3 = 60$ or $60 \times 3 = 180$
	Alternative method 2		
	$180 \div (1 + 2 + 3) \times 2 = 60$ or $180 \div 6 \times 2 = 60$ and $180 \div (4 + 5 + 6) \times 5 = 60$ or $180 \div 15 \times 5 = 60$ and Yes	B2	B1 for $180 \div (1 + 2 + 3) \times 2 = 60$ or $180 \div 6 \times 2 = 60$ or $180 \div (4 + 5 + 6) \times 5 = 60$ or $180 \div 15 \times 5 = 60$
	Alternative method 3		
	30° and 60° and 90° and 48° and 60° and 72° and Yes		B1 for 30° and 60° and 90° or 48° and 60° and 72°
	Additional Guidance		
26(a)	$y = \frac{1}{2}x + 3$	B2	B1 for $\frac{1}{2}x + c$ or $mx + 3$ or gradient $= \frac{1}{2}$ oe
	Additional Guidance		

Q	Answer	Mark	Comments
26(b)	(0, –1)	B2	B1 for each coordinate or for reverse coordinates or $y = -1$ seen or for $y = \frac{1}{2}x + c$ or gradient $= \frac{1}{2}$
	Additional Guidance		
27	2.5(0) × 11 or 27.5(0) or 7.5(0) × 7 or 52.5(0) or 12.5(0) × 2 or 25	M1	
	their 27.5(0) + their 52.5(0) + their 25 or 105	M1dep	sum of fx
	their 105 ÷ 20 or 5.25	M1dep	
	5.25 and correct conclusion	A1	oe eg 5.25 and women gave more
	Additional Guidance		
	105 ÷ 3 = 35		M1M1M0A0

SP/03/15