


YEAR 2004 WORKING AND ANSWERS

SECTION A

<p>1</p> $\begin{array}{r} 1,000 - \text{One thousand} \\ 900 - \text{nine hundred} \\ 90 - \text{ninety} \\ + 4 - \text{four} \\ \hline 1,994 - \text{One thousand, nine hundred ninety four} \end{array}$	<p>2</p> $x = 37^\circ (\text{opposite angles})$	<p>3</p> <p>Hundreds</p>																
<p>4</p> $\begin{array}{r} 2567 \\ + 1 \\ \hline 2600 \end{array}$	<p>5</p> 	<p>6</p> $90 = 100 - 10$ $= XC$																
<p>7</p> $M = D \times V$ $= \frac{765g}{1000cm^3} \times 2000cm^3$ $= 1,530g$	<p>8</p> <p>Let that number be x</p> $x \div \frac{1}{5} = 50$ $x \times 5 = 50$ $5x = 50$ $\frac{5x}{5} = \frac{50}{5}$ $x = 10$	<p>9</p> $172 = 1 + 7 + 2 = 10$ (Not) $259 = 2 + 5 + 9 = 16$ (Not) $501 = 5 + 0 + 1 = 6$ (divisible) 501 is divisible by 3 because the sum of its digits (6) is divisible by 3																
<p>10</p> $= 2 + 3 + 5 + 7$ $= 17$	<p>11</p> 2.5 litres $= \frac{250cm^3}{(2.5 \times 1000)cm^3}$ $= \frac{250cm^3}{2500cm^3} = 10 \text{ cups}$	<p>12</p> $= 8400 \times \frac{75}{100}$ $= 8400 \times \frac{3}{4}$ $= 2100 \times 3$ $= 6300$																
<p>13</p> $= 2000l + \left(\frac{20}{100} \times 2000l\right)$ $= 2000l + 400l$ $= 2,400l$	<p>14</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>9</td> <td>x</td> <td>11</td> <td>20</td> </tr> <tr> <td>80</td> <td>99</td> <td>120</td> <td>y</td> </tr> </table> $x^2 - 1 = yx^2 - 1 = y$ $x^2 - 1 = 9920^2 - 1 = y$ $x^2 = 99 + 120 \times 20 - 1 = y$ $x^2 = 100400 - 1 = y$ $\sqrt{x^2} = \sqrt{100399} = y$ $x = 10$	9	x	11	20	80	99	120	y	<p>15</p> $\begin{array}{r} 0.16 \\ 25 \overline{) 4} \\ \underline{- 0} \\ 40 \\ \underline{- 25} \\ 150 \\ \underline{- 150} \\ 000 \end{array}$								
9	x	11	20															
80	99	120	y															
<p>16</p> $3x + 5 = x + 9$ $3x - x = 9 - 5$ $2x = 4$ $\frac{2x}{2} = \frac{4}{2}$ $x = 2$	<p>17</p> $4cm = 2km$ $1cm = \frac{2km}{4cm} = \frac{2km}{(4 \times 100,000)km}$ $10cm = \left(\frac{2}{400,000}\right) \times 10cm$ $10cm = \left(\frac{10 \times 100,000}{200,000}\right) km$ $= 5km$ $A = S \times S = 5km \times 5km = 25km^2$	<p>18</p> <p>LCD = 84</p> $\frac{31}{84} \times 84 = 31 \dots \dots (ii)$ $\frac{2}{7} \times 84 = 24 \dots \dots (i)$ $\frac{8}{21} \times 84 = 32 \dots \dots (iii)$ $\begin{array}{r} 2318 \\ 7 \overline{) 2318} \\ \underline{- 14} \\ 91 \\ \underline{- 84} \\ 78 \\ \underline{- 70} \\ 8 \end{array}$																
<p>19</p> $= my - 4n$ $= m \times y - 4 \times n$ $= 4 \times 5 - 4 \times 2$ $= 20 - 8$ $= 28$	<p>20</p> $I = \frac{P \times T \times R}{100}$ $= \frac{40,000 \times 4 \times 11}{100}$ $= 17,600Frw$	<p>21</p> $\frac{2}{5} \times 105,000cm^2 = \dots m^2$ $42,000cm^2 = \dots m^2$ $= \frac{42,000}{10,000} m^2$ $= 4.2m^2$																
<p>22</p> $A = 81cm^2$ $\sqrt{S^2} = \sqrt{81cm^2}$ $S = 9cm$ $P = S \times 4$ $= 9cm \times 4$ $= 36cm$	<p>23</p> $= 180^\circ(n - 2)$ $= 180^\circ(6 - 2)$ $= 180^\circ \times 4$ $= 720^\circ$	<p>24</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>2</td> <td>39</td> <td>52</td> </tr> <tr> <td>2</td> <td>39</td> <td>26</td> </tr> <tr> <td>3</td> <td>39</td> <td>13</td> </tr> <tr> <td>13</td> <td>13</td> <td>13</td> </tr> <tr> <td></td> <td>1</td> <td>1</td> </tr> </table> $= 2 \times 2 \times 3 \times 13$ $= 156$	2	39	52	2	39	26	3	39	13	13	13	13		1	1	
2	39	52																
2	39	26																
3	39	13																
13	13	13																
	1	1																
<p>25</p> $= \frac{11}{6} + \left(\frac{2}{3} + \frac{1}{4}\right)$ $= \frac{11}{6} + \left(\frac{8+3}{12}\right)$ $= \frac{11}{6} + \frac{11}{12}$ $= \frac{11}{6} \times \frac{12}{11} = 2$	<p>26</p> $= \frac{(15 \times 16) + (5 \times 6)}{15 + 5}$ $= \frac{240 + 30}{20}$ $= \frac{270}{20}$ $= 13.5 \text{ years}$	<p>27</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Shop A</td> <td style="text-align: center;">Shop B</td> </tr> <tr> <td>$1p = \left(\frac{600}{12}\right)Frw$</td> <td>$1p = \frac{10800}{20 \times 12}$</td> </tr> <tr> <td>$1p = 50Frw$</td> <td>$1p = 45Frw$</td> </tr> </table> <p>I would buy from shop B because it is cheaper there than in shop A.</p>	Shop A	Shop B	$1p = \left(\frac{600}{12}\right)Frw$	$1p = \frac{10800}{20 \times 12}$	$1p = 50Frw$	$1p = 45Frw$										
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<p>28 = (2000 - 1510) + 1</p> <p>= 490 + 1</p> <p>= 491 notes</p> <p>= (491 × 100) Frw</p> <p>= 49,100 Frw</p>	<p>29 $P = SP - CP$</p> <p>= (3000 × 115) - 300,000</p> <p>= 345,000 Frw - 300,000 Frw</p> <p>= 45,000 frw</p> <p>$\%P = \frac{P}{CP} \times 100$</p> <p>= $\frac{45,000}{300,000} \times 100 = 15\%$</p>	<p>30 $A = \text{Parallelogram} - \text{triangle}$</p> <p>= $(b \times h) - \left(\frac{b \times h}{2}\right)$</p> <p>= $(26 \times 12) - \left(\frac{26 \times 12}{2}\right) \text{cm}^2$</p> <p>= $312 \text{cm}^2 - 156 \text{cm}^2$</p> <p>= 156cm^2</p>
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SECTION B

<p>31 $A = 24 \text{cm}^2$</p> <p>$\frac{b \times h}{2} = 24 \text{cm}^2$</p> <p>$b = \frac{24 \text{cm}^2 \times 2}{6 \text{cm}}$</p> <p>$b = 8 \text{cm}$</p> <p>Base $BD = 8 \text{cm}$</p> <p>$CD = (BD - BC)$</p> <p>= $8 \text{cm} - 5 \text{cm}$</p> <p>= 3cm</p> <p>Area of ACD: Area of ABC</p> <p>$\frac{b \times h}{2} : \frac{b \times h}{2}$</p> <p>= $\frac{3 \text{cm} \times 6 \text{cm}}{2} : \frac{5 \text{cm} \times 6 \text{cm}}{2}$</p> <p>= $9 \text{cm}^2 : 15 \text{cm}^2$</p> <p>= $\frac{9 \text{cm}^2 \div 3}{15 \text{cm}^2 \div 3} = \frac{3}{5}$ Ratio = 3 : 5</p>	<p>32</p> <p style="text-align: center;"><u>1st year</u></p> <p>$I = \frac{100,000 \times 1 \times 10}{100} = 10,000 \text{ Frw}$</p> <p>$A = 100,000 + 10,000 = 110,000 \text{ F}$</p> <p style="text-align: center;"><u>2nd year</u></p> <p>$I = \frac{110,000 \times 1 \times 10}{100} = 11,000 \text{ Frw}$</p> <p>$A = 110,000 + 11,000 = 121,000 \text{ F}$</p> <p style="text-align: center;"><u>3rd year</u></p> <p>$I = \frac{121,000 \times 1 \times 10}{100} = 12,100 \text{ Frw}$</p> <p>$A = 121,000 + 12,100 = 133,100 \text{ F}$</p> <p style="text-align: center;"><u>4th year</u></p> <p>$I = \frac{133,100 \times 1 \times 10}{100} = 13,310 \text{ Frw}$</p> <p>$A = 133,100 + 13,310 = 146,410 \text{ F}$</p>	<p>33 $\text{Rent} = 360^\circ - (90 + 70 + 20 + 80)$</p> <p>= $360^\circ - 260^\circ$</p> <p>= 100°</p> <p>= $\frac{90,000}{360} = 250$</p> <p>$\text{Rent} = (250 \times 100) = 25,000 \text{ Frw}$</p> <p>$\text{Food} = (250 \times 90) = 22,500 \text{ Frw}$</p> <p>$\text{Fees} = (250 \times 70) = 17,500 \text{ Frw}$</p> <p>$\text{Others} = (250 \times 20) = 5,000 \text{ Frw}$</p> <p>$\text{Mdcine} = (250 \times 80) = 20,000 \text{ Frw}$</p>
<p>34 <u>Part (a)</u></p> <p>20 days = 10 men</p> <p>1 day = (10 × 20) men</p> <p>5 days = $\left(\frac{10 \times 20}{5}\right) = 40 \text{ men}$</p> <p style="text-align: center;"><u>Part (b)</u></p> <p>10 men = 20 days</p> <p>1 man = (20 × 10) days</p> <p>8 men = $\left(\frac{20 \times 10}{8}\right) = 25 \text{ days}$</p> <p style="text-align: center;"><u>Part (c)</u></p> <p>1 day = 200 men</p> <p>200 men = 200,000 Frw</p> <p>1 man = (200,000 ÷ 200) Frw</p> <p>1 man = 1,000 Frw</p> <p>Take home = (1,000 - 200) Frw</p> <p>= 800 Frw</p>	<p>35 <u>Part (a)</u></p> <p>$V = \text{Area of trap} \times \text{Length of prism}$</p> <p>= $\frac{h}{2}(a + b) \times L$</p> <p>= $\frac{8 \text{cm}}{2}(10 \text{cm} + 4 \text{cm}) \times 20 \text{cm}$</p> <p>= $4 \text{cm} \times 14 \text{cm} \times 20 \text{cm}$</p> <p>= $1,120 \text{cm}^3$</p> <p style="text-align: center;"><u>Part (b)</u></p> <p>$II = \sqrt{b^2 + h^2}$</p> <p>= $\sqrt{(6 \times 6) \text{cm}^2 + (8 \times 8) \text{cm}^2}$</p> <p>= $\sqrt{36 \text{cm}^2 + 64 \text{cm}^2}$</p> <p>= $\sqrt{100 \text{cm}^2}$</p> <p>= 10 cm</p> <p>$\text{TSA} = h(a + b) + L(a + b + h + II)$</p> <p>= $8(10 + 4) + 20(10 + 8 + 4 + 10)$</p> <p>= $8 \times 14 + 20 \times 32$</p> <p>= $112 \text{cm}^2 + 640 \text{cm}^2$</p> <p>= 752cm^2</p>	<p>36 (a). = $\frac{2}{100} \times 4,000,000$</p> <p>= 80,000</p> <p>(b). = Total number - absent</p> <p>= 4,000,000 - 80,000</p> <p>= 3,920,000 people</p> <p>(c). Spoilt votes</p> <p>= 3,920,000 - (3,332,000 + 392,000)</p> <p>= 3,920,000 - 3,724,000</p> <p>= 196,000</p> <p>(d). (i) = $\frac{3,332,000}{3,920,000} \times 100$</p> <p>= 85%</p> <p>(ii). = $\frac{392,000}{3,920,000} \times 100$</p> <p>= 10%</p> <p>(iii). = 100% - (85% + 10%)</p> <p>= 100% - 95%</p> <p>= 5%</p>
<p>37 (a). x - axis</p> <p>4sq = 60 min (1hr)</p> <p>1sq = (60 ÷ 4) min</p> <p>= 15 min</p> <p>(b). y - axis</p> <p>5sq = 40 km</p> <p>1sq = (40 ÷ 5) km</p> <p>= 8 km</p>	<p>(c). 120 km</p> <p>(d). = (2 × 15) min</p> <p>= 30 min</p> <p>(e). = (120 × 2)</p> <p>= 240 km</p> <p>(f). No it didn't because the vehicle stopped at 120 km then returned.</p> <p>(g). = $1\frac{1}{2} \text{hr} + 2 \text{hr} = 3\frac{1}{2} \text{hr}$ (3hr 30min)</p>	