1	$\begin{array}{r} 770,000,000 \\ 818,000 \\ +\quad 555 \\ \hline 770,818,555 \end{array}$	**2**	$= (9 \times 9 \times 9) + (4 \times 4 \times 4 \times 4 \times 4)$ $= 729 + 1024$ $= 1,753$	**3**	$= (a \times a \times a) + (3 \times b \times b)$ $= (2 \times 2 \times 2) + (3 \times 2 \times 2)$ $= 8 + 12$ $= 20$

4	$\begin{array}{ccc} & 59 & \\ 15 & 60 & 75 \\ 16\,hr & 00\,min & 15\,sec \\ -\ 8\,hr & 25\,min & 55\,sec \\ \hline 7\,hr & 34\,min & 20\,sec \end{array}$	**5**	$2\ 3\ 5\ .\ 6$ Tenths Ones Tens Hundreds	**6**	$1 \times 6 \quad = 6$ $6 \times 6 \quad = 36$ $36 \times 6 \quad = \underline{216}$ $216 \times 6 = \underline{1296}$ Hint: Kept multiplying by 6

7	$1^{st}\,no. = \dfrac{20+6}{2} = \dfrac{26}{2} = 13$ $2^{nd}\,no. = \dfrac{20-6}{2} = \dfrac{14}{2} = 7$	**8**	$4k^\circ + 4k^\circ + 4k^\circ = 360^\circ$ $12k^\circ = 360^\circ$ $\dfrac{12k^\circ}{12} = \dfrac{360^\circ}{12}$ $k = 30^\circ$	**9**	$V = L \times W \times H$ $= 10m \times 4m \times 2m$ $= 80m^3$ Changing from m^3 to dast we divide by 10 $= (80 \div 10)$ $= 8\ dast$

10	**Part (a)** Let Alice's age be x || **3 years ago** $x + 4 = 17$ || $= 13 - 3$ $x = 17 - 4$ || $= 10\ years\ old$ $x = 13\ years$ **Part (b)** 6 years from now $= 10 + 6$ $= 16\ years\ old$	**11**	100 pupils $=$ 36 days 1 pupil $=$ (36×100) days 8 pupils $=$ $\dfrac{36 \times 100}{8}$ days $= 45\ days$	**12**	**Part (a)** $\dfrac{60}{100} \times 200 = 120$ **Part (b)** $= \dfrac{36 \div 4}{100 \div 4} = \dfrac{9}{25}$

13	$r = \dfrac{D}{2} = \dfrac{100}{2} = 50cm$ **Part (a)** $A = \pi r^2$ $= \dfrac{314}{100} \times 50cm \times 50cm$ $= 314 \times 5cm \times 5cm$ $= 7850cm^2$ **Part (b)** $= (7850 \div 10000)$ $= 0.785m^2$	**14**	$= \dfrac{4}{6} \times \dfrac{6}{8} \times \dfrac{6}{2}$ $= \dfrac{3}{2}$ $= 1\dfrac{1}{2}$	**15**	$1cm\ rep\ 50,000cm$ $8km\ rep\ \dfrac{8km}{50,000cm}$ $8km\ rep\ \dfrac{800,000cm}{50,000cm}$ $8km\ rep\ 16cm$ *Therefore the distance is 16cm*

16	$Each\ share = \dfrac{Total\ number}{Total\ shares}$ $= \dfrac{720}{2+7} = \dfrac{720}{9} = 80\ pupils$ $Boys = 80 \times 2 = 160$ $Girls = 80 \times 7 = 560$	**17**	**Part (a)** $8 \quad 5 = 1\ r\ 3$ $3 \quad 5 = 0\ r\ 3$ Therefore the answer is 33_{five} **Part (b)** $\begin{array}{r} 1\ 1\ 0_{two} \\ +\ 1\ 1_{two} \\ \hline 1\ 0\ 0\ 1_{two} \end{array}$	**18**	**Part (a)** $D = S \times T$ $D = \dfrac{30km}{hr} \times 6hr$ $D = 180km$ **Part (b)** $D = \dfrac{T.D}{T.T} = \dfrac{(180+180)km}{(6+4)hr}$ $= \dfrac{360km}{10hr} = 36km/hr$

19	$1^{st} = \dfrac{Sum}{Quot+1} = \dfrac{18}{2+1} = \dfrac{18}{3} = 6$ $2^{nd} = (1^{st} \times Quot)$ $= 6 \times 2$ $= 12$	**20**	First $+$ Second $=$ Mix table below	**21**	**Solid X** $D = \dfrac{M}{V} = \dfrac{20g}{25cm^3} = 0.8g/cm^3$ **Solid Y** $D = \dfrac{M}{V} = \dfrac{30g}{40cm^3} = 0.75g/cm^3$ *Solid X has greater density than solid Y*

Question 20 table:

First	+	Second	=	Mix
40	+	60	=	100
300		x		180

$(40 \times 300) + (60 \times x) = (100 \times 180)$
$12,000 + 60x = 18,000$
$60x = 18,000 - 12,000$
$60x = 6,000$
$\dfrac{60x}{60} = \dfrac{6,000}{60}$
$x = 100F/kg$

22

$$P = \frac{1 \times 100}{T \times R}$$

$$= \frac{90,000 \times 100}{3 \times 10}$$

$$= 300,000 Frw$$

23

$$Fr.fees = \frac{1}{2} \quad fr.rem = \frac{2}{2} - \frac{1}{2} = \frac{1}{2}$$

$$Fr.food = \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

$$Fr.svd = 1 - (fr.fees + fr.fd)$$

$$= 1 - \left(\frac{1}{2} + \frac{1}{6}\right)$$

$$= 1 - \left(\frac{3 + 1}{6}\right)$$

$$= \frac{6}{6} - \frac{4}{6}$$

$$= \frac{2}{6} = \frac{1}{3} \text{ equivalent to } 100,000$$

$$= 100,000 \times 3$$

$$= 300,000 Frw$$

24

Part (a)

$$DC = \sqrt{BC^2 - BD^2}$$

$$= \sqrt{(5 \times 5) - (4 \times 4)}$$

$$= \sqrt{25cm^2 - 16cm^2}$$
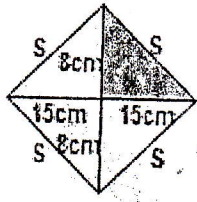
$$= \sqrt{9cm^2}$$

$$= 3cm$$

Note: $AD = DC = 3cm$

$$AC = AD + DC$$

$$= 3cm + 3cm$$

$$= 6cm$$

Part (b)

$$P = AB + BC + CA$$

$$= 5cm + 5cm + 6cm$$

$$= 16cm$$

25

Area

$$A = \frac{D_1 \times D_2}{2}$$

$$= \frac{16cm \times 30cm}{2}$$

$$= 420cm^2$$

Perimeter

$$S = \sqrt{(15 \times 15) + (8 \times 8)}$$

$$= \sqrt{225cm^2 + 64cm^2}$$

$$= \sqrt{289cm^2}$$

$$= 17cm$$

$$P = S \times 4$$

$$= 17cm \times 4$$

$$= 68cm$$

26

Area of wall to be painted

$$A = W \times H$$

$$= 20m \times 2.5m$$

$$= 50m^2$$

Paint needed to paint wall

$$1m^2 = 0.095 \text{ litres}$$

$$50m^2 = (50 \times 0.095) \text{ litres}$$

$$= 4.75 \text{ litres}$$

Wasted paint

$$= \frac{5}{100} \times 4.75$$

$$= 0.2375 \text{ litres}$$

Total paint needed

$$= wall\ paint + wasted\ paint$$

$$= 4.75 + 0.2375$$

$$= 4.9875 \text{ litres}$$

Cost of paint needed

$$1 \text{ litre} = 3000 Frw$$

$$4.9875\ l = \frac{49875}{10000} \times 3000$$

$$= 14962.5 Frw$$

$$\approx 14,963 Frw$$

$$\approx 15,000 Frw$$

27 *Teacher's guidance*

28

First year

$$I = \frac{2,000,000 \times 1 \times 4}{100} = 80,000F$$

$$A = 2,000,000 + 80,000 = 2,080,000F$$

Second year

$$I = \frac{2,080,000 \times 1 \times 4}{100} = 83,200F$$

$$A = 2,080,000 + 83,200 = 2,163,200F$$

Third year

$$I = \frac{2,163,200 \times 1 \times 4}{100} = 86,528F$$

Compound interest

$$= 80,000 + 83,200 + 86,528$$

$$= 249,728 Frw$$

Part (b)

$$A = P + C.I$$

$$= 2,000,000 + 249,728$$

$$= 2,249,728 Frw$$

29

Marks x	Frequency f	$f \times x$
0	4	(0 x 4) = 0
1	11	(1 x 11) = 11
2	6	(2 x 6) = 12
3	3	(3 x 3) = 9
4	2	(4 x 2) = 8
5	1	(5 x 1) = 5
6	2	(6 x 2) = 12
Total	Total f = 29	Total fx = 57

(b). Mean $= \frac{Tfx}{Tf}$

$$= \frac{57}{29}$$

$$= 1.97$$

$$= 2$$

(c). Mode = 1

30

a. {i, 0, 6, 5, t, j, 4, a, m }

b. {a, m, j, 4, d, f, e, k, g}

c. {5, t, j, 4}

d. {i, 0, 6, a, m, j, 4, 5, t, 1, n, d, f, 3}

e. {j, 4, d, i}

f. {j, 4}

g. {5, 6, j, 4, a, m}