

MARKING SCHEME

FORM 1 MATHEMATICS

No.	Working	Marks									
1.	$1044 + 1006 \times 180$ $1006 \times 180 = 181080$ $1044 + 181080 = 182,124$	$M_1$ $M_1, Ans_1$	Long method only								
2.	Let the number be x LCM = product of the number GCD of the number $140 = 20 \times x$ 20 $X = 140 \times 7$ 20 $X = 49$	$M_1$  $M_1$  $A_1$	Mark alternative method.								
3.	$X^2 + x = x(x+1)$ $X^2 - 1 = (x+1)(x-1)$ $X^2 - x = x(x-1)$ $X(x+1)(x-1)$ $X^3 - x$	$M_1$  $M_1$  $A_1$									
4.	$-4 + 108 - 24$ $56 \div 7 \times 2$ $-4 + 108 - 24$ 16 $80/16 = 5$	$M_1$  $M_1$  $A_1$	Numerator  Denominator  Accuracy								
5.	$3/8 (38/5 - 55/36 \times 12/5)$  $3/8 \times 59/40 = 1^{19}/40$	$M_1$  $M_1, A_1$									
6.	$8 + (-4) + -22$ -24    33  $4/-24 - 22/33 = -1/6 - 2/3$ $-3 - 12 = -15/18 = -5/8$ 18	$M_1$  $M_1$  $M_1$ $A_1$									
7.	L.C.M of 30, 36, and 45 <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td>30</td> <td>36</td> <td>45</td> </tr> <tr> <td>2</td> <td>15</td> <td>18</td> <td>45</td> </tr> </table>		30	36	45	2	15	18	45	$M_1$	
	30	36	45								
2	15	18	45								

	<table border="1"> <tbody> <tr> <td>2</td> <td>15</td> <td>9</td> <td>45</td> </tr> <tr> <td>3</td> <td>5</td> <td>3</td> <td>15</td> </tr> <tr> <td>3</td> <td>5</td> <td>1</td> <td>5</td> </tr> <tr> <td>5</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>L.C.M = <math>2^2 \times 3^2 \times 5 = 180</math></p> <p><math>M = 180 + 7 = 187</math></p>	2	15	9	45	3	5	3	15	3	5	1	5	5	1	1	1	<p><math>M_1</math></p> <p><math>A_1</math></p>	
2	15	9	45																
3	5	3	15																
3	5	1	5																
5	1	1	1																
8.	36, 192, 120, 744, and 9564	<p>3mks</p> <p>1 mk</p> <p>0 mk</p>	<p>All listed</p> <p>When 2 numbers wrong</p> <p>More than 2 numbers wrong</p>																
9.	<p><math>8+6+4+9=27</math></p> <p><math>2+0+x</math></p> <p><math>27-(2+x)=11</math></p> <p><math>27-2-x=11</math></p> <p><math>X=27-2-11</math></p> <p><math>X=27-13=14</math></p> <p>14 can not be the answer,</p> <p><math>27-(2+x)= 22</math></p> <p><math>27-2-x=22</math></p> <p><math>X=27-2-22</math></p> <p><math>X=27-24</math></p> <p><math>X=3</math></p>	<p><math>M_1</math></p> <p><math>M_1</math></p> <p><math>A_1</math></p>	<p>But only one digit needed</p>																
10.	<p><math>4 \times (-2) \times (-6)</math></p> <p style="padding-left: 40px;">4</p> <p>=12</p>	<p><math>M_1</math></p> <p><math>A_1</math></p>																	
11.	<p style="text-align: center;">-2</p> <p style="text-align: center;">-9-8-7-6-5-4-3-2-10</p> <p style="text-align: center;">+6</p> <p><math>(-7) + (-2) + (+6) = -3</math></p>																		
12.	<p><math>R=3.256</math></p> <p><math>10r=32.5656\dots</math></p> <p><math>1000r=3256.565656\dots</math></p> <p><math>990r=3256.5656\dots</math></p> <p style="padding-left: 20px;">- 32.5656\dots</p> <p style="padding-left: 20px;">3224.0000\dots</p> <p><math>R=3224/990</math></p>	<p><math>M_1</math></p> <p><math>M_1</math></p> <p><math>A_1</math></p>																	

13.	$\frac{9}{5} \times \frac{33}{4} = \frac{297}{20}$ $\frac{297}{20} - 5$ $= \frac{14^{17}}{20} - 5$ $= \frac{9^{17}}{20}$	<p>M<sub>1</sub></p> <p>M<sub>1</sub></p> <p>A<sub>1</sub></p>																			
14	$\frac{10}{21} + \left(-\frac{1}{18}\right) \div \frac{7}{18}$ $\frac{10}{21} + \left(-\frac{1}{18} \times \frac{18}{7}\right)$ $= \frac{10}{21} - \frac{1}{7}$ $\frac{10}{21} - \frac{3}{21}$ $= \frac{7}{21} = \frac{1}{3}$	<p>M<sub>1</sub></p> <p>M<sub>1</sub></p> <p>A<sub>1</sub></p>																			
15.	<p>2km</p> $\frac{1}{3} \times 2$ $= \frac{2}{3}$ <p>Distance from k = <math>2 - \frac{2}{3}</math></p> $= 1\frac{1}{3}$	<p>M<sub>1</sub></p> <p>M<sub>1</sub></p> <p>A<sub>1</sub></p>																			
16.	<p>L.C.M of 60 and 42</p> <table border="1"> <tbody> <tr> <td></td> <td>60</td> <td>42</td> </tr> <tr> <td>2</td> <td>30</td> <td>21</td> </tr> <tr> <td>2</td> <td>15</td> <td>21</td> </tr> <tr> <td>3</td> <td>5</td> <td>7</td> </tr> <tr> <td>5</td> <td>1</td> <td>7</td> </tr> <tr> <td>7</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>L.C.M = <math>2^2 \times 3 \times 5 \times 7</math></p> $= 420$ <p>Area = <math>4.2 \times 4.2</math></p> $= 17.64M^2$		60	42	2	30	21	2	15	21	3	5	7	5	1	7	7	1	1	<p>M<sub>1</sub></p> <p>M<sub>1</sub></p> <p>A<sub>1</sub></p>	
	60	42																			
2	30	21																			
2	15	21																			
3	5	7																			
5	1	7																			
7	1	1																			

17.	<p>a) Let his salary be sh. X</p> <p>School fees <math>\frac{1}{4}X</math>                      Remaining <math>\frac{3}{4}X</math>                      Electricity and water bills <math>\frac{1}{4}X \times \frac{3}{4}X</math>  <math>= \frac{3}{16}X</math>                      Remaining <math>\frac{3}{4}X - \frac{3}{16}X</math>  <math>= \frac{9}{16}X</math>                      Transport <math>\frac{1}{9} \times \frac{9}{16}X</math>  <math>= \frac{1}{16}X</math>                      Remaining <math>= \frac{9}{16}X - \frac{1}{16}X</math>  <math>= \frac{8}{16}X = \frac{1}{2}X</math>  <math>\frac{1}{2}X = 3,400</math>  <math>X = 3,400 \times 2</math>  <math>= 6,800</math></p>	<p>M 1</p> <p>M 1</p> <p>M 1</p> <p>M 1</p> <p>A 1</p>	
	<p>b) School fees = <math>\frac{1}{4} \times 6,800</math>  <math>= \text{sh. } 1,700</math></p>	<p>A 1</p>	
	<p>c) Transport = <math>\frac{1}{16}X \times</math>  <math>\frac{1}{16} \times 6,800</math>                      Sh. 425</p>	<p>A 2</p>	
	<p>d) Electricity and water bills</p> <p><math>\frac{3}{16}X = \frac{3}{16} \times 6,800</math>                      Sh. 1,275</p>	<p>A 2</p>	
18	<p>Let B be the beginning and E stand for end of the</p> <p>B    23p            20p            26                                   1<sup>st</sup>                            2<sup>nd</sup>                            E          stop                            stop</p> <p>1<sup>st</sup> 23-23 = 11          9+11= 20          2<sup>nd</sup> stop 9-6= 3    20-6= 14          Final destination 14 + 12= 26 Passangers</p>	<p>M 1</p> <p>M 1</p> <p>A 1</p>	
	<p>b) 23+9+12  <math>= 44</math> Passangers</p>	<p>M 1</p> <p>A 1</p>	
	<p>c) <math>12 \times 50 = \text{sh. } 600</math>  <math>11 \times 85 = \text{sh. } 935</math>  <math>6 \times 20 = \text{sh. } 120</math>  <math>3 \times 35 = \text{sh. } 105</math>  <math>12 \times 15 = \text{sh. } 180</math></p>	<p>M 1</p> <p>M 2</p>	

	Sh. 1,940	A 1	
19.	<p>a) i) <math>2+6-*=0</math> <math>*=8</math>                      ii) <math>8+7-#+1 = 11</math>  <math>14-# = 11</math> <math>*=14-11= 3</math>                      iii) <math>8+9+9-#+1 = 22</math>  <math>26-#-1 = 22</math> <math>*= 25-22 = 3</math></p>	<p>M 1                      M 1                      A 1</p>	
	<p>b) i) <math>3+9+6+#+5</math>  <math>23+*</math> sum divisible by 9  <math>23+* = 27</math> <math>* = 27-23 = 4</math></p> <p>ii) <math>4+8+6+7+5+*</math>  <math>30+* = 36</math>  <math>*36-30 = 6</math></p> <p>iii) <math>3+4+9+#+*</math>  <math>16+#+* = 18</math>  <math>*+* = 18-16=2</math>  <math>* *</math>  <math>2 \ 0</math>  <math>0 \ 2</math> MaRK FOR OTHERS THAT ARE CORRECT</p>	<p>M 1                      A 1</p>	
C)	<p>i) <math>3+#+7 = 12</math>  <math>*= 2</math>                      ii) <math>* 1</math>                      iii) <math>* 0</math> Mark for other values that are correct</p>	<p>M 1                      A 1</p>	
d)	<p>i) <math>*= 2</math>                      ii) <math>*=3</math> NB: There could be other numbers                      iii) <math>*= 0</math></p>	<p>M 1                      A 1</p>	

<p>20.</p>	<p>L.C.M of 324 and 220</p> <p>a)</p> <table border="1"> <tr> <td></td> <td>324</td> <td>220</td> </tr> <tr> <td>2</td> <td>162</td> <td>110</td> </tr> <tr> <td>2</td> <td>81</td> <td>55</td> </tr> <tr> <td>3</td> <td>27</td> <td>55</td> </tr> <tr> <td>3</td> <td>9</td> <td>55</td> </tr> <tr> <td>3</td> <td>3</td> <td>55</td> </tr> <tr> <td>3</td> <td>1</td> <td>55</td> </tr> <tr> <td>5</td> <td>1</td> <td>11</td> </tr> <tr> <td>11</td> <td>1</td> <td>1</td> </tr> </table> <p>LCM = <math>2^2 \times 3^4 \times 5 \times 11</math> = 17, 820</p>		324	220	2	162	110	2	81	55	3	27	55	3	9	55	3	3	55	3	1	55	5	1	11	11	1	1	<p>M 1</p> <p>A 1</p>	
	324	220																												
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3	1	55																												
5	1	11																												
11	1	1																												
	<p>b) i) son <math>17820/324</math>  = 55 items</p> <p>ii) daughter <math>17820/220</math>  = 81 items</p>	<p>A<sub>2</sub></p> <p>A<sub>2</sub></p>																												

<p>21.</p> <p>2010 = 750 =100%</p> <p>2011 (100-30)% of 750 bags-B 1</p> <p style="padding-left: 40px;"><math>70/100 \times 750</math></p> <p style="padding-left: 40px;">=525 Bags- B 1</p> <p>2012 <math>115/100 \times 525</math></p> <p style="padding-left: 40px;">603.75 Bags- Bags</p> <p>2010 <math>750 \times 55 = 41250\text{kg}</math></p> <p style="padding-left: 40px;">1 ton= 1000kg</p> <p style="padding-left: 40px;">41250kg</p> <p style="padding-left: 40px;"><math>41250/1000</math></p> <p style="padding-left: 40px;">= 41.25 tonnes – M 1</p> <p style="padding-left: 40px;">1 tonne = 7900</p> <p style="padding-left: 40px;">41.25 tonne = ?</p> <p style="padding-left: 40px;"><math>7900 \times 41.25 = \text{sh. } 325875 - \text{B } 1</math></p> <p>2011 <math>525 \times 55 \times \frac{110}{100} \times 7900</math></p> <p style="padding-left: 40px;">1000</p> <p style="padding-left: 40px;">= sh. 250923.75 – M 1</p> <p>2012 <math>603.75/1000 \times 55</math> B 1</p> <p style="padding-left: 40px;"><math>110/100 \times 8690 = \text{sh. } 317418</math></p> <p>Total <math>325875.00</math> M 1</p> <p style="padding-left: 40px;">250923.75</p> <p style="padding-left: 40px;">317418.54</p> <p style="padding-left: 40px;">894217.29 A 1</p>		
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<p>22.</p>	<p>a) <math>x = \text{GCD} \times \text{LCM}</math>  # given  <math>= 26 \times 1092</math>  182  <math>= 156</math>  Or: <math>\text{GCD} = 26 = 2 \times 13</math></p> <p><math>\text{LCM} = 1096 = 2^2 \times 3 \times 7 \times 13</math>  <math>182 = 2 \times 7 \times 13</math></p> <p>Comparing factors of GCD and LCM and 182  <math>X = 2^2 \times 3 \times 13 = 156</math></p> <p>NB: For LCM; Common factors with lowest power  GCD common factors with lowest power</p>	<p>M 1</p> <p>A 2</p>	
	<p>b) Muigai = sh p</p> <p>Nzau = sh 4p</p> <p>Muli = sh. 2p</p> <p>i) Total = <math>p + 4p + 2p = 7p</math>  ii) P = sh 1500</p> <p>Muigai 1500</p> <p>Nzau 6000</p> <p>Muli 3000</p> <p>total Sh. 10500</p>	<p>M 1</p> <p>M 1</p> <p>M1</p> <p>A 1</p>	
	<p>c) <math>w = 35^\circ</math> - vertically opposite angles are equal</p> <p><math>x = 35^\circ</math> - corresponding angles</p> <p><math>y = (180 - 35)^\circ</math>  <math>= 145^\circ</math> Supplementally angles</p> <p><math>Z = 145^\circ</math> Corresponding angles sum is equal to <math>180^\circ</math></p>	<p>A 1</p> <p>A 1</p> <p>A 1</p> <p>A 1</p>	



23.	<p>a) <math>2340 + 3455 + 675 + 960 + 1350</math>  <math>= 8780</math></p>	A 2	
	<p>b) i) lost job  <math>\frac{2340}{5} + \frac{3455}{5}</math>  <math>468 + 691</math>  <math>= 1159</math></p>	<p>M 1  M 1  A 1</p>	
	<p>iii) Got jobs  <math>\frac{675}{3} + \frac{960}{3} + \frac{1350}{3}</math>  <math>225 + 320 + 450</math>  <math>= 995 \times 2</math>  <math>= 1990</math></p>	<p>M 1  M 1  A 1</p>	
	<p>c) <math>8780 + 1990 - 1159</math>  <math>= 9,611</math></p>	<p>M 1  A 1</p>	

<p>24.</p>	<p>a)</p> <table border="1"> <thead> <tr> <th>Mass</th> <th>Frequency</th> <th>fx</th> </tr> </thead> <tbody> <tr> <td>90</td> <td>2</td> <td>180</td> </tr> <tr> <td>91</td> <td>1</td> <td>91</td> </tr> <tr> <td>94</td> <td>3</td> <td>282</td> </tr> <tr> <td>96</td> <td>2</td> <td>192</td> </tr> <tr> <td>98</td> <td>2</td> <td>196</td> </tr> <tr> <td>99</td> <td>4</td> <td>396</td> </tr> <tr> <td>102</td> <td>3</td> <td>306</td> </tr> <tr> <td>105</td> <td>3</td> <td>315</td> </tr> <tr> <td></td> <td>20</td> <td>1958</td> </tr> </tbody> </table> <p>i) Mode=94 Number repeated many times</p> <p>ii) Mean <math>1958/20</math></p> <p>iii) =97.9</p>	Mass	Frequency	fx	90	2	180	91	1	91	94	3	282	96	2	192	98	2	196	99	4	396	102	3	306	105	3	315		20	1958	<p>A 1</p> <p>A 1</p> <p>A 1</p>	
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	20	1958																															
	<p>b) Thursday bought = 1948</p> <p>Sold = 750</p> <p>Balance = 1,198</p> <p>Friday; sold <math>240 + 750 = 990</math></p> <p>Balance = <math>1,198 - 990</math></p> <p>= 208</p> <p>Saturday; Bought 560</p>	<p>M 1</p> <p>M 1</p> <p>M 1</p> <p>M 1</p>																															

	Total on sat $560 + 208 = 768$ Money = $768 \times 8 = \text{Ksh. } 6144$	A 1	
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