

YEAR 2010 WORKING AND ANSWERS

SECTION A

<p>1 Hint: Distributive property $= 55(112 \cdot 12)$ $= 55 \times 100$ $= 5,500$</p>	<p>2 Hundreds</p>	<p>3 Hint: Number line is arranged in ascending order.</p> <p style="text-align: center;"> $\leftarrow \begin{array}{ccccccc} & -8 & -1 & 0 & 11 & 17 & \rightarrow \end{array}$ $= -8, -1, 0, 11, 17$ </p>																																				
<p>4 $= \frac{31}{1000} \times \frac{11}{10}$ 0.0341</p> $\begin{array}{r} 0.0341 \\ + \quad 0 \\ \hline 0.03 \end{array}$ <p>$= \frac{341}{10,000}$ $= 0.0341$</p>	<p>5 $= \left(\frac{4}{10} \times 1000\right) \text{cm}^3$ $= 400 \text{cm}^3$</p>	<p>6 $2, 8, 14, 20, 26$</p> <p style="text-align: center;"> $\begin{array}{cccc} & & & \\ \hline & & & \end{array}$ $+6 \quad +6 \quad +6 \quad +6$ </p>																																				
<p>7 $4 \text{ litres} = 60 \text{km}$ $1 \text{ litre} = (60 \text{km} \div 4 \text{km})$ $16 \text{ litres} = \left(\frac{60 \times 16}{4}\right) \text{km}$ $16 \text{ litres} = 240 \text{km}$</p>	<p>8</p> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>2</td><td>15</td><td>24</td><td>40</td></tr> <tr><td>2</td><td>15</td><td>12</td><td>20</td></tr> <tr><td>2</td><td>15</td><td>6</td><td>10</td></tr> <tr><td>3</td><td>15</td><td>3</td><td>5</td></tr> <tr><td>5</td><td>5</td><td>1</td><td>5</td></tr> <tr><td></td><td>1</td><td></td><td>1</td></tr> </table> <p>$= 2 \times 2 \times 2 \times 3 \times 5$ $= 120$</p>	2	15	24	40	2	15	12	20	2	15	6	10	3	15	3	5	5	5	1	5		1		1	<p>9</p> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>2</td><td>48</td></tr> <tr><td>2</td><td>24</td></tr> <tr><td>2</td><td>12</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td></td><td>1</td></tr> </table> <p>$48 = 2 \times 2 \times 2 \times 2 \times 3$ or $48 = 2^4 \times 3^1$</p>	2	48	2	24	2	12	2	6	3	3		1
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<p>10 $4(x + 1) = 2x + 7$ $4x + 4 = 2x + 7$ $4x - 2x = 7 - 4$ $2x = 3$ $\frac{2x}{2} = \frac{3}{2}$ $x = 1.5$</p>	<p>11 $= 100\% + 9\%$ $= 109\%$ $= \frac{109}{100} \times 240 \text{kg}$ $= 261.6 \text{kg}$</p>	<p>12 $S^2 = 625 \text{cm}^2$ $\sqrt{S^2} = \sqrt{625 \text{cm}^2}$ $S = 25 \text{cm}$ $P = S \times 4$ $= 25 \text{cm} \times 4$ $= 100 \text{cm}$</p>																																				
<p>13</p> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>4</td><td>6</td><td>7</td><td>x</td></tr> <tr><td>9</td><td>13</td><td>y</td><td>25</td></tr> </table> <p>$2x + 1 = y$ $2 \times 7 + 1 = y$ $14 + 1 = y$ $15 = y$ $x = 12$</p>	4	6	7	x	9	13	y	25	<p>14 $= \frac{3}{4} \times 2,000 \text{Frw}$ $= 1,500 \text{Frw}$</p>	<p>15 $= (4 \times 2)x^{(4+2)}y^{(3+2)}$ $= 8x^6y^5$</p>																												
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<p>16 $1 \text{ cake} = 1.25 \text{kg}$ $6 \text{ cakes} = \left(\frac{125}{100} \times 6\right) \text{kg}$ $= 7.5 \text{kg of flour}$</p>	<p>17 $C = \pi D$ $= 3.14 \times 30 \text{cm}$ $= \frac{314 \times 30 \text{cm}}{100}$ $= 94.2 \text{cm}$</p>	<p>18 $= \frac{3}{25} \times 150 \text{m}$ $= 18 \text{m}$</p>																																				
<p>19 $10 \text{ men} = 4 \text{ days}$ $1 \text{ man} = (4 \times 10) \text{ days}$ $8 \text{ men} = \left(\frac{4 \times 10}{8}\right) \text{ days}$ $= 5 \text{ days}$</p>	<p>20 $x = 180^\circ - (90^\circ + 30^\circ)$ $x = 180^\circ - 120^\circ$ $x = 60^\circ$</p>	<p>21 $I = \frac{P \times T \times R}{100}$ $I = \frac{1,200,000 \times 3 \times 8}{100}$ $I = 288,000 \text{Frw}$</p>																																				
<p>22 $45 = 40 + 5$ $= XL + V$ $= XLV$</p>	<p>23 $A = L \times W$ $= 13 \text{cm} \times 6 \text{cm}$ $= 78 \text{cm}^2$</p>	<p>24 $= (45 \times 1000) \text{g} + 65 \text{g} + (1000 + 1000) \text{g}$ $= 45,000 \text{g} + 65 \text{g} + 2000 \text{g}$ $= 47,065 \text{g}$</p>																																				
<p>25 $S^2 = 64 \text{cm}^2$ $\sqrt{S^2} = \sqrt{64 \text{cm}^2}$ $S = 8 \text{cm}$ $V = S^3$ $= 8 \text{cm} \times 8 \text{cm} \times 8 \text{cm}$ $= 512 \text{cm}^3$</p>	<p>26 $P = SP - CP$ $= 6,000 \text{Frw} - 5,000 \text{Frw}$ $= 1,000 \text{Frw}$ $\%P = \frac{P}{CP} \times 100$ $= \frac{1,000}{5,000} \times 100$ $= 20\%$</p>	<p>27 $\frac{x + 12 + 8}{3} = 9$ $\frac{x + 20}{3} = 9$ $x + 20 = (9 \times 3)$ $x + 20 = 27$ $x = 27 - 20$ $x = 7$</p>																																				

28 Hint: We can use proportions

$$50 \text{ min} = 45 \text{ km}$$

$$1 \text{ min} = \left(\frac{45}{50}\right) \text{ km}$$

$$(2 \text{ hr}) 120 \text{ min} = \left(\frac{45}{50} \times 120\right) \text{ km}$$

$$= 108 \text{ km}$$

$$29 = (\sqrt{64} + \sqrt{25}) \div \sqrt{9}$$

$$= (8 + 5) \div 3$$

$$= 13 \div 3$$

$$= 4 \frac{1}{3}$$

x	11	12	13	14	15
f	4	3	1	1	1

(a). Mode = 11 years

(b). Av = $\frac{\text{sum of ages}}{\text{number of pupils}}$

$$= \frac{(11 \times 4) + (12 \times 3) + (13 \times 1) + (14 \times 1) + (15 \times 1)}{10}$$

$$= \frac{44 + 36 + 13 + 14 + 15}{10}$$

$$= \frac{122}{10} = 12.2$$

SECTION B

31 1st year

$$= \frac{P \times T \times R}{100}$$

$$= \frac{1,000,000 \times 1 \times 6}{100}$$

$$I = 60,000 \text{ Frw}$$

$$A = 1,000,000 \text{ F} + 60,000 \text{ F}$$

$$= 1,060,000 \text{ Frw}$$

2nd year

$$= \frac{P \times T \times R}{100}$$

$$= \frac{1,060,000 \times 1 \times 6}{100}$$

$$I = 63,600 \text{ Frw}$$

$$A = 1,060,000 \text{ F} + 63,600 \text{ F}$$

$$= 1,123,600 \text{ Frw}$$

3rd year

$$= \frac{P \times T \times R}{100}$$

$$= \frac{1,123,600 \times 1 \times 6}{100}$$

$$I = 67,416 \text{ Frw}$$

$$A = 1,123,600 \text{ F} + 67,416 \text{ F}$$

$$= 1,191,016 \text{ Frw}$$

32 $h = \sqrt{H^2 - b^2}$

$$= \sqrt{(10 \text{ cm} \times 10 \text{ cm}) - (6 \text{ cm} \times 6 \text{ cm})}$$

$$= \sqrt{100 \text{ cm}^2 - 36 \text{ cm}^2}$$

$$= \sqrt{64 \text{ cm}^2}$$

$$= 8 \text{ cm}$$

$$A = \frac{b \times h}{2}$$

$$= \frac{6 \text{ cm} \times 8 \text{ cm}}{2}$$

$$= 24 \text{ cm}^2$$

33 Part (a)

Height of prism = Length (L)

$$\text{Vol} = 48 \text{ cm}^3$$

$$\frac{b \times h}{2} \times L = 48 \text{ cm}^3$$

$$\frac{4 \text{ cm} \times 3 \text{ cm} \times L}{2} = 48 \text{ cm}^3$$

$$6 \text{ cm}^2 \times L = 48 \text{ cm}^3$$

$$L = \frac{48 \text{ cm}^3}{6 \text{ cm}^2}$$

$$L = 8 \text{ cm}$$

Part (b)

$$H = \sqrt{b^2 + h^2}$$

$$= \sqrt{(4 \text{ cm} \times 4 \text{ cm}) + (3 \text{ cm} \times 3 \text{ cm})}$$

$$= \sqrt{16 \text{ cm}^2 + 9 \text{ cm}^2}$$

$$= \sqrt{25 \text{ cm}^2}$$

$$= 5 \text{ cm}$$

$$\text{TSA} = (b \times h) + L(b + h + H)$$

$$= (4 \times 3) \text{ cm}^2 + 8(4 + 3 + 5) \text{ cm}^2$$

$$= 12 \text{ cm}^2 + 8 \times 12 \text{ cm}^2$$

$$= 12 \text{ cm}^2 + 96 \text{ cm}^2$$

$$= 108 \text{ cm}^2$$

34 Part (a)

Beans + Maize = Mixture

$$8 \text{ kg} + M = 20 \text{ kg}$$

$$M = 20 \text{ kg} - 8 \text{ kg}$$

$$M = 12 \text{ kg}$$

$$20 \text{ kg mix} = 12 \text{ kg maize}$$

$$1 \text{ kg mix} = \frac{12}{20} \text{ kg maize}$$

$$35 \text{ kg mix} = \left(\frac{12 \times 35}{20}\right) \text{ kg}$$

$$= 21 \text{ kg of maize}$$

Part (b)

$$50 \text{ children} = 18 \text{ days}$$

$$1 \text{ child} = (18 \times 50) \text{ days}$$

$$30 \text{ children} = \left(\frac{18 \times 50}{30}\right) \text{ days}$$

$$= 30 \text{ days}$$

35 Part (a)

Hint: First remove the brackets then cross multiply.

$$\frac{4x - 2}{3} = \frac{3x + 9}{2}$$

$$3(3x + 9) = 2(4x - 2)$$

$$9x + 27 = 8x - 4$$

$$9x - 8x = -4 - 27$$

$$x = -31$$

Part (b)

$$= 2 \times m \times m - 3 \times n \times 2 \times p$$

$$= 2 \times 2 \times 2 - 3 \times 3 + 2 \times 5$$

$$= 8 - 9 + 10$$

$$= 8 + 10 - 9$$

$$= 18 - 9$$

$$= 9$$

36 Teacher's guidance

37 Teacher's guidance