

For AQA

General Certificate of Secondary Education

MATHEMATICS (MODULAR)

Module 5 Higher Tier

Paper A1

Marking Guide

Method marks (M) are awarded for knowing and using a correct method.

Accuracy marks (A) are awarded for correct answers, having used a correct method.

(B) marks are independent of method marks.



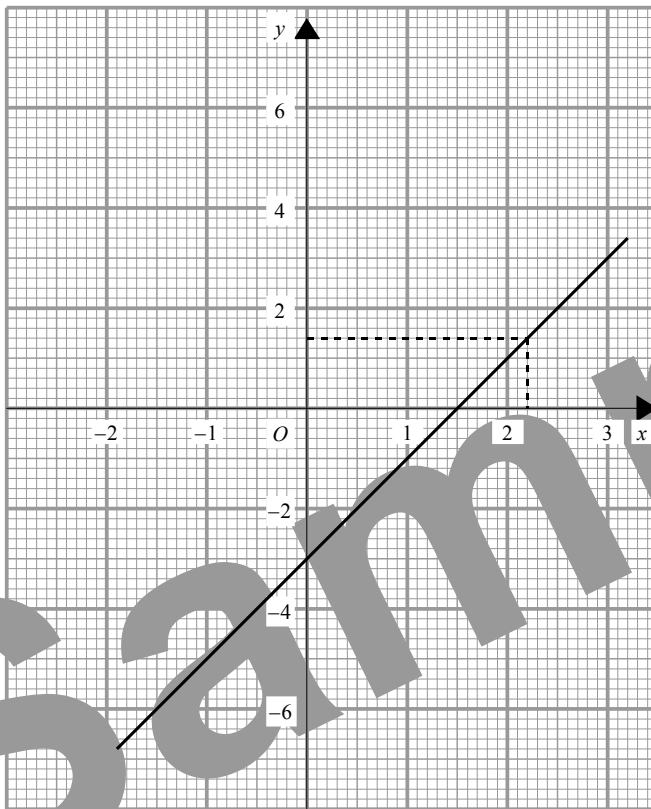
Written by Shaun Armstrong

Only to be copied for use in the purchaser's school or college

Higher Tier Module 5 Paper A1 Marking Guide

1.	$= 2 \times (4 \times 2.5) + 2 \times (6 \times 2.5) - (1 \times 2)$ $= 2 \times 10 + 2 \times 15 - 2 = 20 + 30 - 2 = 48 \text{ m}^2$	M2 A1	Total 3
2.	<p>(a) 14</p> <p>(b) 21</p> <p>(c) 5, 8, 11, 14 difference = 3 0th term = $5 - 3 = 2$ nth = $3n + 2$</p>	B1 B1 M1 M1 A1	Total 5
3.	<p>(a) area</p> <p>(b) volume</p>	B1 B1	Total 2
4.	<p>(a) (i) 40° alternate angles</p> <p>(ii) $= 180 - (30 + 40) = 180 - 70 = 110^\circ$</p> <p>(b) $\angle ACB = \angle ABC = 34$ $\angle BAC = 180 - (34 + 34) = 112$ $x = 360 - 112 = 248^\circ$</p>	B1 B1 M1 A1 B1 M1 A1	Total 7
5.	<p>(a) $4p + 9 = -3$ $4p = -12$ $p = -3$</p> <p>(b) $(x - 2)(x - 5) = 0$ $x = 2$ or 5</p>	M1 M1 A1 M1 A1 A1	Total 6
6.	<p>height of each triangle = $\frac{1}{2}(12 - 8) = 2$</p> <p>area = $(8 \times 3) + 2 \times (\frac{1}{2} \times 3 \times 2) = 24 + 6 = 30 \text{ cm}^2$</p>	B1 M1 A1	Total 3

7. (a)



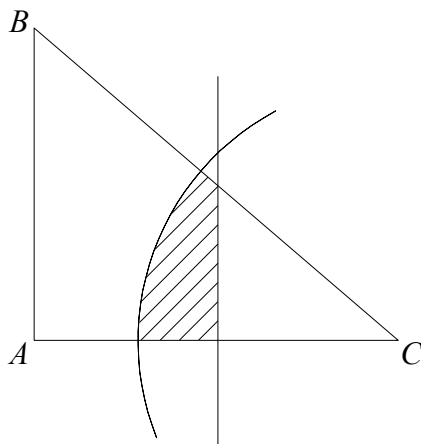
B3

(b) $x = 2.2$

B1

Total 4

8.



perpendicular bisector of AC
 arc, centre C , radius 5 cm
 accurate line and arc
 correct region shaded

M1
 M1
 A1
 A1

Total 4

9. (a) $p + 5q$

B2

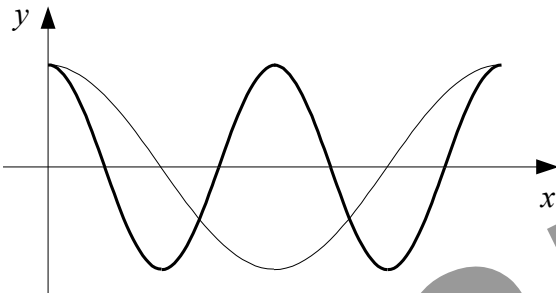
(b) $4a^2$

B1

(c) x^4

B1

Total 4

10.	(a) (i) (90, 0)	B1	
	(ii) (180, -1)	B1	
	(b)	B2	
			Total 4
11.	$P + l = 2\pi r + 5r$ $P + l = r(2\pi + 5)$ $r = \frac{P + l}{2\pi + 5}$	M1 M1 A1	Total 3
12.	(a) $= (x - 4)^2 - 16 + 19$ $= (x - 4)^2 + 3$ $a = -4, b = 3$	M1 A1 A1	
	(b) e.g. $(x - 4)^2 \geq 0$ $\therefore y \geq 3$ so always above x -axis	B1 B1	Total 5
13.	$(x - 1)^2 + (x + 1)^2 = 10^2$ $x^2 - 2x + 1 + x^2 + 2x + 1 = 100$ $2x^2 + 2 = 100$ $x^2 = 49$ $x = \pm 7$, must be +7 for lengths to be positive rectangle measures 6 cm by 8 cm area = $6 \times 8 = 48 \text{ cm}^2$	M1 M1 A1 M1 A1	Total 5
14.	$\tan 40^\circ = \frac{PR}{10}$ $PR = 10 \times \tan 40^\circ = 10 \times 0.839 = 8.39 \text{ cm}$	M1 M1 A1	Total 3
15.	let smallest number be $2n$ where n is an integer next two are $2n + 2$ and $2n + 4$ sum is $2n + 2n + 2 + 2n + 4$ $= 6n + 6 = 6(n + 1)$ which is a multiple of 6	M1 M1 A1	Total 3
16.	(a) OP is radius and PQ is tangent $\therefore \angle OPQ = 90^\circ$ $\angle ORP = \angle OPQ$ and $\angle POQ$ is common angle sum of triangle = $180^\circ \therefore \angle OQP = \angle OPR$ three equal angles \therefore triangles OPR and OPQ are similar	B1 M1 A1	
	(b) $\frac{OR}{OP} = \frac{OP}{OQ}$ $\frac{OR}{5} = \frac{5}{13} \therefore OR = \frac{25}{13} \text{ cm}$	M1 A1	Total 5

17. volume of cylinder = $\pi r^2 h$
volume of cone = $\frac{1}{3}\pi(2r)^2 H = \frac{4}{3}\pi r^2 H$
 $\pi r^2 h = 2 \times \frac{4}{3}\pi r^2 H$
 $h = \frac{8}{3}H \therefore H = \frac{3}{8}h$

B1

M1

M1

A1

Total 4

TOTAL FOR PAPER: 70 MARKS