AQA CERTIFICATE
USE OF MATHEMATICS

43503H – Higher Core Unit
Mark scheme

4350
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Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from aqa.org.uk

Key to mark scheme abbreviations

M	mark is for method
m or dM	mark is dependent on one or more M marks and is for method
A	mark is dependent on M or m marks and is for accuracy
B	mark is independent of M or m marks and is for method and accuracy
E	mark is for explanation
√or ft or F	follow through from previous incorrect result
CAO	correct answer only
CSO	correct solution only
AWFW	anything which falls within
AWRT	anything which rounds to
ACF	any correct form
AG	answer given
SC	special case
OE	or equivalent
A2,1	2 or 1 (or 0) accuracy marks
–*x* EE	deduct *x* marks for each error
NMS	no method shown
PI	possibly implied
SCA	substantially correct approach
c	candidate
sf	significant figure(s)
dp	decimal place(s)

No Method Shown

Where the question specifically requires a particular method to be used, we must usually see evidence of use of this method for any marks to be awarded.

Where the answer can be reasonably obtained without showing working and it is very unlikely that the correct answer can be obtained by using an incorrect method, we must award **full marks**. However, the obvious penalty to candidates showing no working is that incorrect answers, however close, earn **no marks**.

Where a question asks the candidate to state or write down a result, no method need be shown for full marks.

Where the permitted calculator has functions which reasonably allow the solution of the question directly, the correct answer without working earns **full marks**, unless it is given to less than the degree of accuracy accepted in the mark scheme, when it gains **no marks**.

Otherwise we require evidence of a correct method for any marks to be awarded.

Question	Solution	Marks	Total	Comments
1(a)	all sectors correct ± 3 degrees AND correct labels: spares & accessories $= 22.7^\circ$ petrol, diesel & oil $= 233.5^\circ$ repairs &servicing $= 75.7^\circ$ other motoring costs $= 28.1^\circ$	B4	4	3 sectors correct with labels = B3 2 sectors correct with labels = B2 1 sector correct with label = B1 no labels -1 OR no chart drawn: 4 correct angles seen (to nearest whole number) = SC2 1 correct angle seen (to nearest whole number) =SC1 OR correct method seen for an angle =SC1
(b)	$64.9(0) - 58.4(0)$ $\frac{\text{their } 6.5}{58.4} \times 100$ $11.1(\ldots)$	M1 M1 A1	3	
(c)	$467 + \text{their } (\geq -70 \text{ to } \leq -55)$ Any number between 397 to 412 inclusive	M1 A1	2	
	Total		**9**	

Question	Solution	Marks	Total	Comments
2(a)	$10.30 + 2 \times 3.50$	M1		17.30 = M1
	their $17.3(0) - 15.8(0)$	m1		accept $15.8(0) -$ their $17.3(0)$
	1.50	A1	3	1.5 = SC2
(b)(i)	$4 \times 60 + 95$	B1		or "335 is the cost of 1st class" $(335 - 95) \div 60 = 4$
	$50x$: explains that 50(p) is the cost of 2nd class **and** connects this to x 2nd class $(C = 50x + 335)$	B1	2	must refer to x
(b)(ii)	$685 - 335\ (= 50x)$	M1	2	$350(= 50x)$
	$x = 7$	A1		
(c)	$60y + 190$ or $50y + 350$	B1		
	their $60y + 190 =$ their $50y + 350$	M1		
	one correct step to solve equation $(y) = 16$	m1 A1		
	32	A1	5	If '$50y - 350$' and their equation correct with one correct step = SC2
	Total		**12**	

Question	Solution	Marks	Total	Comments
3(a)	$884 \div 2 \div 2$	M1		$(35.35 \times 25) \div 4$ Or 17.675×12.5 = M1 220.9325 = A1
	221	A1	2	220 = SC1
(b)	$\frac{35.4}{100} \times 4.83$	M1		
	any number between 1.70982 to 1.71 inclusive	A1	2	
(c)	$\frac{\text{their } 62.5^2}{2} = w^2$	M1		1953.125
	$w = \sqrt{\text{their} 1953.125}$	m1		44.19 to 44.2
	44	A1cao	3	
	Total		**7**	
4(a)	$\pi \times 8$	M1		8π = M1 or $2 \times \pi \times 4$
	any number between 25.1 to 25.133 inclusive	A1	2	25 = SC1
(b)	$\pi \times 6 \times 6$ OR $\pi \times 2.25 \times 2.25$ $\text{their} 113.08 - \text{their} 15.90$	M1 m1		
	any number between 97.1 to 97.2 inclusive	A1	3	97 (with no working) = SC2
(c)(i)	$2 \times \pi \times 6 \times 7$	M1		
	any number between 263.76 to 264 inclusive	A1	2	
(ii)	$3.50 \times \frac{12}{7} \times \frac{7}{5}$	M1		4.90 or 490 for cost of 50 = B1
	8.40	A1	2	8.40 = B1
	Total		**9**	

Question	Solution	Marks	Total	Comments
5(a)	one appropriate and correct area from the cross-section calculated	M1A1		rectangle, triangle or trapezoidal area: 40×16 =M1 , $640 = A1$ 40×8 =M1, $320 = A1$ 30×8 =M1, $240 = A1$ 30×16 =M1, 480 =A1 8×10 =M1, $80 = A1$ $\frac{1}{2} \times (30 + 40) \times 8$ =M1, $280 = A1$ $\frac{1}{2} \times (16 + 8) \times 10$ =M1, $120 = A1$ $\frac{1}{2} \times 8 \times 10 = \text{M1}, 40 = A$
	One correct area $\times$ 30	M1		
	Fully correct combination of prisms used with addition or subtraction	M1		$(640 - 40) \times 30$ or $(320 + 240 + 40) \times 30$ or $(320+280)\times30$ or $(480 + 120) \times 30$ or $(480 + 80 + 40) \times 30$
	18000	A1	5	Alternate solution: $30 \times 40 \times 16 = 19200$ $(= \text{M2A1})$ OR $30 \times \frac{1}{2} \times 8 \times 10 = 1200$ $(= \text{MA1})$ their $19200 -$ their $1200 = \text{M1}$ $18000 =$ A1
(b)(i)	Use of Pythagoras	B1		
	$BC^2 = 8^2 + 10^2$	M1		
	12.8 to 12.81	A1		
	their 12.8×30	m1		
	any number between 384 to 384.3 inclusive	A1	5	

(b)(ii)	$\frac{3}{4} \times 30$ OR $\frac{3}{4} \times$ their 12.8	M1		alternate solution: $\left(\frac{3}{4}\right)^2$ = M1
	$\left(\frac{3}{4} \times 30\right) \times (\frac{3}{4} \times$ their 12.8)	M1		their $\left(\frac{3}{4}\right)^2 \times$ their 384 = M1
	216 awrt	A1	3	216 = A1 awrt
	Total		**13**	
	TOTAL		**50**	