GCSE
MATHEMATICS

PRACTICE PAPER SET 3

Foundation Tier Paper 1

Mark Scheme

8300/1F

Version 1.3

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	90%	B1	
2	72	B1	
3	mode	B1	
4	250 cm	B1	
5	7889	B2	B1 for (7152 + 876 =) 8028 or (7152 – 139 =) 7013 or (876 – 139 =) 737 or their 8028 – 139 correctly evaluated or their 7013 + 876 correctly evaluated or their 737 + 7152 correctly evaluated
	Additional Guidance		
	7152 + 876 = 8026 8026 – 139 = 7887		B1
6(a)	8.20 (pm) or 20.20	B1	oe twenty past eight (pm)
	Additional Guidance		
	Condone any or no punctuation between 8 and 2 or 0 and 2		

<table>
<tr><th>Q</th><th>Answer</th><th>Mark</th><th>Comments</th></tr>
<tr><td rowspan="5">6(b)</td><td>9.25 (pm) or 21.25</td><td>B2ft</td><td>oe twenty five past nine (pm)
ft their 8.20 (pm)
B1 for their 8.20 + 20 minutes correctly evaluated or 8.40 (pm)
or
their 8.40 (pm) + 45 minutes correctly evaluated
or
(20 mins + 45 mins =) 1 hour 5 minutes
or
(35 mins + 20 mins + 45 mins =) 1 hour 40 minutes</td></tr>
<tr><td colspan="3">Additional Guidance</td></tr>
<tr><td colspan="2">Condone any or no punctuation between 9 and 2 or 1 and 2</td><td></td></tr>
<tr><td colspan="2">Answer to (a) 8.25 (5 minutes later)
Answer to (b) 9.30</td><td>B2ft</td></tr>
<tr><td colspan="2">20 + 45 = 1.05</td><td>B1</td></tr>
<tr><td rowspan="4">7(a)</td><td>Fully correct table
<table><tr><td>16</td><td>25</td><td>40</td></tr><tr><td>25</td><td>34</td><td>49</td></tr><tr><td>40</td><td>49</td><td>64</td></tr></table></td><td>B2</td><td>B1 for 6, 7 or 8 correct values in the correct places</td></tr>
<tr><td colspan="3">Additional Guidance</td></tr>
<tr><td colspan="2"></td><td></td></tr>
</table>

Q	Answer	Mark	Comments
7(b)	Identifies the square numbers in their completed table or lists the square numbers up to at least 64	M1	Any indication
	$\frac{6}{9}$ or $\frac{2}{3}$	A1ft	oe fraction, decimal or percentage ft their completed table Accept 0.66… or 0.67 Do **not** accept 0.6 or 0.7
	Additional Guidance		
	If there are no square numbers in their completed table award both marks for an answer of 0 oe		
8(a)	Manchester	B1	
	Additional Guidance		
8(b)	Bristol and Plymouth	B1	Either order
	Additional Guidance		

Q	Answer	Mark	Comments
8(c)	**Alternative method 1**		
	7 + 4 + 8 + 5 + 4 or 28 and 6 + 5 + 4 + 6 + 1 or 22	M1	Allow one incorrect value
	their 28 – their 22	M1dep	
	6	A1	
	Alternative method 2		
	7 – 6 or 1 and 4 – 5 or – 1 and 8 – 4 or 4 and 5 – 6 or – 1 and 4 – 1 or 3	M1	Allow one incorrect value
	their 1 + their (– 1) + their 4 + their (– 1) + their 3	M1dep	
	6	A1	
	Alternative method 3		
	13 + 9 + 12 + 11 + 5 or 50 and 7 + 4 + 8 + 5 + 4 or 28 or 6 + 5 + 4 + 6 + 1 or 22	M1	Allow one incorrect value
	their 28 – (their 50 – their 28) or (their 50 – their 22) – their 22	M1dep	
	6	A1	
	Additional Guidance		

9(a)	17	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
9(b)	40	B1	
	Additional Guidance		
10(a)	2.4(0) + 4.8(0) or 2.4 × 3 or 12 – 4.8 or 7.2 or 240 + 480 or 240 × 3 or 1200 – 480 or 720	M1	Any correct calculation that would give the cost of 3 boxes
	7.20	A1	
	Additional Guidance		
10(b)	Any combination of costs for more than 10 boxes correctly evaluated or 52.8(0) ÷ 2.4(0) or 5280 ÷ 240 or 528 ÷ 24	M1	eg 15 boxes oe
	22	A1	
	Additional Guidance		
	The correct cost may come from adding values in the table, multiplying by 2.40 or subtracting values from £52.80 11 boxes £26.40 15 boxes £36.00 19 boxes £45.60 12 boxes £28.80 16 boxes £38.40 20 boxes £48.00 13 boxes £31.20 17 boxes £40.80 21 boxes £50.40 14 boxes £33.60 18 boxes £43.20 Condone missing signs or end 0s		

Q	Answer	Mark	Comments
10(c)	4 : 5	B1	Must be in simplest form
	Additional Guidance		
	Any units seen eg £4 : £5		B0
11	270	B1	
12	$\frac{1}{10}$	B1	
13	(–3, 6)	B1	
14	No and 15 is half of 30, but 445 is less than half of 900 or No and 13 350 and 13 500	B2	oe B1 for 890 or 450 seen or 13 350 or 13 500 or No with an attempt to give reason eg $30 \times 445 = 15 \times 890$ or $890 < 900$
	Additional Guidance		
	No on its own		B0
15	$r = p - 3$	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
16(a)	$\frac{5}{20}$ (+) $\frac{14}{20}$	M1	oe fractions with a common denominator and at least one correct numerator
	$\frac{19}{20}$	A1	oe fraction eg $\frac{38}{40}$ or $\frac{95}{100}$ SC1 0.95
	Additional Guidance		
16(b)	$\frac{3\times7}{5\times2}$ or $\frac{21}{10}$	M1	oe fraction eg $\frac{210}{100}$
	$2\frac{1}{10}$	A1	oe mixed number eg $2\frac{10}{100}$ SC1 2.1
	Additional Guidance		
17(a)	1.8 × 7 or 12.6	M1	
	12.60	A1	SC1 for 1260
	Additional Guidance		
17(b)	1.8 ÷ 4 or 0.45 or 180 ÷ 4	M1	4 × 45 = 180 4 × 0.45 = 1.8
	45	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
18	**Alternative method 1**		
	Plots (–1, 2) and (1, 6)	M1	Mark intention
	Fully correct ruled line through the correct points	A1	
	Draws the line $y = x$	B1	
	(–4, –4)	B1ft	ft their intersection
	Additional Guidance		
	Correct line drawn implies points (–1, 2) and (1, 6) are plotted		M1A1
	Alternative method 2		
	Gradient = $\frac{6-2}{1-(-1)}$ or $\frac{2-6}{-1--1}$ or 2	M1	oe Implied by the correct equation
	$(y =)\ 2x + 4$	M1dep	Correct function for their gradient
	their $2x + 4 = x$	M1	ft their function
	(– 4, – 4)	A1	
	Additional Guidance		
	$\frac{6-2}{1-(-1)} = -2$ $y = -2x + 4$ $-2x + 4 = x$ $x = \frac{4}{3}$		M1 M1 M1 A0

Q	Answer	Mark	Comments
19	**Alternative method 1**		
	5 ÷ 10 or 0.5 or 50(p) or 5.5(0)	M1	
	16 × their 5.5(0) or 88	M1dep	
	(52 – 16) × 5 or 36 × 5 or 180	M1	
	their 180 + their 88	M1dep	dep on M1M1M1 Must be consistent units.
	268(.00)	A1	SC2 for 348(.00)
	Alternative method 2		
	5 ÷ 10 or 0.5 or 50(p) or 5.5(0)	M1	
	their 0.5(0) × 16 or 8	M1dep	
	52 × 5 or 260	M1	
	their 8 + their 260	M1dep	dep on M1M1M1 Must be consistent units.
	268(.00)	A1	SC2 for 348(.00)
	Additional Guidance		
	50 × 16 = 800, 520 × 5 = 260, answer 1060		M3M0A0
20	80 or 10 or 400	M1	
	80 and 10 and 400 seen or $\frac{80 \times 10}{400}$ with two correct	M1	
	2 from correct approximations	A1	
	Additional Guidance		
	2 without any correct approximations		M0M0A0

Q	Answer	Mark	Comments
21	$\frac{x}{3} = 12 + 9$ or $\frac{x}{3} = 21$ or $x - 9 \times 3 = 12 \times 3$ or $x - 27 = 36$	M1	$12 \rightarrow + 9 \rightarrow \times 3$ or $(12 + 9) \times 3$
	63	A1	
	Additional Guidance		
	$12 + 9 \times 3 = 39$		M0A0

22(a)	250 + 230 + 120 or 600	M1	May be seen as a denominator
	$\frac{120}{600}$	A1	oe
	Additional Guidance		

Q	Answer	Mark	Comments
22(b)	**Alternative method 1**		
	$15 \times \frac{120}{250+230+120}$ or $15 \times \frac{120}{600}$ or 3	M1	oe fraction, decimal or percentage 250 + 230 + 120 may come from (a)
	Yes and 3	A1	
	Alternative method 2		
	(250 + 230 + 120) ÷ 15 or 600 ÷ 15 or 40 and 120 ÷ their 40 or 3	M1	oe 250 + 230 + 120 may come from (a)
	Yes and 3	A1	
	Alternative method 3		
	(250 + 230 + 120) ÷ 120 or 600 ÷ 120 or 5 and 15 ÷ their 5 or 3	M1	oe 250 + 230 + 120 may come from (a)
	Yes and 3	A1	
	Additional Guidance		

Q	Answer	Mark	Comments
23(a)	**Alternative method 1**		
	7.2 – 4.8 or 2.4	M1	
	12	A1	
	Alternative method 2		
	7.2 – at least eight 0.2s or 4.8 + at least eight 0.2s	M1	
	12	A1	
	Alternative method 3		
	7.2 ÷ 0.2 or 36 and 4.8 ÷ 0.2 or 24	M1	
	12	A1	
	Additional Guidance		
23(b)	It will take fewer days	B1	oe the answer would be lower eg it will be less than 12
	Additional Guidance		
	Quicker/faster than 12 days		B1
	Quicker/faster alone		B0

Q	Answer	Mark	Comments
24(a)	**Alternative method 1**		
	25 ÷ 50 (× 60) or 30 min or $\frac{1}{2}$ h or 20 ÷ 30 (× 60) or 40 min or $\frac{2}{3}$ h or 30 ÷ 40 (× 60) or 45 min or $\frac{3}{4}$ h	M1	oe
	Two of 25 ÷ 50 (× 60) or 30 min or $\frac{1}{2}$ h and 20 ÷ 30 (× 60) or 40 min or $\frac{2}{3}$ h and 30 ÷ 40 (× 60) or 45 min or $\frac{3}{4}$ h	M1	oe
	25 ÷ 50 (× 60) or 30 min or $\frac{1}{2}$ h and 20 ÷ 30 (× 60) or 40 min or $\frac{2}{3}$ h and 30 ÷ 40 (× 60) or 45 min or $\frac{3}{4}$ h	M1	oe
	C with all working correct	A1	oe
	Additional Guidance		
	Condone missing units, but note that 30 is given as both a distance and a speed in the question		
	Mark scheme for 24(a) continues on the next page		

Q	Answer	Mark	Comments

24(a)	**Alternative method 2**			
	20 ÷ 30 (× 60) or 40 minutes or $\frac{2}{3}$ h	30 ÷ 40 (× 60) or 45 minutes or $\frac{3}{4}$ h	M1	25 ÷ 50 (× 10) or 30 minutes or $\frac{1}{2}$ h
	$50 \times \frac{2}{3}$ or 33(.3..) miles or $40 \times \frac{2}{3}$ or 26(.6..) miles or 26.7 miles	$50 \times \frac{3}{4}$ or 37.5 miles or $30 \times \frac{3}{4}$ or 22.5 miles	M1	$30 \times \frac{1}{2}$ or 15 miles or $40 \times \frac{1}{2}$ or 20 miles
	$50 \times \frac{2}{3}$ or 33(.3..) miles and $40 \times \frac{2}{3}$ or 26(.6..) miles or 26.7 miles	$50 \times \frac{3}{4}$ or 37.5 miles and $30 \times \frac{3}{4}$ or 22.5 miles	M1	
	C with all working correct		A1	oe
	Additional Guidance			
	Condone missing units, but note that 30 is given as both a distance and a speed in the question and 40 appears as both a time and a speed			

Q	Answer	Mark	Comments
24(b)	Time = 30 minutes or $\frac{1}{2}$ h or 15 minutes difference or scale factor 2	B1	oe
	30×2 or $30 \div \frac{1}{2}$ or 60	M1	
	20 mph faster	A1	
	Additional Guidance		
	20 mph with no box ticked		B1M1A0
	20 mph with slower ticked		B1M1A0
25(a)	**Alternative method 1**		
	43 – 28 or 15 seen	M1	
	15 – 13 (= 2) or 2, 13 and 15	A1	
	Alternative method 2		
	$x + 2y = 28$ and $2x + 3y = 43$	M1	oe equations
	Solves equations correctly obtaining $x = 2$	A1	
	Additional Guidance		
	If setting up two equations, they must be correct		

Q	Answer	Mark	Comments
25(b)	$b - a$	M1	Second term
	$2b - a$	M1dep	oe Fourth term
	$3b - a$	A1	
	Additional Guidance		
26	$DAE = 180 - 65 - 72$ or 43 or $ABC = 65$ or $DAB = 72$ or $EDB = 180 - 65$ or 115 or $BAE = 180 - 65$ or 115	M1	May be on diagram in correct position
	$BAC = 180 - 65 - 65$ or 50 or $ADB = 115 - 72$ or 43 and $ACD = 115$ or $BAC = 50$, $BAE = 115$ and $ADB = 115 - 72$ or 43 or $CAE = 65$ and $DAE = 43$ or $DAB = 72$ and $BAC = 50$	M1	May be on diagram in correct position oe
	$72 - 50 = 22$ or $180 - 115 - 43 = 22$ or $115 - 50 - 43 = 22$ or $65 - 43 = 22$	A1	
	Additional Guidance		
	eg 115 or $A = 50$ is ambiguous Written work takes precedence over diagrams if contradictory.		M0

Q	Answer	Mark	Comments
27	The method will **sometimes** give an answer which is a whole number	B1	
	$\sqrt{64} = 8$ or correctly evaluated example where the answer is a whole number	B1	eg $5^2 - 4^2 = 9$ and 9 is a square number or $5^2 - 4^2 = 3^2$ oe
	Correctly evaluated example where the answer is not a whole number	B1	eg $3^2 - 2^2 = 5$ and 5 is not a square number oe
	Additional Guidance		
	1 or 2 marks can be gained for example(s) even if the decision is incorrect		
	$3^2 - 2^2 = 5$ and 5 is between 4 and 9, implies 5 is not square		B0B0B1
28	*B* (0, 2) and *D* (6, 5) or *B* (4, 4) and *D* (–2, 1)	B2	B1 for one correct or for one correct and one incorrect or *B* and *D* reversed or correct diagonal drawn of any length
	Additional Guidance		
	Eg *B*(0,2) and *D*(–2, 1)		B1

SP/03/15