THE WEST AFRICAN EXAMINATIONS COUNCIL, ACCRA

BASIC EDUCATION CERTIFICATE EXAMINATION FOR SCHOOL CANDIDATES, 2021

MATHEMATICS 2

FINAL MARKING SCHEME

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FINAL MARKING SCHEME FOR MATHEMATICS 2

QUESTION NO.	SOLUTION	MARKS
1. (a)	$n(M) = 8x + 4 + 6$	M1
	$= 8x + 10$	A1
	$n(N) = 2x + 7 + 6$	M1
	$= 2x + 13$	A1
(b)(i)	$n(M) = n(N)$	M1
	$8x + 10 = 2x + 13$	
	$8x - 2x = 13 - 10$	M1 for solving
	$6x = 3$	
	$x = \frac{1}{2}$	A1
(ii)	$n(\mu) = (8x + 4) + 6 + (2x + 7) + 6$	M1
	$= 10x + 23$	M1
	$= 10\left(\frac{1}{2}\right) + 23$	M1
	$= 5 + 23$	
	$n(\mu) = 28$	A1
(c)	$2^6 \div (2^2 \times 2^1) \div 2^5$	
	$= 2^6 \div (2^3) \div 2^5$	M1A1 for 2^3 {All workings in index}
	$= 2^{6-3-5}$	M1
	$= 2^{-2}$	A1 for 2^{-2}
		[15 marks]

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QUESTION NO.	SOLUTION	MARKS
2. (a)	$5ay - by + 15a - 3b$	
	$y(5a - b) + 3(5a - b)$	**M1A1** (at least 2 correct)
	$(y + 3)(5a - b)$	**A1**
(b)	$\frac{6}{4p-1} = \frac{4}{3(p+4)}$	
	$6 \times 3(p + 4) = 4(4p - 1)$	**M1 for clearing fraction**
	$18(p + 4) = 16p - 4$	**M1 for expansion, one correct**
	$18p + 72 = 16p - 4$	
	$18p - 16p = -4 - 72$	**M1 for solving**
	$2p = -76$	
	$\frac{2p}{2} = \frac{-76}{2}$	
	$p = -38$	**A1 for – 38**
(c)	Esi : Kofi	
	2 : 5	
	Total ratio = 2 + 5	**B1**
	= 7	
	Kofi's share = $\frac{5}{7_1} \times \cancel{21}^{3},000$	**M1**
		M1 for simplification
	= GH₵15,000.00	**A1 for GH₵15,000.00**
	Esi's share = $\frac{2}{7_1} \times \cancel{21}^{3},000$	**M1**
	= GH₵6,000.00	**A1 for GH₵6,000.00**
	How much more Kofi receives	
	= GH₵15,000.00 – GH₵6,000.00	**M1**
	= GH₵9,000.00	
	∴ Kofi received GH₵9,000.00 more than Esi.	**A1**
	(–1) ou/wu/2dp once only	
		[15 marks]

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QUESTION NO	SOLUTION	MARKS
3. (a)	$\mathbf{r} = \begin{pmatrix}-4\\-5\end{pmatrix}, \mathbf{m} = \begin{pmatrix}-1\\-2\end{pmatrix}$	
	$\mathbf{p} = \mathbf{r} - \mathbf{m}$	
	$= \begin{pmatrix}-4\\-5\end{pmatrix} - \begin{pmatrix}-1\\-2\end{pmatrix}$	**M1 for correct substituting**
	$= \begin{pmatrix}-4+1\\-5+2\end{pmatrix}$	**M1 for simplifying, one component correct**
	$= \begin{pmatrix}-3\\-3\end{pmatrix}$	**A1 for** $\begin{pmatrix}-3\\-3\end{pmatrix}$
(b)	Let x = the first number y = the second number $x + y = 81$ .....(1) $y = 2x$ ..... (2) (2) into (1) $x + 2x = 81$ $3x = 81$ $\frac{3x}{3} = \frac{81}{3}$ $x = 27$ x into (2) $y = 2(27)$ $y = 54$:. The second number is 54	let one be x and other $2x$ $x + 2x = 81$ (M1 A1) $3x = 81$ (M1) $x = 27$ (A1) Secon $= 2(27)$ (M1) $= 54$ (A1) **M1 for anyone correct** **A1 for all correct** **M1 for solving** **A1 for $x = 27$** **M1 for substituting** **A1 for y = 54**
(c)	Area of rectangular Hall = 9m × 4m $= 36m^2$ or $360000cm^2$ Area of square files = 20cm × 30cm $= 600cm^2$ $= 0.6m^2$ $0.06 m^2$ Number of tiles that can cover the room $= \frac{area\ of\ the\ rectangular\ Hall}{area\ of\ the\ tiles}$ $= \frac{360000^{600}}{600_1}$ $= 600$	**M1for any multiplication** **A1 for $36m^2$ or equivalent** **A1 for $600cm^2$ or equivalent** **B1 for conversion** M1 A1 **[15 marks]**

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QUESTION NO	SOLUTION	MARKS
4. (a)	Number of ripe mangoes = 25 – 7	M1
	= 18	A1
	Percentage of ripe mangoes = $\frac{18}{\cancel{25}_1} \times \cancel{100}_4$	M1M1
	= 72% ignore unit	A1 for 72%
(b)	Rule : $y = mx + c$	
(i)	Gradient(m) = $\frac{5-2}{3-2}$	
	$m = 3$	M1 for m = 3
	$y = 3x + c$	
	From the mapping, when $x = 2$, $y = 2$ and $c = -4$	
	$y = 3x - 4$	A1 for $y = 3x - 4$
(ii)	When $x = 8$	
	$m = 3\ (8) - 4$	M1 for substituting 8
	$m = 24 - 4$	
	$m = 20$	A1 for 20
	When $x = n$, $y = 29$	M1 substituting 29
	$29 = 3n - 4$	
	$3n = 29 + 4$	
	$\frac{3n}{3} = \frac{33}{3}$	
	$n = 11$	A1 for $n = 11$
(c)	Time used to travel = 1:00pm – 6:30am	
	= 6hrs 30minutes	B1
	Distance from x to y = 6 hrs 30 minutes ×100	
	$= 6\frac{1}{2} \times 100$	M1
	$= \frac{13}{\cancel{2}_1} \times \cancel{100}^{50}$	M1 simplifying
	= 650km	A1 for 650km
	(– 1) ou/wu	[15 Marks]

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QUESTION NO	SOLUTION	MARKS
5. (a)	$(4x + 2)(x - 2) - 3x^2$	
	$4x^2 - 8x + 2x - 4 - 3x^2$	M1 for expanding: $(4x^2 - 8x)$ or $(2x - 4)$
	$4x^2 - 3x^2 - 8x + 2x - 4$	M1 for grouping like terms
	$x^2 - 6x - 4$	A1 for $x^2 - 6x - 4$
(b)	$40^0 + 60^0 + 100^0 + 3x^0 + 5x^0 = 360^0$	M1A1
	$200 + 8x = 360$	A1 for 200
	$\frac{8x}{8} = \frac{160_2}{8_1}$	M1 for solving
	$x = 20$	A1 for 20
(c)	$C = 25 + 0.6x$	
(i)	When $x = 220$	
	$C = 25 + 0.6(220)$	M1 for substituting 220
	$= 25 + \frac{6}{10} \times 220$	
	$= 25 + 132$	M1 for simplifying
	$C = GH¢157.00$	A1
(ii)	$145 = 25 + 0.6x$	M1 for substituting 145
	$0.6x = 145 - 25$	M1 for solving
	$0.6x = 120$	
	$\frac{6x}{10} = 120$	
	$6x = 120 \times 10$	
	$x = \frac{120^{20} \times 10}{6_1}$	M1 for dividing by 6
	$x = 200$ pages	A1 for 200
	(– 1) ou/wu/2dp once only	
		[15 Marks]

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QUESTION NO	SOLUTION	MARKS
6. (a)		

Number of marbles (x)	Number of students (f)	fx
1	4	(4)
2	5	(10)
3	(14)	42
4	9	(36)
5	(6)	30
6	2	12

B5 (-1 ee)

(b)(i) Number of students in class = 4 + 5 + 14 + 9 + 6 + 2

= 40

M1
A1

(ii) Marbles brought to class = 4 + 10 + 42 + 36 + 30 + 12

= 134

M1
A1

(iii) 3

M1A1

(c) Mean = $\frac{134}{40}$

= 3.35 or 3.4 accept 3.3 and $3\frac{14}{40}$

Mean = 3

M1
M1 for simplifying
A1 for 3.35 or 3.4
A1 for 3

[15 Marks]