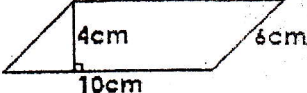
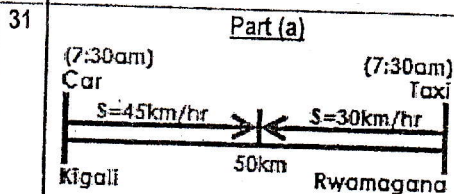


# YEAR 2012 WORKING AND ANSWERS

1	$\begin{array}{ccccccc} 4 & 7 & 10 & 13 & 16 \\ \swarrow & \swarrow & \swarrow & \swarrow & \swarrow \\ (4+3) & (7+3) & (10+3) & (13+3) & \end{array}$	2	$= 340 \times \frac{4}{170} \times 4$ $= 32$	3	$4s = 20cm \quad A = S \times S$ $\frac{4s}{4} = \frac{20}{4} \quad = 5cm \times 5cm$ $s = 5cm \quad = 25cm^2$															
4	$LCD = 12$ $= \left(\frac{1}{3} \times 12\right) + \left(\frac{1}{4} \times 12\right) + \left(\frac{5}{12} \times 12\right)$ $= \frac{4 + 3 + 5}{12}$ $= \frac{12}{12} = 1$	5	$\text{One part} = \frac{\text{Total money}}{\text{Total parts}} = \frac{7,000}{2+5} = \frac{7,000}{7}$ $= 1,000F$ $1^{\text{st}} \text{ share} = (1,000F \times 2) = 2,000F$ $2^{\text{nd}} \text{ share} = (1,000F \times 5) = 7,000F$	6	<table border="1"> <tr><td>2</td><td>140</td></tr> <tr><td>2</td><td>70</td></tr> <tr><td>5</td><td>35</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td></td><td>1</td></tr> </table> $140 = 2 \times 2 \times 5 \times 7$	2	140	2	70	5	35	7	7		1					
2	140																			
2	70																			
5	35																			
7	7																			
	1																			
7	$LCD = 105$ $\frac{2}{5} = \frac{2}{5} \times 105 = 42 \dots \dots \dots (ii)$ $\frac{1}{3} = \frac{1}{3} \times 105 = 35 \dots \dots \dots (i)$ $\frac{3}{7} = \frac{3}{7} \times 105 = 45 \dots \dots \dots (iii)$ $= \frac{1}{3}, \frac{2}{5}, \frac{3}{7}$	8	 $A = b \times h$ $= 10cm \times 4cm$ $= 40cm^2$	9	$= 100\% + 2\%$ $= 102\%$ $= \frac{102}{100} \times 990Frw$ $= 1,009.8Frw$															
10	$2x + 4 = 8 - 2x$ $2x + 2x = 8 - 4$ $4x = 4$ $\frac{4x}{4} = \frac{4}{4}$ $x = 1$	11	$P = 2(L + W)$ $36 = 2(L + 6)$ $36 = 2L + 12 \quad A = L \times W$ $36 - 12 = 2L \quad = 12cm \times 6cm$ $24 = 2L \quad = 72cm^2$ $\frac{24}{2} = \frac{2L}{2}$ $L = 12cm$	12	<table border="1"> <tr><td>B</td><td>N</td><td>R</td></tr> <tr><td>2</td><td>5</td><td>1</td></tr> <tr><td>2</td><td>2</td><td>0</td></tr> <tr><td>2</td><td>1</td><td>1</td></tr> <tr><td></td><td>0</td><td></td></tr> </table> $\begin{array}{r} 1011two \\ + 101two \\ \hline 10000two \end{array}$ $5ten = 101two$	B	N	R	2	5	1	2	2	0	2	1	1		0	
B	N	R																		
2	5	1																		
2	2	0																		
2	1	1																		
	0																			
13	<p>(a). <math>A \cup B = \{2, 3, 4, 5, 7, 10, 11\}</math></p> <p>(b). <math>A \cap B = \{2, 5\}</math></p>	14	$3x + 4x + 2x = 360^\circ$ $9x = 360^\circ$ $\frac{9x}{9} = \frac{360^\circ}{9}$ $x = 40^\circ$	15	$D = 0.14dm,$ $r = \frac{D}{2} = \frac{0.14dm}{2} = 0.07dm$ $A = \frac{1}{2} \pi r^2$ $= \frac{1}{2} \times \frac{22}{7} \times \frac{7}{100} dm \times \frac{7}{100} dm$ $= \frac{77}{10,000} dm^2 = 0.0077dm^2$															
16	$S = 60km/hr$ $T = 9:00am - 8:05am$ $= 55min = \frac{55}{60}hr$ $D = S \times T$ $= \frac{60km}{hr} \times \frac{55}{60}hr = 60km$	17	$\text{Angle } n = 150^\circ$ $\text{Angle } m = 180^\circ - 150^\circ$ $= 30^\circ$	18	<p>(a). <i>Comp angles</i> (<math>60^\circ</math> and <math>30^\circ</math>)</p> <p>(b). <i>Supp angles</i> (<math>100^\circ</math> and <math>80^\circ</math>)</p>															
19	$3 \text{ people} = 12 \text{ days}$ $1 \text{ person} = (12 \times 3) \text{ days}$ $9 \text{ people} = \left(\frac{12 \times 3}{9}\right) \text{ days}$ $= 4 \text{ days}$	20	$h = \sqrt{H^2 - b^2}$ $h = \sqrt{(10 \times 10)cm^2 - (8 \times 8)cm^2}$ $h = \sqrt{100cm^2 - 64cm^2}$ $h = \sqrt{36cm^2}$ $h = 6cm^2$	21	$x + 50^\circ = 140^\circ$ $x = 140^\circ - 50^\circ$ $x = 90^\circ$															
22	Teacher's guidance	23	$= 100\% - 20\%$ $= 80\%$ $\frac{80}{100} \times CP = SP$ $80CP = 8,000 \times 100$ $\frac{80CP}{80} = \frac{8,000 \times 100}{80}$ $CP = 10,000Frw$	24	<p>(a). A Rhombus has <u>2</u> lines of symmetry</p> <p>(b). An isosceles triangle has <u>1</u> line of symmetry</p>															
25	$5,000Frw = 1 \text{ book}$ $1Frw = \frac{1}{5,000} \text{ book}$ $24,000Frw = \frac{1}{5,000} \times 24,000$ $= 4 \text{ books and bal of } 4,000Frw$	26	$= 2x^2 + xy - x$ $= 2 \times x \times x + x \times y - x$ $= 2 \times 2 \times 2 + 2 \times 3 - 2$ $= 8 + 6 - 2$ $= 8 + 2 - 6$ $= 10 - 6$ $= 4$	27	$D = \frac{C}{\pi} \quad V = \pi r^2 h$ $= \frac{31.4}{3.14} \times 5 \times 5 \times 10$ $D = 10cm \quad = 785cm^3$ $r = 5cm$															

$$\begin{aligned} \text{ext} &= 180^\circ - \text{int angle} \\ &= 180^\circ - 150^\circ \\ &= 30^\circ \\ S &= \frac{360^\circ}{\text{ext angle}} \\ &= \frac{360^\circ}{30^\circ} \\ &= 12 \text{ sides} \end{aligned}$$



$$\begin{aligned} T &= \frac{D}{S_1 + S_2} \\ &= \frac{50 \text{ km}}{45 \text{ km/h} + 30 \text{ km/h}} \\ &= \frac{50 \text{ km}}{75 \text{ km/hr}} = \frac{2}{3} \text{ hr} \end{aligned}$$

$$\begin{aligned} D &= S \times T \text{ (Car's information)} \\ &= \left(45 \times \frac{2}{3}\right) \text{ km} \\ &= 30 \text{ km} \end{aligned}$$

Part (b)

$$\begin{aligned} T &= \text{starting time} + \text{duration} \\ &= 7:30 \text{ am} + \left(\frac{2}{3} \times 60\right) \text{ min} \\ &= 7:30 \text{ am} + 40 \text{ min} \\ &= 8:10 \text{ am} \end{aligned}$$

34 1<sup>st</sup> year  $A = P + I$

$$\begin{aligned} &= \frac{P \times T \times R}{100} \\ &= \frac{90,000 \times 1 \times 10}{100} \\ &= 9,000 \text{ Frw} \end{aligned}$$

$$\begin{array}{r} 90,000 \text{ Frw} \\ + 9,000 \text{ Frw} \\ \hline 99,000 \text{ Frw} \end{array}$$

2<sup>nd</sup> year  $A = P + I$

$$\begin{aligned} &= \frac{P \times T \times R}{100} \\ &= \frac{99,000 \times 1 \times 10}{100} \\ &= 9,900 \text{ Frw} \end{aligned}$$

$$\begin{array}{r} 99,000 \text{ Frw} \\ + 9,900 \text{ Frw} \\ \hline 108,900 \text{ Frw} \end{array}$$

3<sup>rd</sup> year  $A = P + I$

$$\begin{aligned} &= \frac{P \times T \times R}{100} \\ &= \frac{108,900 \times 1 \times 10}{100} \\ &= 10,890 \text{ Frw} \end{aligned}$$

$$\begin{array}{r} 108,900 \text{ Frw} \\ + 10,890 \text{ Frw} \\ \hline 119,790 \text{ Frw} \end{array}$$

29 Fees =  $\frac{1}{8}$ , Car loan =  $\frac{2}{5}$

$$\begin{aligned} \text{Fr. rem} &= 1 - (\text{fees} + \text{loan}) \\ &= 1 - \left(\frac{1}{8} + \frac{2}{5}\right) \text{ LCD} = 40 \\ &= 1 - \left(\frac{4 + 16}{40}\right) = 1 - \frac{1}{2} = \frac{1}{2} \\ \text{Fr. rem} \times \text{salary} &= \text{money rem} \\ \frac{1}{2} \times \text{salary} &= 380,000 \text{ Frw} \\ \text{Salary} &= 380,000 \text{ Frw} \times 2 \\ \text{Salary} &= 760,000 \text{ Frw} \end{aligned}$$

32 (a)  $642 \times 50$

$$\begin{aligned} &= (642 \times 100) \div 2 \\ &= 64,200 \div 2 \\ &= 32,100 \end{aligned}$$

(b)  $2,224 \times 49$

$$\begin{aligned} &= \left(\frac{2,224 \times 100}{2}\right) - 2,224 \\ &= \left(\frac{222,400}{2}\right) - 2,224 \\ &= 111,200 - 2,224 \\ &= 108,976 \end{aligned}$$

(c)  $16,999 \times 99$

$$\begin{aligned} &= (16,999 \times 100) - 16,999 \\ &= 1,699,900 - 16,999 \\ &= 1,682,901 \end{aligned}$$

(d)  $4,444 \times 25$

$$\begin{aligned} &= (4,444 \times 100) \div 4 \\ &= 444,400 \div 4 \\ &= 111,100 \end{aligned}$$

30 Let the total number be  $x$

$$\begin{aligned} \frac{45}{360} \times x &= 40 \\ x &= \frac{40 \times 360}{45} \end{aligned}$$

$$x = 320 \text{ animals}$$

$$\begin{aligned} \text{Goats} &= 320 - (\text{pigs} + \text{cows}) \\ &= 320 - (40 + 120) \\ &= 320 - 160 \\ &= 160 \text{ goats} \end{aligned}$$

33

x	f	fx
0	3	0
1	2	2
2	2	4
3	3	9
4	0	0
Total	Tf = 10	Tfx = 15

$$\text{Mean goals} = \frac{Tfx}{Tf} = \frac{15}{10} = 1.5$$

Approximately 2 goals per match.

	Type A	+	Type B	=	Mixture
Qty	300	+	x	=	(300 + x)
Px/kg	300		400		340

Multiply each quantity by its price to form an equation

$$(300 \times 300) + (400 \times x) = 340(300 + x)$$

$$90,000 + 400x = 102,000 + 340x$$

$$400x - 340x = 102,000 - 90,000$$

$$60x = 12,000$$

$$\frac{60x}{60} = \frac{12,000}{60}$$

$$x = 200 \text{ F}$$

The quantity of the second type costs 200F per kg.