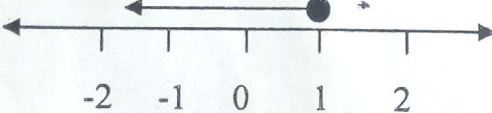


1

THE WEST AFRICAN EXAMINATIONS COUNCIL, ACCRA
JUNE 2018 BASIC EDUCATION CERTIFICATE EXAMINATION

FINAL MARKING SCHEME

MATHEMATICS

QUESTION NO.	SOLUTION	MARKS
1.	<p>(a) $5x - 3 \geq \frac{15x - 11}{2}$</p> <p>$2(5x - 3) \geq 15x - 11$</p> <p>$10x - 6 \geq 15x - 11$</p> <p>$11 - 6 \geq 15x - 10x$</p> <p>$5 \geq 5x$</p> <p>$x \leq 1$</p>  <p>(b) $t = \begin{pmatrix} -1 \\ 3 \end{pmatrix}, k = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$</p> <p>$2t + k$</p> <p>$\Rightarrow 2 \begin{pmatrix} -1 \\ 3 \end{pmatrix} + \begin{pmatrix} 2 \\ -4 \end{pmatrix}$</p> <p>$= \begin{pmatrix} -2 \\ 6 \end{pmatrix} + \begin{pmatrix} 2 \\ -4 \end{pmatrix}$</p> <p>$= \begin{pmatrix} 0 \\ 2 \end{pmatrix}$</p>	<p>M1 Clearing fractions</p> <p>M1 expansion (at least one term correct)</p> <p>M1 solving</p> <p>A1</p> <p>B1</p> <p>M1 substitution</p> <p>A1 scalar multiple for both</p> <p>M1 vector addition (at least one component correct)</p> <p>A1 Either component is correct</p>

3

QUESTION NO.	SOLUTION	MARKS
3.	<p>(a) $\frac{0.084 \times 0.81}{0.027 \times 0.04}$</p> <p>$= \frac{84 \times 10^{-3} \times 81 \times 10^{-2}}{27 \times 10^{-3} \times 4 \times 10^{-2}}$</p> <p>$= \frac{84^{21} \times 81^3 \times 10^{-5}}{27_1 \times 4_1 \times 10^{-5}}$</p> <p>$= 21 \times 3 \times 10^{-5+5}$</p> <p>$= 63$</p> <p>$= 6.3 \times 10^1$ accept 6.3×10</p> <p>ALITER</p> <p>$\frac{\frac{84}{1000} \times \frac{81}{100}}{\frac{27}{1000} \times \frac{4}{100}}$</p> <p>$= \frac{84^{21} \times 81^3}{100000} \times \frac{100000}{27 \times 4_1}$</p> <p>$= 63$</p> <p>$= 6.3 \times 10^1$</p> <p>(b)(i) $y = \frac{x-r}{x+r}$</p> <p>$y(x+r) = x-r$</p> <p>$xy + ry = x-r$</p> <p>$ry + r = x - xy$</p> <p>$r(y+1) = x - xy$</p> <p>$r = \frac{x-xy}{y+1}$ or equivalent</p>	<p>M1 either num. or denom correct</p> <p>A1 both correct</p> <p>M1 simplifying whole number</p> <p><i>evidence of simplification</i></p> <p>A1</p> <p>A1</p> <p>M1 M1</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>M1 clearing fractions</p> <p>M1 solving</p> <p>A1</p>

(ii)

When $y = 3$, and $x = 10$

$$r = \frac{10 - (10)(3)}{3 + 1}$$

$$= \frac{10 - 30}{4}$$

$$= \frac{-20}{4}$$

$$= -5$$

M1 correct substitution

M1

simplified

A1

(c) 1756

$$\begin{array}{r} 1756 \\ + 0.675 \\ + 0.095 \\ \hline 1756.770\text{kg} \end{array}$$

converting to kg

"

accept 1756.77kg

B1 for 0.675kg

B1 for 0.095kg

M1 for adding

A1

Penalize for wrong unit only

ALITER

(c) 1756000g

$$\begin{array}{r} 1756000 \\ + 675 \\ + 95 \\ \hline 1756770 \end{array}$$

$$= \frac{1756770}{1000}$$

$$= 1756.770\text{kg} \text{ accept } 1756.77\text{kg}$$

M1 adding

A1

M1 converting to kg

A1

[15 Marks]

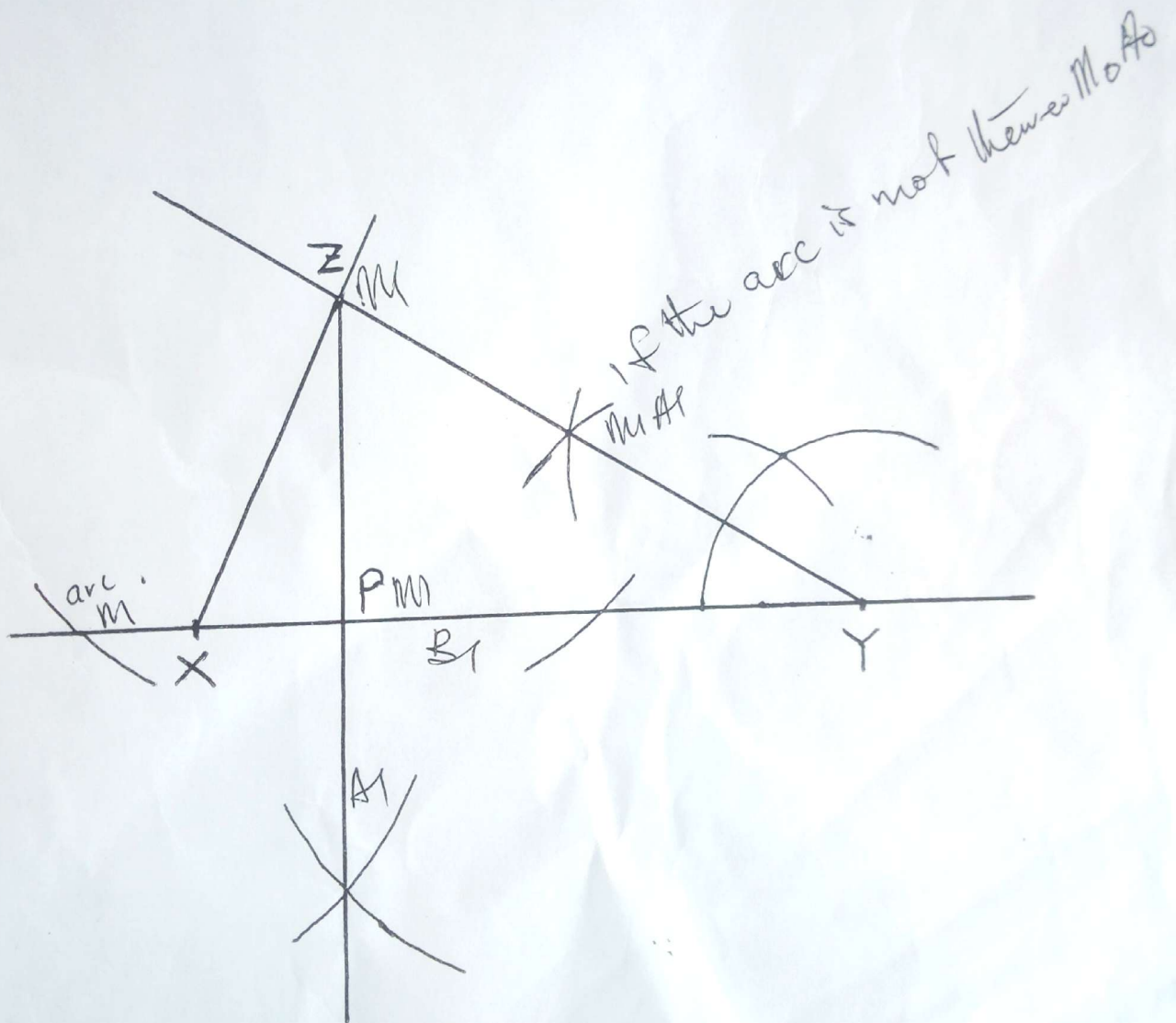
4

JUNE 2018 BASIC EDUCATION CERTIFICATE EXAMINATION , MATHEMATICS

QUESTION NO.	SOLUTION	MARKS
4.	<p>(a) $900 = (n-2) 180$ or equiv $180n = 900 + 360$ $2 + 5 = n$ $n = 7$</p>	<p>M1 <u>correct</u> equation M1 solving A1</p>
(b)	<p>(i) constructing $XY = 10\text{cm} \pm 0.1\text{cm}$ constructing angle 30° at Y arc for 30° Arc centre Y, radius $9\text{cm} \pm 0.1\text{cm}$ Locating Z and completing ΔXYZ</p> <p>(ii) constructing a perpendicular from Z to meet \overline{XY}. Locating and labeling the point P.</p> <p>(iii) (α) Length $PZ = 4.5\text{cm} \pm 0.1\text{cm}$ (β) angle $XZY = 86^\circ \pm 1^\circ$</p> <p>(iv) Area of triangle $XYZ = \frac{1}{2} XY PZ$ $= \frac{1}{2} \times 10 \times 4.4$ or 4.5 or 4.6 $= 22\text{cm}^2$ if 4.4 is used or 23cm^2 if 4.5 or 4.6 is used</p> <p style="text-align: center;">-1 ow/wu once only</p>	<p>B1 measure M1A1 M1 measure (insist on arc) A1 M1 arc centre z cutting XY at two points M1 arc for perpendicular bisector A1 B1 B1 M1 A1</p>

[15 Marks]

Q. 4(b)



$$|PZ| = 4.5\text{cm} \pm 0.1\text{cm}$$
$$\angle XYZ = 86^\circ \pm 1^\circ$$

JUNE 2018 BASIC EDUCATION CERTIFICATE EXAMINATION , MATHEMATICS

QUESTION NO.	SOLUTION	MARKS														
5.	<p>(a) Ratio \Rightarrow 1:4</p> <p>Total ratio = $1 + 4 = 5$</p> <p>children's share = $\frac{4}{5} \times 10480$</p> <p style="margin-left: 40px;">$= 4 \times 2096$ <i>evidence of simplification</i></p> <p style="margin-left: 40px;">$= \text{GH}\text{¢}8,384.00$</p> <p>A child's share = $\frac{\text{GH}\text{¢}8,384}{10}$</p> <p style="margin-left: 40px;">$= \text{GH}\text{¢}838.40$</p> <p style="margin-left: 40px;">-1 o/w/wu once only</p> <p>(i)</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th style="width: 25%;">Stem</th> <th style="width: 75%;">Leaf</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>9, 4, 1, 3, 4, 0, 7 0,</td> </tr> <tr> <td>2</td> <td>7, 2, 4, 5, 8</td> </tr> <tr> <td>3</td> <td>8, 9, 2</td> </tr> <tr> <td>4</td> <td>6, 2, 5, 3, 9</td> </tr> <tr> <td>5</td> <td>5, 7, 2, 6</td> </tr> <tr> <td>6</td> <td>5, 9, 7, 1, 3, 4</td> </tr> </tbody> </table> <p>(ii) 6 students</p> <p>(iii) Student scoring less than 20 = 7 or implied</p> <p style="margin-left: 40px;">$P(S < 20) = \frac{7}{30}$</p>	Stem	Leaf	1	9, 4, 1 , 3, 4, 0, 7 0,	2	7, 2, 4, 5, 8	3	8, 9, 2	4	6, 2, 5, 3, 9	5	5, 7, 2, 6	6	5, 9, 7, 1, 3, 4	<p>B1 or used</p> <p>M1 insist on use of $\frac{4}{5}$</p> <p>M1 simplifying</p> <p>A1</p> <p>M1 division by 10</p> <p>A1 insist on 2dp</p> <p>M1 a stem with corresponding leaf correct</p> <p>A3 ($-\frac{1}{2} ee$)</p> <p>M1 A1</p> <p>B1</p> <p>M1 A1</p> <p style="text-align: right;">[15 Marks]</p>
Stem	Leaf															
1	9, 4, 1 , 3, 4, 0, 7 0,															
2	7, 2, 4, 5, 8															
3	8, 9, 2															
4	6, 2, 5, 3, 9															
5	5, 7, 2, 6															
6	5, 9, 7, 1, 3, 4															

6

JUNE 2018 BASIC EDUCATION CERTIFICATE EXAMINATION , MATHEMATICS

QUESTION NO.	SOLUTION	MARKS
(6) (a)	Time of Departure = 7.26pm = 19.26 GMT Duration = 9:30 Time of Arrival = 19.26 or 7.26 + 9.30 + 9.30 28.56 16.56 - 24.00 -12.00 <u>04.56</u> GMT 4.56 or 4.56am Day of arrival = Thursday	M1 addition M1 subtraction A1 B1
(b)(i)	Drawing Ox and Oy with correct scale and interval on each axes.	B1 - $\frac{1}{2}$ ee
(ii)	Plotting and indicating coordinates of all vertices of quadrilateral ABCD.	B3 (- $\frac{1}{2}$ ee)
(iii)	Drawing the straight line $x = -2$ Locating P Locating Q	B1 B1 B1
(iv)	angle BPQ = $26^\circ \pm 1^\circ$ angle PQD = $26^\circ + 1^\circ$	B1 B1
(v)	(α) angles BPQ and PQD are alternate angles or angle BPQ = angle PQD (β) lines AB and CD are parallel.	B1 B1
		[15 Marks]

CD is longer than AB = B₁
 evidence of measurement
 wrong scale = $-\frac{1}{2}$

Q 6 (b)

(To be fastened together with other answers to paper)

Name.....

Index Number.....

