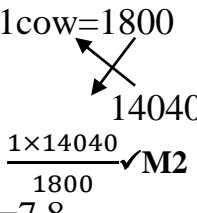
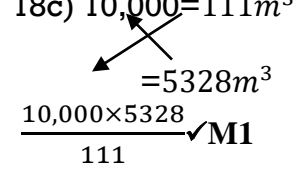
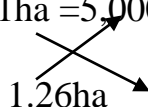


## FORM 1 MATHEMATICS TERM 3 2023 MARKING SCHEME

<p>1. a) BODMAS</p> <p><u>Numerator:</u></p> $= 80 + 10 \div -5 \times 6$ $= 80 - 2 \times 6$ $= 80 - 12$ $= 68 \checkmark \text{M1}$ <p><u>Denominator</u></p> $= 6 \times 9 - 2 + 12$ $= 54 - 2 + 12$ $= 64 \checkmark \text{M2}$ $= \frac{68}{64} = 1 \frac{1}{16} \text{ or } \frac{17}{16} \checkmark \text{Ans}$	<p>2. Numerator</p> $0.24 + 0.243$ $= 0.483 \checkmark \text{M1}$ <p>Denominator</p> $0.08 \div 0.4$ $= 0.2 \checkmark \text{M2}$ $\frac{0.483}{0.2}$ $= 2.415 \checkmark \text{Ans}$																					
<p>3. a)</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 5px;">2</td><td style="border-right: 1px solid black; padding: 5px;">36</td><td style="padding: 5px;">54</td></tr> <tr><td colspan="3" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 5px;">3</td><td style="border-right: 1px solid black; padding: 5px;">18</td><td style="padding: 5px;">27</td></tr> <tr><td colspan="3" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 5px;">3</td><td style="border-right: 1px solid black; padding: 5px;">6</td><td style="padding: 5px;">9</td></tr> <tr><td colspan="3" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 5px;">2</td><td style="border-right: 1px solid black; padding: 5px;"></td><td style="padding: 5px;">3</td></tr> </table> <p><math>2 \times 3 \times 3 = 18 \checkmark \text{Ans}</math></p>	2	36	54				3	18	27				3	6	9				2		3	<p>b) The other number = <math>\frac{\text{G.C.D} \times \text{L.C.M}}{\text{Given number}}</math></p> $= \frac{6 \times 216}{36} \checkmark \text{M1}$ $= 36 \checkmark \text{Ans}$ <p style="text-align: center;">‘or’</p> $\frac{6 \times 216}{54}$ $\checkmark \text{M1} = 24 \checkmark \text{Ans}$
2	36	54																				
3	18	27																				
3	6	9																				
2		3																				
<p>a) <math>\frac{3(3x+4) + 6(x+1) - 4(2x+8)}{12} \checkmark \text{M1}</math></p> <p>4. <math>\frac{9x+12+6x+6-8x-32}{12} \checkmark \text{M2}</math></p> $\frac{7x-14}{12}$	<p>b) <math>2x+8=14 \checkmark \text{M1}</math></p> $2x=14-8$ $2x=6$ $x=3 \checkmark \text{Ans}$																					
<p>5.</p> <div style="border: 1px solid black; padding: 10px; margin: 5px;"> <p>i) <math>3+4 = -1 \checkmark</math></p> </div> <div style="border: 1px solid black; padding: 10px; margin: 5px;"> <p>ii) <del><math>5-2</math></del></p> <p><math>5 - -2</math></p> <p><math>n = 7 \checkmark</math></p> </div>																						
<p>6. Length of an arc = <math>\frac{\theta}{360} 2\pi r</math></p> $88 \text{ cm} = \frac{144}{360} \times 2 \times \frac{22}{7} \times r \checkmark \text{M1}$ $88 \times 10 = \frac{88}{7} r$	<p>7. Men                      length                      days</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr><td style="padding: 5px;">4</td><td style="padding: 5px;">32</td><td style="padding: 5px;">12</td></tr> <tr><td style="padding: 5px;">8</td><td style="padding: 5px;">?</td><td style="padding: 5px;">8</td></tr> </table> <p>Ratio of men: <math>8 : 4 = 2 : 1 \checkmark \text{M1}</math></p> <p>Ratio of days <math>8 : 12 = 2 : 3 \checkmark \text{M1}</math></p> <p>Length of the wall = <math>\frac{2}{1} \times \frac{2}{3} \times 32</math></p>	4	32	12	8	?	8															
4	32	12																				
8	?	8																				

$r = \frac{880 \times 7}{88} \checkmark \text{M2}$ $r = 70 \text{cm} \checkmark \text{Ans}$	$= \frac{128}{3} =$ $42.67 \checkmark \text{Ans}$
<p>8. <math>80\% = 960</math></p> $\frac{100 \times 960}{80} = 1200 \checkmark \text{M1}$ $1500 - 1200 = 300 \checkmark \text{M2}$ $\frac{300}{1200} \times 100 = 25\% \checkmark \text{Ans}$	<p>9. Bread = <math>\frac{2}{5}</math></p> $\frac{5}{5} - \frac{2}{5} = \frac{3}{5} \checkmark \text{M1}$ <p>Stationery = <math>\frac{1}{6}</math> of <math>\frac{3}{5} = \frac{1}{10} \checkmark \text{M2}</math></p> $\frac{2}{5} + \frac{1}{10} = \frac{1}{2}$ $\frac{1}{2} = 200$ $\frac{2 \times 200}{1} = 400 \checkmark \text{Ans}$
<p>10. 1 US dollar = 90.45</p> $\frac{7500 \times 90.45}{1} = 678,375 \checkmark \text{M1}$ $678,375 - 638,676 = 39,699 \checkmark \text{M2}$ <p>1 sterling pound = 132.33</p> $\frac{39699}{132.33} = 300 \text{ sterling pound} \checkmark \text{Ans}$	<p>11. a: b = a:b:c</p> $5(2:3) = 10:15 \checkmark \text{M1}$ <p>b:c</p> $3(5:9) = 15:27$ $a:c = 10:27 \checkmark \text{Ans}$
<p>12. Let <math>r = 0.4074 \dots \dots \dots</math> (i)</p> $10r = 4.0740 \dots \dots \dots$ (ii) $100r = 40.7407 \dots \dots \dots \checkmark \text{M1}$ $1000r = 407.4074 \dots \dots \dots$ (iv) $1000r = 407.4074$ $- \quad r = 0.4074 \quad \checkmark \text{M2}$ $99r = 407$ $R = \frac{407}{99} = \frac{11}{27} \checkmark \text{Ans}$	<p>13. Time used = <math>45 \times 2 = 90</math> mins</p> <p>Break = 15 mins</p> <p>Extra = 15 mins</p> <p>Penalties = 15 mins</p> $90 + 15 + 15 + 15 = 135 \text{ mins} \checkmark \text{M1}$ <p>1 hr = 60 min</p> $\frac{135 \times 1}{60} = 2.15 \text{ min} \checkmark \text{M1}$ $+ 11:50$ $2:15$ $14.05 \text{ or } 2.05 \text{ pm} \checkmark \text{Ans}$
<p>14. <math>Bh = 36 \text{cm}^2</math></p> $4b = 36 \checkmark \text{M1}$ $B = 9 \text{cm} \checkmark \text{M2}$ $P = 6 + 9 + 6 + 9 = 30 \text{cm} \checkmark \text{Ans}$	<p>15. Now <span style="float: right;">future</span></p> <p>Man = <math>3x</math> <span style="float: right;"><math>3x + 5</math></span></p> <p>Son = <math>x</math> <span style="float: right;"><math>x + 5</math></span></p> $3x + 5 + x + 5 = 74 \checkmark \text{M1}$ $4x + 10 = 74$ $4x = 64 \checkmark \text{M2}$ $x = 16 \text{ yrs}$ <p>Son = 16 yrs } <math>\checkmark \text{Ans}</math></p> <p>Man = 48 yrs }</p>

<p>16. <math>(7.21 \times 10^{-1})^2 + \sqrt{16.24 \times 10^2}</math>  <math>51.98 \times 10^{-2} + 4.0298 \times 10^1 \checkmark M1</math>  <math>= 0.5198 + 40.298 \checkmark M2</math>  <math>= 40.8178 \checkmark Ans</math></p>	<p>17.a) 20% of the profit  <math>=</math> running the business  <math>\frac{20}{100} \times 43200 \checkmark M1</math>  <math>= Kshs 8,640 \checkmark Ans</math></p>
<p>17.b) 15% of profit = shared equally  <math>\frac{15}{100} \times 43200 = 6,480 \checkmark M1</math>  <math>Mue \frac{6480}{2} = 3240 \checkmark M2</math>  <math>43200 - 8640 - 6480 = 28080 \checkmark M3</math>                  28,080 = shared as per the ratio of contribution                  Ratio = Korir : Mue  <math>40,000 : 64,000</math>  <math>5 : 8</math>  <math>Mue \frac{8}{13} \times 28,080 = 17,280 \checkmark M4</math>  <math>3240 + 17280 = 20,520 \checkmark Ans</math></p>	<p>17.c) Kori received  <math>\frac{5}{13} \times 28,080</math>  <math>= 10,800</math>  <math>10800 + 3240 = 14040 \checkmark M1</math>  <math>1 cow = 1800</math>    <math>\frac{1 \times 14040}{1800} \checkmark M2</math>  <math>= 7.8</math>                  7 cows <math>\checkmark Ans</math></p>
<p>18.a) volume = <math>L \times W \times H</math>  <math>= 36 \times 25 \times 9</math>  <math>= 8100 m^3 \checkmark M1</math>  <math>\frac{1}{2} \times \frac{22}{7} \times 7 \times 7 \times 36 = 2772 m^3 \checkmark M2</math>                  volume of concrete = <math>8100 - 2772 \checkmark M3</math>  <math>= 5328 m^3 \checkmark Ans</math></p>	<p>18.b) Density = <math>\frac{mass}{volume}</math>                  Mass = density <math>\times</math> volume  <math>= 1500 \times 5328</math>  <math>= 7,992,000 kg \checkmark M1</math>                  Ratio 1:4:4                  Mass of cement = <math>\frac{1}{9} \times 7,992,000</math>  <math>= 888,000 kg \checkmark A1</math>                  Mass of sand = <math>\frac{4}{9} \times 7,992,000</math>  <math>= 3,552,000 kg \checkmark A2</math>                  Mass of ballast = <math>\frac{4}{9} \times 7,992,000</math>  <math>= 3,552,000 kg \checkmark A3</math></p>
<p>18c) <math>10,000 = 111 m^3</math>    <math>\frac{10,000 \times 5328}{111} \checkmark M1</math>  <math>= Ksh 480,000 \checkmark Ans</math></p>	<p>19.a) 1930h  <math>\frac{-1230 \checkmark M1}{700}</math>  <math>= 7hrs \checkmark Ans</math></p>
<p>19b) arrival = 1455h                  Departure = 1830  <math>1830</math>  <math>- 1455</math>  <math>\underline{3.35} \checkmark M1</math>  <math>= 3hrs 35mins \checkmark Ans</math></p>	<p>19d) station y 1445  <math>- 1350</math>  <math>\underline{00.55} \checkmark M1</math>  <math>= 55mins</math>                  Station n 1830  <math>- 1455</math>  <math>\underline{3 hr 35min}</math>                  Station y <math>\checkmark Ans</math></p>
<p>19.e) average speed = <math>\frac{Distance}{Time}</math>  <math>= \frac{420}{7} \checkmark M1</math></p>	<p>20.a) let h be bull                  Let g be goat  <math>5b + 30g = 117000</math></p>

<p>=60km/h✓Ans</p>	$4b+25g=94,750 \checkmark M1$ $4(5b+30g)=117,000$ $5(4b+25g)=94750$ $=20b+120g=468,000 \checkmark M2$ $20b+125g=473750 -$ $0 \quad - 5g = -5750$ $g=1150 \checkmark A1$ $5b=82500$ $b=16,500 \checkmark A2$
<p>20. b) abdul :</p> <p>40% profit per bull</p> <p>30% profit per goat</p> $\frac{40}{100} \times 16500$ $= 6600$ $16500+6600=23,100 \checkmark M1$ $\frac{30}{100} \times 1150 = 345$ $1150 + 345 = 1495 \text{ per goat} \checkmark M2$ <p>Abdul had 5 bulls and 30 goats</p> $(5 \times 23100) + (1495 \times 30)$ $= 115,500 + 44850$ $= 160,350 \checkmark M3$ <p>Ali</p> <p>50% profit per bull</p> <p>40% profit per goat</p> $\frac{50}{100} \times 16500 = 8250$ $16500 + 8250 = 24,750$ $\frac{40}{100} \times 1150 = 460$ $460 + 1150 = 1610 \checkmark M4$ <p>Ali had 4 bulls and 30 goats</p> $(4 \times 24750) + (25 \times 1610)$ $99000 + 40250$ $= 139,250$ <p>Abdul = 160,350 - 117000</p> $= 43350$ <p>Ali = 139 - 94750 = 44500 ✓ M5</p> <p>Hs Ali ✓ Ans</p>	<p>21. a)(i) <math>\frac{1}{2} \times \frac{22}{7} \times 140 =</math></p> $220m \checkmark M1$ $220+200+220+200=840m \checkmark Ans$ <p>s</p> <p>(ii) <math>200 \times 140 = 28000m^2</math></p> $\frac{22}{7} \times 70 \times 70 =$ $15400m^2 \checkmark M1$ $28000 - 15400$ $= 12600m^2$ $1ha = 10,000m^2$ $12600m^2 \checkmark M2$ $\frac{12600 \times 1}{10000}$ $= 1.26ha \checkmark Ans$ <p>b(i) <math>1ha = 5,000,000</math></p>  $1.26 \times 5000000 \checkmark M1$ $= 6,300,000 \text{ shillings} \checkmark Ans$ <p>B(ii) <math>14,760,000 - 6,300,000</math></p> $= 8,460,000 \checkmark M1$ $\frac{8,460,000}{6,300,000} \times 100 \checkmark M2$ $134.28$ $= 134.3\% \checkmark Ans$