GCSE Mathematics (1MA1)

Themed papers – Percentages

Compiled from student-friendly mark schemes

Please note that this mark scheme is not the one used by examiners for making scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.

NOTES ON MARKING PRINCIPLES

Guidance on the use of codes within this mark scheme
M1 – method mark. This mark is generally given for an appropriate method in the context of the question. This mark is given for showing your working and may be awarded even if working is incorrect. P1 – process mark. This mark is generally given for setting up an appropriate process to find a solution in the context of the question. A1 – accuracy mark. This mark is generally given for a correct answer following correct working. B1 – working mark. This mark is usually given when working and the answer cannot easily be separated. C1 – communication mark. This mark is given for explaining your answer or giving a conclusion in context supported by your working. Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer).

Question 1 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$8500 \times 1.2 = 10200$ or $8500 + (8500 \times 0.2) = 10200$	P1	This mark is given for a process to find total cost of the van
	$12 \times 531.25 = 6375$	P1	This mark is given for a process to find total cost of the 12 payments
	$10200 - 6375 = 3825$	P1	This mark is given for a complete process to find the value of the deposit
	3825 : 6375	P1	This mark is given for a process to find a correct unsimplified ratio
	(Dividing both sides by 1275) 3 : 5	A1	This mark is given for the correct answer only

Question 2 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Price of washing machine (x) + 20% = 600 $x + 0.2x = 600$ $1.2x = 600$ $x = 600 \div 1.2$	M1	This mark is given for a complete method to find the price of the washing machine before VAT of 20% was added
	500	A1	This mark is given for the correct answer only

Question 3 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$900 \div 1.2 =$	M1	This mark is given for a method to find the price of the computer before VAT is added
	750	A1	This mark is given for the correct answer only

Question 4 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{28.80}{20} \times 100 = 144$	P1	This mark is given for a process to find the amount of interest added before tax
	$\frac{144}{8000} \times 100$	P1	This mark is given for a process to find the interest rate
	1.8	A1	This mark is given for the correct answer only

Question 5 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$105 \div (5 - 2)$ (= 35) Kim gets £70, Molly gets £175	P1	This mark is given for a strategy to start to solve the problem
	$385 - (2 \times 35) - (5 \times 35)$ (= 140) or $(385 \div 35) - 2 - 5$ (= 4)	P1	This mark is given for a process to find Laura's share
	$\frac{140}{385} \times 100$ or $\frac{4}{11} \times 100$	P1	This mark is given for a process to find the percentage Laura gets
	36.4%	A1	This mark is given for an answer in range 36.3 to 36.4

Question 6 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	100 ÷ 1.38 (= £72.46) or 222 × 1.38 (= €306.36)	P1	This mark is given for a process to use the currency conversion rate
	$\frac{72.46}{222+72.46} = 0.2461$ or $\frac{100}{306.36+100} = 0.2461$	P1	This mark is given for a complete process to find the percentage required
	24.6%	A1	This mark is given for an answer in the range 24.6 – 24.61

Question 7 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2100 × 0.4 = 840	P1	This mark is given for a process to find the three managers' share of the bonus
	2100 – 840 = 1260	P1	This mark is given for a process to find the seven salesmens' share of the bonus
	1260 ÷ 7 = 180	P1	This mark is given for a process to find one salesman's share of the bonus
	2100 ÷ 10 = 210 $\frac{210-180}{180} = 0.1666 = 16.66\%$	P1	This mark is given for a process to find the percentage difference between the actual bonus and the salesman's suggestion
	No, the salesman would only receive and extra 16.66%, not 25%	C1	This mark is given for a correct conclusion supported by correct working

Question 8 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{162\,000}{0.9} = 180\,000$	P1	This mark is given for a process to find the cost of the house in 2007
	$\frac{180\,000}{1.2}$	P1	This mark is given for a process to find the cost of the house in 2003
	150 000	A1	This mark is given for the correct answer only

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Area of B = 1.1 × Area of A	P1	This mark is given for a using a multiple of 1.1
	Area of C = 1.1 × Area of B = 1.1 × 1.1 × Area of A	P1	This mark is given for a for complete process to derive of 1.21
	Area of C = 1.21 × Area of A, a 21% increase	A1	This mark is given for the correct answer only

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	P : **Q** = 1 : 1.5 **Q** : **R** = 1.5 : 2.25	P1	This mark is given for a process to find the ratio of the volumes of **P** and **Q**, and of **Q** and **R**
	P : **R** = 1 : 2.25 = 4 : 9	P1	This mark is given for a process to find the ratio of the volume of **P** to the volume of **R**
	$\frac{4}{9}$	A1	This mark is given for a correct answer only

Question 11 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$5.64 \div 12 = 0.47$	1	This mark is given for finding the cost of one bottle
	$50 - 47 = 3$	1	This mark is given for finding the profit on the sale of one bottle
	$\frac{3}{47} \times 100 = 6.4$ (to one decimal place)	1	This mark is given for the correct answer only

Question 12 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	20 litres of yellow paint and 30 litres of blue paint	P1	This mark is given for the a process to find the overall ratio of litres
	$(20 \div 5) =$ 4 tins of yellow paint needed $(30 \div 10) = 3$ tins of blue paint needed Cost $= (4 \times 26) + (3 \times 48)$ $= 104 + 144 = 248$	P1	This mark is given for a process to find the total cost of making 50 litres of green paint
	50 litres of green paint costs £248 10 litres of green paint costs £49.60	A1	This mark is given for finding out the cost of making 10 litres of green paint
	$\frac{66.96 - 49.60}{49.60} = 0.35$	P1	This mark is given for a process to find Robert's percentage profit
	35%	A1	This mark is given for the correct answer only

Mark scheme for 1MA1 Higher themed papers: Percentages

Performance data:

Q	Taken from			Total Marks available	TOPIC	Spec Ref	AO	% Mean marks	Edexcel mean averages Marks of candidates who achieved grade:										
	Q	Series	Paper						ALL	9	8	7	6	5	4	3	2	1	U
1	4	June 2018	2H	5	Ratio	N13/ R4/R5 /R9	2	67	3.37	4.63	4.2	3.82	3.44	3.03	2.49	1.87	-	-	1.31
2	9	June 2017	1H	2	Ratio	R9	1	62	1.24	1.95	1.82	1.56	1.29	0.99	0.62	0.29	-	-	0.14
3	10	Mock Set 4	1H	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	10	June 2019	3H	3	Ratio	R9	3	57	1.7	2.75	2.43	2.08	1.74	1.29	0.74	0.3	-	-	0.13
5	3	Mock Set 1	3H	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	2	Mock Set 2	3H	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	3	Nov 2018	1H	5	Ratio	N2, R6, R9	3	54	2.71	4.7	4.58	3.86	3.7	3.29	2.68	1.9	-	-	1.16
8	11	June 2018	3H	3	Ratio	R9	3	45	1.34	2.86	2.47	1.87	1.31	0.79	0.38	0.12	-	-	0.05
9	10	Mock Set 2	1H	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	12	June 2019	1H	3	Ratio	R6, R9, N2, N8	2	42	1.27	2.67	2.19	1.68	1.2	0.73	0.34	0.1	-	-	0.08
11	2	Nov 2017	2H	3	Ratio	R9 N13	3	42	1.27	2.75	2.41	2.27	1.99	1.64	1.26	1.04	-	-	0.88
12	10	Nov 2018	2H	5	Ratio	R5, R9, R10	3	40	2.02	4.2	3.94	3.53	3.39	2.76	1.83	0.93	-	-	0.37
				41					**14.92**	**26.51**	**24.04**	**20.67**	**18.06**	**14.52**	**10.34**	**6.55**	**-**	**-**	**4.12**