YEAR 2014 WORKING AND ANSWERS

1

563,091
+ 36,909
600,000

2

(a). Thousands (b). 6,000,000
800,000
+ 26
6,800,026

3

$=\sqrt{2.25} = \sqrt{\frac{225}{100}} = \frac{15}{10} = 1.5$

4

$0.2hm^2 = \frac{2}{10} \times 10,000 = 2000m^2$
$4dam^2 = 4 \times 100 = 400m^2$
Therefore, $2000m^2 - 400m^2 = 1600m^2$

5

10 three = (1 x 3^1) + (0 x 3^0) = 3ten

B	N	R
2	3	1
2	1	1
	0	

= 11two

101_{two}
$+ 11_{two}$
1000_{two}

6

1h 90min
2h 30min
− 1h 45min
0h 45min

Minutes
60 + 30 = 90
90 − 45 = 45
Hours
2 − 1 = 1
1 − 1 = 0

7

$4x + x = 360^o - 90^o$
$5x = 270^o$
$\frac{5x}{5} = \frac{270^o}{5}$
$x = 54^o$

8

$= \frac{sum\ of\ items}{number\ of\ items}$

$= \frac{9+3+1+8+4+5}{6} = \frac{30}{6} = 5$

9

(a). Rectangle has 2 lines of symmetry

(b). A square has 4 lines of symmetry

10

(a). x = b (corresponding angles)

(b). a = c (alternate angles)

11

$4s = 18cm$
$\frac{4s}{4} = \frac{18}{4}$
$s = 4.5cm$

A = S x S
= 4.5cm x 4.5cm
= $20.25cm^2$

12

3	105
5	35
7	7
	1

105 = 3 x 5 x 7

13

$2x - 1 = 2 - x$
$2x + x = 2 + 1$
$3x = 3$
$\frac{3x}{3} = \frac{3}{3}$
$x = 1$

14

3	9	12	15
	3	4	5

HCF = 3 (only 3 can divide all the three numbers at once)

15

Total parts = 2 + 3 = 5

(a). Girls = $\frac{3}{5} \times 40$ = 24 girls

(b). Boys = $\frac{2}{5} \times 40$ = 16 boys

16

= 100% − 60% = 40% (weigh less)
Pupils weigh less = $\frac{40}{100} \times 1,200$
= 480 pupils

17

(a). 1 book = (2,400 ÷ 6) Frw= 400Frw
5,000Frw = (5,000÷ 400) = 12 books
(b). Bal = 5,000Frw − (400 × 12)Frw
= 5,000Frw − 4,800Frw
= 200Frw

18

$= \frac{28}{40} \times 100$

= 70%

19

$= \frac{6000}{20}$ = 300min $= \frac{300}{60}$ = 5 hours

20

$= \frac{3}{5} \times \frac{5}{4} \times \frac{4}{9} = \frac{1}{3}$

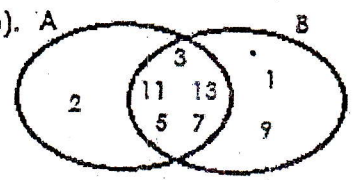
21

$= \frac{4 \times m \times p + 3 \times n}{n}$
$= \frac{4 \times 3 \times 2 + 3 \times 6}{6}$
$= \frac{24 + 18}{6} = \frac{42}{6} = 7$

22

(a). Set A = {2, 3, 5, 7, 11, 13}
Set B = {1, 3, 5, 7, 9, 11, 13}
A∩B = {3, 5, 7, 11, 13}

(b).



23

Teacher's guidance

24

P = SP − CP
= 66,000Frw − 55,000Frw
= 11,000Frw

$\%P = \frac{P}{CP} \times 100$
$= \frac{11,000}{55,000} \times 100$
= 20%

25

$TSA = 4\pi r^2$
$5544cm^2 = \frac{4 \times 22r^2}{7}$
$5544cm^2 \times 7 = 88r^2$
$\frac{5544cm^2 \times 7}{88} = \frac{88r^2}{88}$
$r^2 = 63cm^2 \times 7$
$\sqrt{r^2} = \sqrt{441cm^2}$
$r = 21cm$
$Vol = \frac{4}{3}\pi r^3$
$= \frac{4}{3} \times \frac{22}{7} \times 21cm \times 21cm \times 21cm$
$= 38,808cm^3$

26

(a). Angle ABC = Angle ACB = 45°

Angle CAD = 180°− (CDA + ACD)
= 180°− (90° + 45°)
= 180°− 135°
= 45°

(b). Triangle ABC is an Isosceles triangle

27

LCD = 300

$0.42 = \frac{42}{100} \times 300 = 126$.....(iii)

$\frac{11}{25} = \frac{11}{25} \times 300 = 132$.....(iv)

$\frac{12}{30} = \frac{12}{30} \times 300 = 120$.....(i)

$0.41 = \frac{41}{100} \times 300 = 123$.....(ii)

$= \frac{12}{30}, 0.41, 0.42, \frac{11}{25}$

28

(a). Actual Length = (10 x 6)m = 60m

(b). Actual width = (10 x 5)m = 50m

(c). Surface area = L x W

= 60m x 50m

= 3,000m²

29

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

$= \frac{20{,}000 \times 100}{2 \times 10}$

= 100,000Frw

A = P + I

100,000Frw

+ 20,000Frw

120,000Frw

30

$A = \frac{h}{2}(a + b)$

$= \frac{4cm}{2}(14cm + 6cm)$

= 2cm x 20cm

= 40cm²

31

Part (a)

$= 2a^2b - ac$

$= 2 \times a \times a \times b - a \times c$

$= 2 \times \bar{1} \times \bar{1} \times 2 - \bar{1} \times 3$

$= 4 + 3$

$= 7$

Part (b)

(i). Rectangle

(ii). Length = Length

$3x + 1 = x + 9$

$3x - x = 9 - 1$

$2x = 8$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

L = (4 + 9)cm = 13cm

W = (3 x 4 – 7)cm = (12 – 7)cm = 5cm

(iii). Perimeter and surface area

P = 2(L + W) = 2(13cm + 5cm) = 2 x 18cm = 36cm

A = L x W = 13cm x 5cm = 65cm²

32

Part (a)

Interest for 1st year

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

$= \frac{3{,}000{,}000 \times 1 \times 5}{100}$

= 150,000Frw

A = P + I

= 3,000,000Frw + 150,000Frw

= 3,150,000Frw

Interest for 2nd year

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

$= \frac{3{,}150{,}000 \times 1 \times 5}{100}$

= 157,500Frw

C.I = Total interest of (1styr + 2ndyr)

= 150,000frw + 157,500Frw

= 307,500Frw.

Part (b)

A = P + C.I

= 3,000,000Frw + 307,500Frw

= 3,307,500Frw.

33

Part (a)

$C = 2\pi r$

$44 = \frac{2 \times 22r}{7}$

$44 \times 7 = 44r$

$\frac{44 \times 7}{44} = \frac{44r}{44}$

$r = 7cm$

$V = \pi r^2 h$

$= \frac{22 \times 7cm \times 7cm \times 10cm}{7}$

$= 1{,}540cm^3$

Part (b)

$TSA = 2\pi r^2 + 2\pi rh$

$= \frac{2 \times 22 \times 7 \times 7}{7} + \frac{2 \times 22 \times 7 \times 10}{7}$

$= 308cm^2 + 440cm^2$

$= 748cm^2$

34

Part (a)

$Vol = \frac{b \times h}{2} \times L$

$= \frac{12cm \times 5cm}{2} \times 25cm$

$= 30cm^2 \times 25cm$

$= 750cm^3$

Part (b)

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

$= \sqrt{(5 \times 5) + (12 \times 12)}$

$= \sqrt{25cm^2 + 144cm^2}$

$= \sqrt{169cm^2}$

= 13cm

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

= (12 x 5)cm² + 25(5 + 12 + 13)cm²

= 60cm² + (25 x 30)cm²

= 60cm² + 750cm²

= 810cm²

35

Part (a)

Marks, x	Frequency, f	fx
8	4	32
10	6	60
11	3	33
12	4	48
15	1	15
16	2	32
	Total, f = 20	Total, fx = 220

Part (b)

Mode mark = 10

Part (c)

Mean $= \frac{Total\ fx}{Total\ f} = \frac{220}{20} = 11$