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## FORM 5 MATHEMATICS TRACK 2 MARKING SCHEME

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### Notes for Marking of Scripts

#### *Types of Marks*

- **M**(ethod) marks are awarded for knowing a correct method of solution and attempting to apply it. Method marks cannot be lost for arithmetic mistakes. They can only be awarded if the method used would have led to the correct answer had not an arithmetic mistake been made. In general a correct method is implied by a correct answer and therefore **when a correct answer is given and no work is shown, no method marks are lost**.
- **A**(ccuracy) marks are given for correct answer only (c.a.o.) Incorrect answers, even though nearly correct, score no marks. Accuracy marks are also awarded for incorrect answers which are correctly **followed through** (f.t.) from an incorrect previous answer, **provided that f.t. is indicated in the marking scheme**. No method (M) or accuracy (A) marks are awarded when a wrong method leads to a correct answer.
- **B** marks are accuracy marks awarded for specific results or statements independent of the method used.

#### *Misreading*

M marks can still be earned (unless that part of the question is trivialised) but the final A marks are lost.

#### *Crossed out working*

An answer or working that is crossed out and not replaced is marked as if it was not crossed out. If the answer or working is replaced, then the crossed out answer or working is ignored and should not be considered for marking.

#### *Units*

In general, missing or inaccurate units are not penalised unless otherwise indicated in the marking scheme.

#### *Other*

- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
  - o.e. (or equivalent)
  - e.e.o.o. (each error or omission)
- Markers are advised to indicate the M, A or B marks awarded in the body of the script and then write their total in the margin. The total mark for each question should be written in the table included at the top of page 1 of the main paper. This measure facilitates the moderation of papers.

**NON CALCULATOR PAPER (20 marks – 1 mark each)**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
22	12	80	$\frac{5}{12}$	21	$A\left(\frac{1}{6}\right)$	1000	24	2	21

  

<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
6	41, 43, 47	36	8	D (13 cm <sup>2</sup> )	30	12	3	$\frac{9}{50}$	$\frac{1}{16}$

**MAIN PAPER (80 marks)**

Que.		Requirements	Mark	Additional Guidance
<b>1</b>	a	Mercury	B1	4 Accept 30 e.g. uses formula $C = 2\pi r$
	b	29	B1	
	c	Valid method used 40 000	M1 A1	
<b>2</b>	a	Yes, valid reason given.	B1	4 e.g. y-intercept is -2 e.g. gradient measures slope For $x = 1, y = 1$
	b	No, valid reason given	B1	
	c	C(1, 1) Valid reason given	B1 B1	
<b>3</b>	a	Valid method used 16	M1 A1	6 f.t. for incorrect answer in (a)
	b	Valid method used 249 4.15	M1 M1 A1	
	c	20	B1	
<b>4</b>	a	1531.20 $1531.20 \times 100 / 12760$ 12	M1 M1 A1	6 Seen or implied Accept other valid methods f.t. for incorrect answer in (a) accept other valid methods
	b	$12760 / 88$ $145 \times 100$ 14 500	M1 M1 A1	
<b>5</b>	a	AB = CD (opposite sides of   ogram) $\angle APB = \angle CQD = 90^\circ$ (given) $\angle ABP = \angle CDQ$ (alternate angles) $\therefore$ triangles congruent (AAS)	M1 M1 M1 A1	5 AAS seen o.e.
	b	$\angle DCQ$	B1	
<b>6</b>	a	Line 3 She had to divide by $(k + 3)$	M1 A1	5 o.e. o.e.
	b	$m = \frac{11}{k+3}$	B1	
	c	Correctly substitutes $k = 19$ in (b) 0.5	M1 A1	

Que.	Requirements	Mark	Additional Guidance
<b>7</b>	Valid method used	M1	e.g. attempts to eliminate $x$ or $y$ .  both correct
	Correctly works out the value of $x$ or $y$ ( $x = 4$ or $y = -1$ )	M1	
	Uses valid method to find the value of $y$ or $x$ ( $y = -1$ or $x = 4$ ).	M1	
	$x = 4, y = -1$	A1	
<b>8</b>	a $x + 6x + x + 60 = 180$ $8x + 60 = 180$ $x = 15$ 90	M1 M1 A1 B1	5  o.e.  e.g. all angles are different
	b Scalene, valid reason given	B1	
<b>9</b>	a LB correctly drawn Angle of $60^\circ$ correctly drawn Perpendicular at L equal to $90^\circ$	M1 M1 M1	8  $\pm 1$ mm $\pm 1^\circ$ $\pm 1^\circ$  Seen or implied ( $\pm 5$ km)
	b $7.8 \times 10$ 78 km	M1 A1	
	c (i) Circle correctly drawn. Region correctly shaded (ii) No Lighthouse is more than 50 km from the boat.	B1 B1 B1	
<b>10</b>	a 90 Tangent perpendicular to radius at point of contact.	B1 B1	8  o.e.  e.g. $\tan APO = 3.2/6.5$  e.g. Pythagoras theorem  Do not deduct marks for incorrect accuracy.
	b (i) valid method used 26.211... 52.4 (ii) valid method used $OP^2 = 52.49$ $OP = 7.2$	M1 M1 A1 M1 M1 A1	
<b>11</b>	a 45, 30, 25	B2	8  -1 (e.e.o.o.)
	b In the first survey Valid reason given	B1 B1	
	c Valid method used 1792	M1 A1	
	d Gatt Valid reason given	B1 B1	

Que.		Requirements	Mark	Additional Guidance	
12	a	C	B2		
	b	Valid method used 2	M1 A1		
	c	Similar, not similar, not similar, similar	B4		
13	a	4, 16, 20 -1, -16, -25 3, 0, -5	B1 B1 B1		
	b	Correct plotting of graph	B4		-1 (e.e.o.o.)
	c	4.2 -0.2	B1 B1		(± 0.1)