Rewarding Learning

General Certificate of Secondary Education

Mathematics

M1

Calculator Paper

Foundation Tier

[GMC11]

Assessment

MARK SCHEME

GCSE MATHEMATICS

Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **W** and **MW** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

W indicates marks for working.

MW indicates marks for combined method and working.

The solution to a question gains marks for correct method and marks for an accurate working based on this method. Where the method is not correct no marks can be given.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be **followed through** from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

(a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;

(b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier only a proportion of the marks will be available (based on the professional judgement of the examining team).

General Marking Advice

(i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.

(ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.

(iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.

(iv) Work crossed out but not replaced should be marked.

(v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line, if two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.

(vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.

(vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.

(viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen, e.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.

(ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.

(x) For any question, the range of answers given in the mark scheme is inclusive.

				AVAILABLE MARKS
1	**(a)**	587	A1	
	(b)	37	A1	2
2	**(a)**	Pentagon indicated (five-sided figure)	A1	
	(b)	Obtuse angle indicated (last on right)	A1	
	(c)	8	A1	3
3	**(a)**	Math Ado About Nothing	A1	
	(b)	10	A1	
	(c)	Sum Like It Hot, Charlie's Angles Allow 1 for 195 minutes used.	M1 A1	4
4	**(a)**	Chihuahua	A1	
	(b)	Kerry Blue Terrier	A1	
	(c)	Chihuahua, Westie	A1 A1	4
5	**(a)**	Chris	A1	
	(b)	Alf	A1	
	(c)	Dave	A1	
	(d)	1.4	A1	4

				AVAILABLE MARKS
6	**(a)**	80	A1	
	(b)	$255 - 80 = 175$	MA1	
		$175 \div 25 = 7$ follow through for numerical error above provided 25 divides into value	MA1	
		$7 + 5 = 12$	MA1	4
7	**(a)**	19	A1	
	(b)	June	A1	
	(c)	February 2017	A1	3
8	**(a)**	**(i)** White	A1	
		(ii) No numbers to put in order	A1	
	(b)	**(i)** 4	A1	
		(ii) $(14 + 10 + 10.5 + 13 + 12.5) \div 5$ M1 includes addition and division, A1 for accurate values	M1 A1	
		12 correct answer gains 3 marks even without work shown	MA1	6
9	**(a)**	$200 \div 7.5$ (evidence of knowing to do this)	MA1	
		26.666 ... (this value gains first 2 marks even if in answer space)	MA1	
		26	A1	
	(b)	$26 \times 7.5 = 195$ (follow through for integer answer in **(a)**)	MA1	
		5	A1	
	(c)	£10 – £4.70 = £5.30 (mark gained for sight of 5.30)	MA1	
		Pastie, Chips, Soft Drink	A1	7

				AVAILABLE MARKS
10	**(a)**	24	A1	
	(b)	2 correct lines drawn (vertical and horizontal lines through middle of shape)	A1	2
11	**(a)**	Correct face drawn (rectangle 4 across and 5 down, attached to right-hand edge)	A1	
	(b)	Evidence of 5, 2 and 4 $5 \times 2 \times 4$ 40	MA1 MA1 A1	4
12	**(a)**	Correct points plotted	A1 A1	
	(b)	Point plotted at $(x, -2)$ where $-5 \leq x < 5$	A1	3
13		$4 \times 5 = 20$ $3 + 20 = 23$ with indication of Zach	A1 A1	2
14	**(a)**	16	A1	
	(b)	32	A1	
	(c)	12	A1	
	(d)	$9n = 54$ 6	MA1 A1	5

				AVAILABLE MARKS
15	**(a)** 0, 1, 2, 6, 11 (award [1] for any 3 correct)	A2		
	(b) 7	A1	3	
16	$8e - 9w$	A1 A1	2	
17	$1400 \div 100 \times 4$ (oe) (or equivalent)	M1		
	56	MA1		
	$56 \times 3 = 168$	A1	3	
	ans 168 gains 3 marks, ans 56 gains 2 marks, with or without work shown			
18	**(a)** **(i)** 45	A1		
	(ii) 38	A1		
	(b) **(i)** Stay the same	A1		
	(ii) Stay the same	A1		
	(iii) Increase	A1	5	
19	Evidence of 160 cm and 80 cm as dimensions	MA1		
	160 + 160 + 80 + 80 (= 480 cm)	MA1		
	4.8	A1	3	
	480 as answer gains 2 marks			
20	$38 \times 9.80 = 372.40$	MA1		
	$473.90 - 372.40 = 101.50$	MA1		
	$101.50 \div 14.50 = 7$	A1	3	
	follow through for numerical errors			

			AVAILABLE MARKS
21	17:42 to 18:00 = 18 mins	MA1	
	18:00 to 20:00 = 2 hours	MA1	
	18 mins + 2 hours + 11 mins = 2 hours 29 mins	A1	3
	correct ans of 2 hours and 29 mins or 149 mins gains 3 marks		
22	12.8 ÷ 100 × 5 (oe)	MA1	
	0.64 or 64p	MA1	
	13.44	A1	3
23	**(a)** 6 points plotted correctly (4,43),(1,41),(9,48),(6,45),(5,46),(5,42)	A2	
	(award [1] for 3, 4 or 5 correct)		
	(b) 5	A1	
	(c) more, higher	A1	4
24	**(a)** $4t$	A1	
	(b) **(i)** $4t + 21 = 49$ (or similar, accept $4t = 28$ but not $t = 7$)	A1	
	(ii) $4t = 28$	MA1	
	7	A1	4
25	Garden Store: 480 ÷ 32 = 15		
	15 × 27 = 405	MA1	
	Perfect Patio: 480 ÷ 80 = 6		
	6 × 70 = 420	MA1	
	10% discount so final price 378	MA1	
	Quinn's Paving: 480 ÷ 16 = 30		
	Needs to buy 25 boxes to get 30	MA1	
	25 × 17 = 425	MA1	
	Perfect Patio is the cheapest	A1	6
	follow through for numerical errors, but not for use of incorrect methods in any of the three calculations		

			AVAILABLE MARKS
26	$620 \div 100 \times 30 = 186$ (or equivalent)	M1 A1	
	434 correct ans gains 3 marks	A1	3
27	**(a)** QPR = QRS = 65° (mark gained for angle QRS as 65 in diagram)	MA1	
	TSR = 77° (may be marked in diagram)	MA1	
	$x = 180 - (77 + 65) = 38°$ (3 marks for correct ans)	MA1	
	(b) No because $50 + 142 \neq 180°$ **or** because $65 + 103 \neq 180°$ **or** because the angles between the two lines do not add up to 180 so not parallel **or** because $38 \neq 50$, corresponding. Allow A1 for numerical error but correct argument	A2	5
		Total	**100**