

# YEAR 2009 WORKING AND ANSWERS

## SECTION A

<p>1</p> $\begin{array}{r} 246 \\ 309 \quad 809 \\ + 254 \quad + 209 \\ \hline 809 \quad 600 \end{array}$	<p>2</p> $= \frac{1}{5} \times 300g$ <p>60g</p>	<p>3</p> $\begin{array}{r} 0.008 \\ 5 \overline{) 0.04} \\ \underline{-0.04} \phantom{0} \\ 00 \\ \underline{-0} \\ 40 \\ \underline{40} \\ 00 \end{array}$																				
<p>4</p> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> <p>1h 60min</p> </div> <div> <p>Minutes</p> <p>60 + 10 = 70</p> <p>70 - 40 = 30</p> <p>Hours</p> <p>3 - 1 = 2</p> <p>2 - 1 = 1</p> </div> </div> <p>3h 30m</p> <p>1h 40m</p> <p>1h 30m</p> <p>= 60min + 30min = 90min</p>	<p>5</p> <p>Hint: A number line is arranged in ascending order.</p> <p>0 &gt; -1 and -5 &lt; -1 are true statements</p>	<p>6</p> <p>(a). <math>Comp = 90^\circ - 27^\circ</math> = <math>63^\circ</math></p> <p>(b). <math>Supp = 180^\circ - 135^\circ</math> = <math>45^\circ</math></p>																				
<p>7</p> <p>Chairs = number of people</p> <p>1 row = 14chairs</p> <p>43rows = (14 × 43)chairs = 602chairs</p>	<p>8</p> $\begin{aligned} &= -159 - (-467) \\ &= -159 + 467 \\ &= 467 - 159 \\ &= 308 \end{aligned}$	<p>9</p> $= \frac{5}{6} \times 24 = \frac{20}{40} = \frac{1}{2}$																				
<p>10</p> $= 2 + 3 + 5 + 7 + 11 + 13 = 41$	<p>11</p> $\begin{aligned} 3.2km &= \left(\frac{32}{10} \times 1000\right) = 3200m \\ 67dm &= (67 \div 10) = 6.7m \\ 234cm &= (234 \div 100) = 2.34m \\ &= 3200m + 6.7 + 2.34m \\ &= 3209.04m \end{aligned}$	<p>12</p> $= \frac{11}{5} \times 800 = 1,760$																				
<p>13</p> $= \frac{7}{16} \times 100 = 43.75\%$	<p>14</p> $= x^{(3-1)}y^{(5-3)} = x^2y^2$	<p>15</p>																				
<p>16</p> $\begin{aligned} \text{Scale} &= \frac{5cm}{1.5km} \\ &= \frac{5cm}{(1.5 \times 100,000)cm} \\ &= \frac{5}{150,000} = \frac{1}{30,000} \end{aligned}$	<p>17</p> $\begin{aligned} C &= 2\pi r \\ &= 2 \times \frac{22}{7} \times 42cm \\ &= 264cm \end{aligned}$	<p>18</p> $\begin{aligned} 3x - 5x &= 13 - 7 \\ -2x &= 6 \\ \frac{-2x}{-2} &= \frac{6}{-2} \\ x &= -3 \end{aligned}$																				
<p>19</p> $\begin{aligned} I &= P \times T \times \frac{R}{100} \\ 30,600 &= 170,000 \times \frac{9}{12} \times \frac{R}{100} \\ \frac{30,600 \times 12 \times 100}{170,000 \times 9} &= R \\ 24\% &= R \end{aligned}$	<p>20</p> $\begin{aligned} A &= \frac{b \times h}{2} \\ &= \frac{8cm \times 6cm}{2} \\ &= 24cm^2 \end{aligned}$	<p>21</p> $\begin{aligned} V &= \pi r^2 h \\ &= \frac{22}{7} \times 7cm \times 7cm \times 10cm \\ &= 1,540cm^3 \end{aligned}$																				
<p>22</p> $\begin{aligned} \text{LCD} &= 21 \\ &= \frac{2}{7} + \left(\frac{\frac{2}{3} \times 21}{21} + \frac{\frac{4}{7} \times 21}{21}\right) \\ &= \frac{2}{7} + \frac{14+12}{21} \\ &= \frac{2}{7} + \frac{26}{21} = \frac{2}{7} \times \frac{21}{26} = \frac{3}{13} \end{aligned}$	<p>23</p> <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>2</td><td>4</td><td>6</td><td>10</td></tr> <tr><td>2</td><td>2</td><td>3</td><td>5</td></tr> <tr><td>3</td><td>1</td><td>3</td><td>5</td></tr> <tr><td>5</td><td></td><td>1</td><td>5</td></tr> <tr><td></td><td></td><td></td><td>1</td></tr> </table> <p>= 2 × 2 × 3 × 5 = 60 seconds = (60 ÷ 60)minutes = 1minutes <u>They will all flash again together after 1 minute</u></p>	2	4	6	10	2	2	3	5	3	1	3	5	5		1	5				1	<p>24</p> <p>Area of square = Area of rectangle</p> $S^2 = L \times W$ $S^2 = 16cm \times 9cm$ $S^2 = 144cm^2$ $\sqrt{S^2} = \sqrt{144cm^2}$ $S = 12cm$
2	4	6	10																			
2	2	3	5																			
3	1	3	5																			
5		1	5																			
			1																			
<p>25</p> $\frac{x + 12 + 13 + 15}{4} = 12.5$ $\frac{x + 40}{4} = 12.5$ $x + 40 = 12.5 \times 4$ $x = 50 - 40$ $x = 10$	<p>26</p> $= 100\% - 10\%$ $= 90\%$ $\frac{90}{100} \times CP = 4320$ $CP = \frac{4320 \times 100}{90}$ $CP = 4,800Frw$	<p>27</p> $x + (x + 10) + 2x + 3x = 180^\circ(n - 2)$ $7x + 10 = 180^\circ(4 - 2)$ $7x + 10 = 180^\circ \times 2$ $7x = 360^\circ - 10^\circ$ $\frac{7x}{7} = \frac{350^\circ}{7}$ $x = 50^\circ$ $(x + 10) = 50 + 10 = 60^\circ$ $2x = 50 \times 2 = 100^\circ$ $3x = 50 \times 3 = 150^\circ$																				

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1<sup>st</sup> year

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

$$= \frac{90,000 \times 1 \times 12}{100}$$

$$I = 10,800Frw$$

$$A = 90,000F + 10,800F$$

$$= 100,800Frw$$

2<sup>nd</sup> year

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

$$= \frac{100,800 \times 1 \times 12}{100}$$

$$I = 12,096Frw$$

$$A = 100,800F + 12,096F$$

$$= 112,896Frw$$

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	A	+	B	=	Mix
Qty	100	+	80	=	180
Px/kg	200		245		x

$$(100 \times 200) + (80 \times 245) = (180 \times x)$$

$$20,000 + 19,600 = 180x$$

$$39,600 = 180x$$

$$\frac{39,600}{180} = \frac{180x}{180}$$

$$220 = x$$

Therefore the cost per kg of the mixture is 220F

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$$\text{One share} = \frac{\text{Total sweets}}{\text{Total shares}}$$

$$= \frac{60 \text{ sweets}}{11 + 10 + 9}$$

$$= \frac{60}{30} \text{ sweets}$$

$$= 2 \text{ sweets}$$

$$1^{\text{st}} \text{ Child} = 11 \times 2 = 22 \text{ sweets}$$

$$2^{\text{nd}} \text{ child} = 10 \times 2 = 20 \text{ sweets}$$

$$3^{\text{rd}} \text{ child} = 9 \times 2 = 18 \text{ sweets}$$

### SECTION B

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Teacher's guidance

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Part (a)

Hint: We can use proportions

$$8cm^3 = 12g$$

$$1cm^3 = \frac{12g}{8cm^3}$$

$$9cm^3 = \frac{(12g \times 9cm^3)}{8cm^3}$$

$$= 13.5g$$

Part (b)

$$= \frac{q}{p}$$

$$\frac{6}{1} = \frac{4}{8} \times 3$$

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Part (a)

Hint: cross multiply

$$7(2x - 4) = 3(x + 9)$$

$$14x - 28 = 3x + 27$$

$$14x - 3x = 27 + 28$$

$$11x = 55$$

$$\frac{11x}{11} = \frac{55}{11}$$

$$x = 5$$

Part (b)

$$= m \times m \times m - m \times n \times n + n \times y \times y$$

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

$$= 8 - 18 + 75$$

$$= 18 - 8 + 75$$

$$= 10 + 75$$

$$= 85$$

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Teacher's guidance

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Numerator

$$= \left(\frac{7}{2} \times \frac{5}{4}\right) \div \left(\frac{5}{2} - \frac{7}{4}\right)$$

$$= \left(\frac{7}{2} \times \frac{5}{4}\right) \div \left(\frac{10-7}{4}\right)$$

$$= \left(\frac{7}{2} \times \frac{5}{4}\right) \div \frac{3}{4}$$

$$= \frac{7}{2} \times \frac{5}{4} \times \frac{4}{3}$$

$$= \frac{35}{6}$$

Denominator

$$= 2.3 \div 4.6$$

$$= \frac{23}{10} \div \frac{46}{10}$$

$$= \frac{23}{10} \times \frac{10}{46}$$

$$= \frac{1}{2}$$

Whole statement

$$= \text{Numerator} \div \text{Denominator}$$

$$= \frac{35}{6} \div \frac{1}{2}$$

$$= \frac{35}{6} \times \frac{2}{1}$$

$$= \frac{35}{3} = 11\frac{2}{3}$$

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$$\text{Rukundo} = x$$

$$\text{Karimba} = (3 \times x) = 3x$$

$$x + 3x = 20$$

$$4x = 20$$

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

$$x = 5$$

$$\text{Rukundo} = 5 \text{ years old}$$

$$\text{Karimba} = (3 \times 5) = 15 \text{ yrs old}$$

In 5 years time

$$\text{Rukundo} = (5 + 5) = 10 \text{ yrs}$$

$$\text{Karimba} = (15 + 5) = 20 \text{ yrs}$$

Number of times

$$= \frac{\text{Karimba's age}}{\text{Rukundo's age}}$$

$$= \frac{20 \text{ yrs}}{10 \text{ yrs}}$$

$$= 2 \text{ times}$$

Therefore Karimba will be twice (2 times) Rukundo's age in 5 years time.

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Teacher's guidance