YEAR 2005 WORKING AND ANSWERS

SECTION A

1

$$= \left(\frac{7}{3} \times \frac{9}{14}\right) + \frac{3}{4}$$
$$= \frac{3}{2} + \frac{3}{4} = \frac{6+3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

2

$$8x - 2x = 5 + 7$$
$$6x = 12$$
$$\frac{6x}{6} = \frac{12}{6}$$
$$x = 2$$

3

Total parts = 3 + 7 = 10

$$1^{st} share = \frac{3}{10} \times 10,000 = 3,000kg$$
$$2^{nd} share = \frac{7}{10} \times 10,000 = 7,000kg$$

4

3	45	60
5	15	20
	3	4

HCF = 3 x 5
= 15

5

$$= 4m - 12n + 12 - 3m + 3n - 12$$
$$= 4m - 3m + 3n - 12n + 12 - 12$$
$$= m - 9n$$

6

$$x = 360^o - (145^o + 160^o)$$
$$= 360^o - 305^o$$
$$= 55^o$$

7

$$A = \frac{b \times h}{2}$$
$$= \frac{6cm \times 10cm}{2} = 30cm^2$$

8

$$= \frac{8}{10} \div \frac{5}{100} = \frac{8}{10} \times \frac{100}{5} = 16$$

9

$$I = P \times T \times \frac{R}{100}$$
$$= 240,000 \times \frac{8}{12} \times \frac{5}{100}$$
$$= 8,000Frw$$

10

$$C = 2\pi r$$
$$= 2 \times 3.14 \times 5cm$$
$$= 31.4cm$$

11

$$m = 30^o (corresponding\ angles)$$
$$n = 180^o - 30^o (straight\ line)$$
$$= 150^o$$

12

$$D = M \div V$$
$$= 96g \div 12cm^3$$
$$= 8g/cm^3$$

13

$$= \frac{162}{9} + \frac{2 \times 80}{10}$$
$$= 18 + 16$$
$$= 34$$

14

$$TSA = 24cm^2$$
$$6S^2 = 24cm^2$$
$$\frac{6S^2}{6} = \frac{24cm^2}{6}$$
$$S^2 = 4cm^2$$
$$\sqrt{S^2} = \sqrt{4cm^2}$$
$$S = 2cm$$

$$V = S \times S \times S$$
$$= 2cm \times 2cm \times 2cm$$
$$= 8cm^3$$

15

$$6km = (6 \times 1000)m$$
$$= 6,000m$$
$$50min = (50 \times 60)sec$$
$$= 3,000sec$$
$$S = \frac{D}{T} = \frac{6,000m}{3,000s} = 2m/s$$

16

Let his old salary be x

$$\frac{3}{100} \times x = 9,000$$
$$x = \frac{9000 \times 100}{3} = 300,000Frw$$

New salary = Old salary + Increase
$$= 300,000F + 9,000F$$
$$= 309,000Frw$$

17

2 , 5 , 10 , 17 , 28 , 41 , 58

+3 +5 +7 +11 +13 +17

18

$$P = SP - CP$$
$$= 75,000Frw - 60,000Frw$$
$$= 15,000Frw$$
$$\%P = \frac{P}{CP} \times 100$$
$$= \frac{15,000}{60,000} \times 100$$
$$= 25\%$$

19

$$P = S \times 4$$
$$= 5cm \times 4$$
$$= 20cm$$

20

$$\frac{x+3+5+7+8}{5} = 5$$
$$\frac{x+23}{5} = 5$$
$$x + 23 = 5 \times 5$$
$$x = 25 - 23$$
$$x = 2$$

21

$$30\ eggs = 1,500Frw$$
$$1\ egg = \left(\frac{1,500}{30}\right) Frw$$
$$12\ eggs = \left(\frac{1,500 \times 12}{30}\right) Frw$$
$$= 600Frw$$

22

2	4	5	x	10
5	9	y	19	21

$2x + 1 = y$ $2x + 1 = y$

$2 \times 5 + 1 = y$ $2x + 1 = 19$

$10 + 1 = y$ $2x = 19 - 1$

$11 = y$ $\frac{2x}{2} = \frac{18}{2}$

$x = 9$

23

$$4\ boys = 9\ days$$
$$1\ boy = (9 \times 4) days$$
$$6\ days = \left(\frac{9 \times 4}{6}\right) days$$
$$= 6\ days$$

24

$$= m \times m \times p - 2 \times n \times p$$
$$= 2 \times 2 \times 3 - 2 \times 4 \times 3$$
$$= 12 + 24$$
$$= 36$$

25

Hint: Express 181 as a sum of two square numbers then find their square roots.

$181 = 100 + 81$

$1^{st} = \sqrt{100} = 10$

$2^{nd} = \sqrt{81} = 9$

The numbers are 9 and 10

26

$\frac{3 \times 5}{5 \times 5} = \frac{15}{25}$, $\frac{125 \div 5}{125 \div 5} = \frac{12}{25}$, $\frac{39 \div 3}{75 \div 3} = \frac{13}{25}$,

$0.56 = \frac{56 \div 4}{100 \div 4} = \frac{14}{25}$

Note: All fractions have the same denominators, we can arrange considering the numerators.

$= \frac{15}{25}, \frac{14}{25}, \frac{13}{25}, \frac{12}{25}$

$= \frac{3}{5}, 0.56, \frac{39}{75}, \frac{60}{125}$

27

2	4	6	10
2	2	3	5
3	1	3	5
5		1	5
			1

LCM = 2 x 2 x 3 x 5
= 60min
= (60 ÷ 60) hr
= 1 hour

28

A	+	B	=	Mix
40	+	x	=	$(40+x)$
200		120		160

$(200 \times 40) + (120 \times x) = 160(40+x)$

$8,000 + 120x = 6,400 + 160x$

$8,000 - 6,400 = 160x - 120x$

$1,600 = 40x$

$\frac{1,600}{40} = \frac{40x}{40}$

$x = 40$

Quantity of maize is 40kg

29

Part (a)

Let total number be t

$\frac{110}{360} \times t = 220 Teachers$

$t = \frac{220 \times 360}{110} = \frac{10 \times 720}{360} = 20$

$t = 720$

Part (b)

Boys = Total – (Girls + teachers)

= 720 – (220 + 20)

= 720 – 240

= 480 boys

30

$C = 180^o - (90^o + 20^o)$ *(Triangle)*

$= 180^o - 110^o$

$= 70^o$

$b = C = 70^o$ *(Isosceles triangle)*

$a = 20^o$ *(Symmetry line)*

Symmetry lines divides the triangle into two equal angles and two equal right angled triangles.

SECTION B

31

x	f	fx
0	3	0
1	3	3
2	1	2
3	3	9
4	5	20
5	7	35
6	1	6
7	2	14
Total	$Tf = 25$	$Tfx = 89$

Part (b)

$Average = \frac{Tfx}{Tf} = \frac{89}{25} = 3.56$

32

$12x + 60^o = 180^o(n-2)$

$12x + 60^o = 180^o(5-2)$

$12x + 60^o = 180^o \times 3$

$12x + 60^o = 540^o$

$12x = 540^o - 60^o$

$12x = 480^o$

$\frac{12x}{12} = \frac{480^o}{12}$

$x = 40^o$

$2x = 2 \times 40^o = 80^o$

$(3 \times 40^o + 11^o) = 120^o + 11^o = 131^o$

$(2 \times 40^o + 34^o) = 80^o + 34^o = 114^o$

$(2 \times 40^o + 11^o) = 80^o + 11^o = 91^o$

$(3 \times 40^o + 4^o) = 120^o + 4^o = 124^o$

33

$4\ months = \frac{4}{12} = \frac{1}{3} yr\ (3\ times)$

1st third of a year

$I = 250,000 \times \frac{1}{3} \times \frac{9}{100} = 7,500F$

$A = 250,000 + 7,500 = 257,500F$

2nd third of a year

$I = 257,500 \times \frac{1}{3} \times \frac{9}{100} = 7,725F$

$A = 257,500 + 7,725 = 265,225F$

3rd third of a year (Beg. of year)

$I = 265,225 \times \frac{1}{3} \times \frac{9}{100} = 7,956.75F$

$A = 265,225 + 7,956.75$

$= 273,181.75Frw$

34

Part (a)

$(i). Ang.ABD = (60^o \div 2) = 30^o$

$(ii). Ang.ADB = 180^o - (60^o + 30^o)$

$= 180^o - 90^o$

$= 90^o$

$(iii). Ang.DAE = (90^o \div 20) = 45^o$

$(b). \overline{AD} = (10cm \div 2) = 5cm$

$(c). = \frac{b \times h}{2} = \frac{(5 \times 8.7)}{2} = 21.75cm^2$

$(d). BAE = BAD + DAE$

$= 60^o + 45^o$

$= 105^o$

35

Part (a)

Distance covered by cyclist before motorist started moving

$D = S \times T = 15km/hr \times 2hr = 30km$

Time taken by motorist to catch up with cyclist

$T = \frac{D}{S_2 - S_1} = \frac{30km}{45-15} = \frac{30}{30} = 1hr$

Distance from Kigali covered when motorist overtake cyclist

$D = S \times T = 45km/hr \times 1hr = 45km$

Part (b)

$T = 8:00am + 2hr + 1hr$

$= 11:00am$

36

Part (a) *(Teacher'sguidance)*

Part (b)

$TSA = 2(LW + WH + LH)$

$= 2(12 \times 6 + 6 \times 5 + 12 \times 5)cm^2$

$= 2(72 + 30 + 60)cm^2$

$= 2 \times 162cm^2$

$= 324cm^2$

Part (b)

$V = L \times W \times H$

$= 12cm \times 6cm \times 5cm$

$= 360cm^3$

37

Part (a) *(Teacher'sguidance)*

Part (b)

$x - axis$

$5sq = 60min$

$1sq = (60 \div 5)min$

$= 12min$

$y - axis$

$5sq = 5km$

$1sq = 1km$

$(b). 23km = 4h\ (3 \times 12)min$

$= 4hr\ 36min$

$(c). = 7km$