



**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**General Certificate of Secondary Education**

**MATHEMATICS A**

**A503/02**

Unit C (Higher)

**Specimen Mark Scheme**

The maximum mark for this paper is **100**.

This document consists of **6** printed pages and **2** blank pages.

1		10	3	<b>B2</b> for 9·3 or better <b>Or M1</b> for $\frac{2}{3} \times 2 \times 7$
2	(a)	(i) (0,7,3)	1	
		(ii) (8,7,3)	1	
	(b)	(4,0,3)	2	<b>SC1</b> for correct 3 values in any order
	(c)	(4,3.5,3) oe	1	
3	(a)	All 9 pairs correct	2	<b>B1</b> for 4 correct pairs Ignore entries in shaded sections
	(b)	(i) Cannot play themselves oe	1	
		(ii) Play each other once only	1	
4	(a)	1·11(11...) oe	2	<b>B1</b> for 12·6 ÷ 11·34
	(b)	$\frac{13}{35}$ or 0·371...	1	
	(c)	8·169 or 8·17 or 8·2	2	<b>B1</b> for 66·73 seen
5	(a)	20	2	<b>M1</b> for 50 ÷ 2·5 oe Condone 2·30 for <b>M1</b>
	(b)	BC, steeper line	1	
	(c)	Horizontal line to (4,120) Line(s) from <i>their</i> (4,120) to (6,0)	1 <b>ft1</b>	By eye May be curve as long as no vertical part
6		Value between 1 and 2 inclusive 1·8 or 1·9 Value between 1·8 and 1·9 1·8	1 1 1 1	Or after 1·8 <b>and</b> 1·9 used, mention of closer to 1·8

7 *	<p>Calculates correct amount of interest (AB: 650, MP: 616.77 or 616.78 or 617) or correct total sum (AB: 10 650, MP: 10 616.77 or 10 616.78 or 10 617) for each plan <b>and</b> recommends that Brian uses Annual Booster plan as he will earn more money. Well laid-out answer with correct and clear language throughout.</p> <p>Makes minor errors in calculating amount of interest or total sum for each plan <b>and</b> makes a recommendation based on their calculations. Some structure to the calculations or recommendation with minor errors in spelling, punctuation or grammar.</p> <p>Correctly calculates amount of interest or total sum for one plan, and may or may not make a recommendation. Little structure evident.</p> <p>No relevant calculations</p>	<p><b>5</b></p> <p><b>3-4</b></p> <p><b>1-2</b></p> <p><b>0</b></p>	<p>For lower mark – calculates amount of interest or total sum for each plan but makes no recommendation/incorrect recommendation based on their calculations <b>or</b> there are a number of errors in spelling, punctuation or grammar.</p> <p>For lower mark – attempts to calculate amount of interest or total sum for one plan (working must be seen) and no recommendation made.</p>
8	<p>Missing length 1 or 2 soi  <math>5 \times 4 + 4 \times 2</math> or <math>6 \times 4 + 1 \times 4</math> or  <math>6 \times 5 - 2 \times 1</math>  <i>Their</i> <math>28 \times 8.99</math>  <math>251.72</math></p>	<p><b>1</b>  <b>M2</b>  <b>M1</b>  <b>A1</b></p>	<p><b>M1</b> for correct area of one rectangle</p>
9	<p>(a) <math>6x + 15</math>  (b) (i) <math>\frac{t + 50}{7}</math>  (ii) <math>\frac{y^2}{2}</math></p>	<p><b>2</b>  <b>2</b>  <b>2</b></p>	<p><b>B1</b> for <math>6x</math> or <math>+ 15</math> seen  <b>M1</b> for <math>t + 50 = 7p</math> or other correct first step  <b>M1</b> for <math>y^2 = 2x</math></p>
10	<p>4.9 to <math>4.95 \times 10^6</math></p>	<p><b>3</b></p>	<p><b>M1</b> for <math>1.4 \times 10^5 \div 28.3 \times 1000</math> oe  <b>And A1</b> for 4900000 to 4950000</p>

11	(a)	Correct front elevation including semi-circle radius 4 Correct plan including two dotted 'hidden' lines	2 2	<b>B1</b> for 10 by 5 rectangle <b>B1</b> for 10 by 3 rectangle
	(b)	$3 \times 10 \times 5$ 150 $(0.5 \times) \pi \times 4^2 \times 3$ 75.4 74.5 to 74.7	<b>M1</b> <b>A1</b> <b>M1</b> <b>A1</b> <b>A1</b>	<u>Alternative method</u> <b>Or M1</b> for $10 \times 5$ <b>And M1</b> for $-(0.5 \times) \pi \times 4^2$ <b>And A1</b> for 24.87 or 24.9 <b>And M1</b> for $(24.87 \text{ or } 24.9) \times 3$ <b>And A1</b> for 74.5 to 74.7
12	(a)	0, 15, 75, 120	2	<b>B1</b> for two values correct
	(b)	8 points correctly plotted Curve through <i>their</i> points	2 1	<b>B1</b> for 4 points correctly plotted $\pm \frac{1}{2}$ sm sq. $\pm \frac{1}{2}$ small square
	(c)	275 to 287	1	
	(d)	35.5 to 37	2	<b>M1</b> for reading from 100 feet
13	(a)	(i) $4x(x - 5)$	2	<b>M1</b> for $4(x^2 - 5x)$ or $x(4x - 20)$
		(ii) $(x - 5)(x + 5)$	1	
	(b)	$6x^2 + 5x - 4$	3	<b>B1</b> for each of $6x^2$ , $5x$ , $-4$
14		44 325	4	<b>M2</b> for $35\,460 \div 0.4$ <b>Or M1</b> for 40% of pay = 35 460 <b>And A1</b> for 88 650
15		$147.8^\circ$ to $148^\circ$	3	<b>M2</b> for $385 \times \sin 19 \div \sin 122$ <b>Or M1</b> for $\frac{x}{\sin 19} = \frac{385}{\sin 122}$
16		$3x + 2(x^2 - 2x + 3) = 7$ $2x^2 - x - 1 = 0$  $(2x + 1)(x - 1)$  $x = 1$ <u>and</u> $x = -\frac{1}{2}$ oe $y = 2$ $y = 4\frac{1}{4}$ oe  $(1, 2)$ and $(-\frac{1}{2}, 4\frac{1}{4})$	<b>M1</b> <b>A1</b>  <b>FTM2</b>      <b>B1</b> <b>B1</b> <b>B1</b> <b>B1</b>	oe method to eliminate one variable or $4y^2 - 25y + 34 = 0$ oe of these terms  or $(4y - 17)(y - 2)$ or factorisation for their trinomial <b>or M1</b> for $(2x \pm 1)(x \pm 1)$ or for $(4y \pm 17)(y \pm 2)$ or ft "correct", wrong signs  Last four marks are independent of any previous method

17		$\pi \times 5^2 \times 18$ $\frac{4}{3} \times \pi \times 2^3$ <i>their 1413.7 ÷ their 33.5</i> 42.(...) 42	<b>1</b> <b>1</b> <b>M1</b> <b>A1</b> <b>1</b>	soi by 1413.7 soi by 33.5
18	(a)	$\frac{27}{60}$ oe	<b>4</b>	<b>M1</b> for $\frac{2}{5} \times \frac{2}{3} \times \frac{3}{4}$ <b>And M1</b> for $\frac{3}{5} \times \frac{1}{3} \times \frac{3}{4}$ <b>And M1</b> for $\frac{3}{5} \times \frac{2}{3} \times \frac{1}{4}$ <u>After 0 scored</u> <b>SC1</b> for sight of two of $\frac{3}{5}, \frac{2}{3}, \frac{3}{4}$
	(b)	$\frac{12}{60}$ oe	<b>3</b>	<b>M2</b> for $\frac{3}{5} \times \frac{1}{3}$ <b>Or M1</b> for $\frac{3}{5} \times \frac{1}{3} \times \frac{1}{4}$ <b>And M1</b> for $\frac{3}{5} \times \frac{1}{3} \times \frac{3}{4}$
19		Using $\frac{2 \times 60}{12}$ soi $\frac{2 \times 65}{11.5}$ oe 11.3 $\frac{2 \times 55}{12.5}$ oe 12.5 8.8	<b>M1</b> <b>M1</b> <b>A1</b> <b>M1</b> <b>A1</b>	

### Assessment Objectives and Functional Elements Grid

GCSE MATHEMATICS A

A503/02: Unit C (Higher)

Qn	Topic	AO1	AO2	AO3	Functional
1	Fractions			3	3
2	3-D coordinates	2	3		
3	Listing		4		2
4	Calculator work	5			
5	Dist/time graph		3	2	
6	Trial and improvement	4			
7	Repeated percentage change			5	5
8	Compound area		5		5
9	Expand brackets, Rearrange formula	6			
10	Standard form			3	
11	Views. Volume	4		5	
12	Quadratic graph	6		2	2
13	Factorise, Expand brackets	6			
14	Reverse percentages		4		4
15	Sine rule	3			
16	Line and curve	8			
17	Cylinder and sphere			5	
18	Probability		7		
19	Bounds	5			
	TOTAL	49	26	25	21