AQA

A S S E S S M E N T and
Q U A L I F I C A T I O N S
A L L I A N C E

General Certificate of Secondary Education

Applications of Mathematics 9370

Unit 1 Higher Tier 93701H

Mark Scheme

Specimen Paper

Mark Schemes

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.

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.

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.
Q	Marks awarded for quality of written communication. (QWC)
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.
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$
eeoo	Each error or omission.

A1 Higher Tier

Q	Answer	Mark	Comments
1(a)	$18\,245 - 8500$	M1	
	Their $9745 \div 5$ or 1949	M1	
	1950	A1	
1(b)	$8500 -$ (their) 1950	M1	
	6550	A1ft	

Q	Answer	Mark	Comments
2(a)	$\dfrac{195 + 210}{2}$	M1	oe eg, $195 + 15 \div 2$
	$= 202.5$	A1	
2(b)	$165 - 30$	M1	oe
	135	A1	
Alt 2(a)	Attempt to plot 4 given points	M1	
	202.5	A1	
Alt 2(b)	Extending line to origin	M1	
	135	A1	

Q	Answer	Mark	Comments
3(a)	$= B3 + C3$	B1	
3(b)	$575 \div (575 + 240) \times 100$	M1	
	70.6 and 815	A1	70.55... and 815

Q	Answer	Mark	Comments
4	Trial using 15 customers	M1	eg, 15 × £10 = £150
	Second trial	M1	eg, 14 × £10 = £140 1 × £20 = £20
	Any solution leading to > £200	A1	
	10	A1	

Q	Answer	Mark	Comments
Alt 4	L + G = 15 or 10L + 20G = 200	M1	
	L + G = 15 **and** 10L + 20G = 200	M1	
	10L + 10G = 150 or 20L + 20G = 300 or L + 2G = 20 or 10L + 20(15 – L) = 200 or 10(15 – G) + 20G = 200	M1	Correct substitution for L or G or correct scaling up or down of one equation for elimination method
	(L) = 10	A1	

Q	Answer	Mark	Comments
5	400 × 1.14 (or 456)	M1	
	200 × 1.09 (or 218)	M1	
	(Their) 456 + (their) 218 – 484	M1	
	190	A1	
	(Their 190) ÷ 1.13	M1	
	(£) 168.14	A1	QWC Strand (iii) - To achieve a correct solution a clear organised approach must be evident

Q	Answer	Mark	Comments
6(a)(i)	Sight of midpoint eg, 35	B1	Could be their midpoint such as 35.5
	10 × (their) 35 (= 350) **or** 12 × (their) 45 (= 540) **or** 6 × (their) 55 (= 330) **or** 2 × (their) 65 (= 130)	M1	One product only required
	[(their 350) + (their 540) + (their 330) + (their 130)] ÷ 30 (or 1350 ÷ 30)	M1dep	Must be division by 30
	45	A1	
6(a)(ii)	10 + 12 (or 22) **or** 10 + 12 + 6 + 2 (or 30)	M1	
	$\dfrac{22}{30}$	A1	oe
6(b)(i)	Correct plots at midpoints	B2	B1 One error Treat not joined as one error Ignore lines drawn beyond 1st and last plot
6(b)(ii)	Slower as peak for members is earlier	B1	oe
	More varied as graph for non-members is 'wider'	B1	oe
6(c)	Circles 39 minutes	B1	Any indication
	12 people finished in under 40 minutes	E1	SC1 42 circled and explains 10 in under 40 minutes oe

Q	Answer	Mark	Comments
7(a)	All four formulae circled	B2	B1 For 2 or 3 circled Accept other clear indication
7(b)	1.15 × 480	M1	oe (Using a different formula)
	552	A1	
	Their 552 ÷ 4	M1	Allow 480 ÷ 4 (as misread)
	138	A1ft	Allow 120
	(their 552 – 138) ÷ 24 or 414 ÷ 24	M1	Allow 360 ÷ 24
	17.25	A1	QWC Strand (iii) - To achieve a correct solution a clear organised approach must be evident

Q	Answer	Mark	Comments
8	1.5×10 (or 15) **or** 12×1.5 (or 18)	M1	12 men need 15 days **or** 18 men take 10 days
	(their)15×12 (or 180) **or** (their) 18×10 (or 180)	M1	1 man takes 180 days
	(their) $180 \div 15$	M1	
	12	A1	QWC Strand (ii) - A structured argument using accurate mathematical language is essential to obtain full marks

9(a)	Substituting $n = 20$ in formula	M1	
	50	A1	
9(b)	$340 - 50 = \frac{3}{2}(n - 20)$	M1	
	Their $290 \times 2 \div 3 = n - 20$	M1	
	$n = 213.33 \ldots$ **and** n needs to be a whole number	A1	oe 290 is not a multiple of 3

10	$50 \times 210 \div (70 + 55 + 45)$	M1	
	61.7(...) or 61.8	A1	or 2 with method
	Fair	B1ft	ft from their F

11	Clear link between (£)950 and 1.4% **or** $(950 + 100)$ and 3.6%	B1	Do not award if there is a contradiction eg, (£)950 and 1.4% **and** $(950 + 100)$ and 1.4%
	$950 \times 1.014 - 950$ (or 13.3)	M1	oe
	$(950 + 100) \times 1.036 - (950 + 100)$ (or 37.8)	M1	oe
	(their) $37.8 -$ (their) $13.3 (= 24.5)$	M1	
	£24.50	A1	

Q	Answer	Mark	Comments
12	Increase in average age	Q1	oe
	Increased variability in ages	Q1	oe
	Any other valid observation eg, Higher proportion > 60 years old Same proportion < 25 years old Lower greatest age	Q1	oe QWC Strand (iii) - For each mark, appropriate mathematical language must be used and response must be clear

Q	Answer	Mark	Comments
13	$140 \div 175 \ (= 0.8)$ or $35 \div 140 \ (= 0.2)$	M1	oe eg, $\frac{40}{175} \ (= \frac{8}{35})$
	Their 0.8×40 **or** their 0.2×40	M1	$\frac{8}{35} \times 140$ **or** $\frac{8}{35} \times 35$
	32 **and** 8	A1	

Q	Answer	Mark	Comments
14	3300	B1	
	$3300 \div 295$	M1	
	11.18...	A1	
	11	B1 ft	

Q	Answer	Mark	Comments
15	$100 \times (1.025^2 - 1)$ **or** $100 \times (1.000126...^{365} - 1)$	M1	
	$100 \times (1.025^2 - 1)$ **and** $100 \times (1.000126...^{365} - 1)$	M1	
	$5.06(...)\%$ or 5.1% **or** $4.70(...)\%$ or 4.71% or 4.7%	A1	
	$5.0(...)\%$ **and** $4.7(...)\%$ **and** *AER* for Cardiff is greater	B1	

Q	Answer	Mark	Comments
16(a)	$L + S \leq 7$	B1	
	$25L + 15S \geq 90$	B1	or $5L + 3S \geq 18$
	$L + S \leq 7$ drawn on graph with correct region shaded	B1	
	$5L + 3S \geq 18$ drawn on graph with correct region shaded	B2	B1 Straight line passing through (3.6, 0) **or** (0, 6) with negative gradient **and** correct region shaded
16(b)	(£)750 or $L = 1$ and $S = 5$	B2	B1 Line drawn on graph with gradient −2.5 **or** Costs given for any two possible arrangements of buses