

**Section A (40 Marks)**

**1** **Workout:**

$$\begin{array}{r}
 2042 \\
 + 2513 \\
 \hline
 9555
 \end{array}$$

**2** Write 71090 in words.  
Thousands      Units

71 090

Seventy one thousand  
ninety.

- 3** Find the sum of all triangular numbers less than 12.

$$= 1, 3, 6, 10$$

$$\begin{aligned}
 \text{Sum} &= 1+3+6+10 \\
 &= 20
 \end{aligned}$$

- 4** Find the number of elements in a set with 16 subsets.

$$\text{No. of } C = 2^n$$

$$16 = 2^n$$

$$2^4 = 2$$

$$4 = n$$

$\therefore n = 4$  elements

- 5** Write 0.00503 in standard form.

$$0.00503 \times 10 = 0.0503$$

$$0.0503 \times 10 = 0.503$$

$$0.503 \times 10 = 5.03$$

$$= 5.03 \times 10$$

- A school concert started at 9:30am and ended at 4:00pm. How long did the concert last?

$$ST = 9:30$$

$$00:00$$

$$ET = +4:00$$

$$12:00$$

$$1600$$

$$= 6\frac{1}{2} \text{ hours}$$

- 7** Using a ruler and a pair of compasses, construct an angle of  $135^\circ$ .

- 8** Given that  $n = 3$ ,  $m = -2$  and  $y = 8$ , find the value of  $mn$ .

$$mn$$

$$= -2 \times 3$$

$$= -6$$

$$y+m$$

$$= -6$$

$$8-2$$

$$= -6$$

$$= -1$$

$$= -1$$

$$= -1$$

- 9** Change 4.56 tonnes to kilograms

$$1 \text{ tonne} = 1000 \text{ kg}$$

$$4.56 = (4.56 \times 1000) \text{ kg}$$

$$4560$$

$$= 4560$$

$$\text{kg}$$

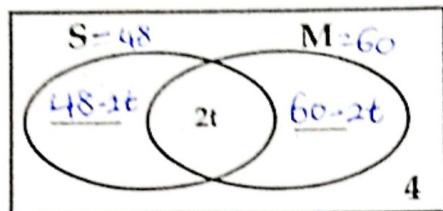
10	<p>In a box there are blue and red pens. The probability of picking a blue pen from the box at random is <math>\frac{5}{7}</math>. If there are 10 red pens in the box, find the total number of pens in the box.</p> <p><math>P(B) = \frac{5}{7}</math></p> <p><math>P(R) = \frac{2}{7} - \frac{5}{7} = \frac{2}{7}</math></p> <p>Let the total no be <math>x</math>.</p> $\frac{2}{7}x = 10$ $2x = 70$ $x = 35$ <p>total no of pens = 35</p>	11	<p>If today is Saturday. What day of the week will it be 50 days from now?</p> $6 + 50 = 56$ $56 \equiv 8 \text{ rem } 0$ $= 0 \text{ (finite)} \quad \therefore \text{The day will be Sunday.}$																					
12	<p>John and Peter were told to report to the police station after 15 days and 16 days respectively. After how many days will they report to the police station together again?</p> <table border="1" data-bbox="253 1021 499 1336"> <tr><td>2</td><td>15</td><td>16</td></tr> <tr><td>2</td><td>15</td><td>8</td></tr> <tr><td>2</td><td>15</td><td>4</td></tr> <tr><td>2</td><td>15</td><td>2</td></tr> <tr><td>3</td><td>15</td><td>1</td></tr> <tr><td>5</td><td>5</td><td>1</td></tr> <tr><td>1</td><td>1</td><td></td></tr> </table> $= 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 240 \text{ days}$	2	15	16	2	15	8	2	15	4	2	15	2	3	15	1	5	5	1	1	1		13	<p>Work out: <math>18.43 - 9.16 + 7.23</math></p> $= 18.43 + 7.23 - 9.16$ $= 25.66 - 9.16$ $\begin{array}{r} 18.43 \\ + 7.23 \\ \hline 25.66 \end{array}$ $\begin{array}{r} 25.66 \\ - 9.16 \\ \hline 16.50 \end{array}$ $= 16.5$
2	15	16																						
2	15	8																						
2	15	4																						
2	15	2																						
3	15	1																						
5	5	1																						
1	1																							
14	<p>Hadijah bought <math>1\frac{1}{2}</math> kg of rice at sh. 1800 for every a half kg. Find how much Peter spent altogether.</p> $\frac{1}{2} \text{kg} = \text{sh. } 1800$ $\frac{1\frac{1}{2}}{\frac{1}{2}} \text{kg} = (\frac{3}{2} \times 1800) \div \frac{1}{2}$ $= (\frac{3}{2} \times 1800) \div \frac{1}{2}$ $= 2700 \div \frac{1}{2}$ $= 2700 \times 2$ $= \text{sh. } 5400$	15	<p>Study the figure below and find the value of <math>x</math> in degrees.</p> $\frac{1}{2} \times \frac{53}{21} = 53^\circ$ $x = 53^\circ$ <p>Find <math>x</math></p> $\angle n = 74^\circ \text{ (corresponding)}$ $x + x + 74^\circ = 180^\circ$ $2x + 74^\circ = 180^\circ$ $2x + 74^\circ - 74^\circ = 180^\circ - 74^\circ$ $2x = 106^\circ$ $x = 53^\circ$																					

16	A motorist covers 150km in 2 hours. How long will he take to cover a distance of 450km?  150km take 2 hours 450km take $(\frac{3}{1} \times 2)$ hrs = 6 hours	17	Solve $\frac{2}{3} P^2 = 24$  $3 \times 2 P^2 = 24 \times 3$ $\frac{12}{7} P^2 = 24 \times 3$ $P^2 = 36$	$\sqrt{P^2} = \sqrt{36}$ $P = 6.$
18.	Workout the mean of -4, 0, 9, 4 and 6  mean = <u>sum of items</u> no. of items $= \frac{9+6+4+0+(-4)}{5}$ $= \frac{19-4}{5}$ $= 3$	19	The circumference of a circle is 132dm. Calculate its radius.  $C = 2\pi r$ $132 = 2 \times \frac{22}{7} \times r$ $7 \times 132 = \frac{44}{7} \times r$ $7 \times 132 = 44r$	$\frac{44r}{44} = \frac{7 \times 132}{44}$ $r = 7 \times 3$ $r = 21 \text{ dm}$
20.	Omoding covered a distance of 60km in 1 hour and 15 minutes. Calculate his speed.  $T = 1\frac{15}{60} \text{ hours}$ $T = 1\frac{3}{4} \text{ hours}$ $D = 60 \text{ km}$		$S = \frac{D}{T}$ $S = 60 \div \frac{5}{4}$ $S = 60 \times \frac{4}{5}$	$S = 12 \times 4$ $S = 48 \text{ km/hr}$

### Section B (60 Marks)

21	The list below shows prices of different items in a certain shop.  2kg of wheat flour at sh.8000 1kg of sugar at sh.4600 4 bars of soap at sh.14000 A half litre of milk at sh.900.  (a) How much money will Mafabi pay for 5kg of wheat flour? (02 marks)
	$2 \text{ kg at sh. } 8000$ $5 \text{ kg at sh. } (5 \times 8000)$ $= \text{sh. } 20000$
	(b) Nafula buys 1kg of sugar, 2 litres of milk and 4 bars of soap, how much does she pay? (03 marks)

- 22 In a class, 48 pupils like Science (S), 60 like Maths (M), 2t like both subjects while 4 do not like any of the two subjects. (a) Complete the Venn diagram. (02 marks)



- (b) If there are 100 pupils in the class, find the value of t (03marks)

$$48 - 2t + 2t + 60 - 2t + 4 = 100$$

$$48 + 60 + 4 - 2t = 100$$

$$112 - 2t = 100$$

$$112 - 112 - 2t = 100 - 112$$

$$\frac{+2t}{+2t} = \frac{-12}{-12}$$

$$t = 6.$$

- 23 Omondi deposited some money in a bank that offers a simple interest rate of 18% p.a. After 12 months, Omondi had an amount of sh.885,000 in the bank. (a) Calculate the amount of money Omondi deposited in the bank. (03marks)

$$A = P + S.I$$

$$S.I = A - P - \textcircled{1}$$

$$S.I = P \times R \times T - \textcircled{2}$$

put \textcircled{1} in \textcircled{2}

$$A - P = P \times R \times T$$

$$885000 - P = P \times \frac{18}{100} \times \frac{12}{12}$$

$$885000 - P = P \times \frac{18}{100} \times 1$$

$$\frac{100}{100} \times (885000 - P) = \frac{18}{100} P \times 100$$

$$18P = 88500000 - 100P$$

$$18P + 100P = 88500000 - 100P + 100P$$

$$\frac{118P}{118} = \frac{88500000}{118}$$

$$P = \text{sh. } 750,000$$

- (b) Calculate Omondi's interest. (02marks)

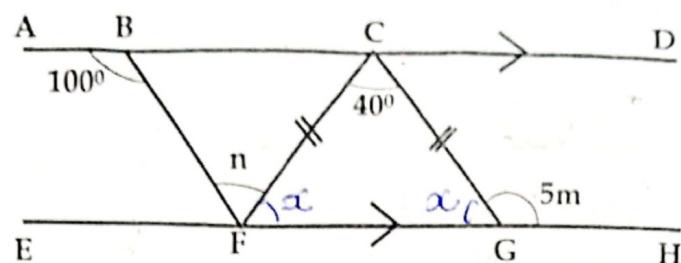
$$\text{Interest} = \text{Amount} - \text{principal}$$

$$= 885000 - 750,000$$

$$= \text{sh. } 135000$$

24

In the figure below, AD is parallel to EH. Study the figure and answer the questions that follow.



(a) Find the value of m.

$$\begin{aligned}x + x + 40^\circ &= 180^\circ \\2x + 40^\circ &= 180^\circ \\2x + 40^\circ - 40^\circ &= 180^\circ - 40^\circ \\2x &= 140^\circ \\x &= 70^\circ\end{aligned}$$

$$\begin{aligned}x + 5m &= 180^\circ \quad (03 \text{ marks}) \\70^\circ + 5m &= 180^\circ \\70^\circ - 70^\circ + 5m &= 180^\circ - 70^\circ \\5m &= 110^\circ \\m &= 22^\circ\end{aligned}$$

(b) Find the value of n.

$$\begin{aligned}n + x &= 100^\circ \\n + 70^\circ &= 100^\circ \\n + 70^\circ - 70^\circ &= 100^\circ - 70^\circ \\n &= 30^\circ \\∴ n &= 30^\circ\end{aligned}$$

25

Namenya filled a cylindrical tank with water using 10 containers of capacity 12.32 litres. If the base area of the cylindrical tank was  $616\text{cm}^2$ , find the height of the water in the cylindrical tank.

$$\begin{aligned}1 \text{ container} &= 12.32\text{L} \\10 \text{ containers} &= (10 \times 12.32)\text{L} \\&= 123.2\text{L}\end{aligned}$$

$$\begin{aligned}\text{Volume} &= \text{capacity} \times 1000 \\&= 123.2 \times 1000 \\&= 123200\text{cm}^3\end{aligned}$$

$$\begin{aligned}\sqrt{V} &= \text{base area} \times \text{height} \\123200 &= \frac{\text{base area}}{616} \times h \\200 &= h \\h &= 200\text{ cm}\end{aligned}$$

(05 marks)

26

Wanume went to the market with sh.70,000 and bought the items shown in the table below. He was given a discount of sh.500 and went back home with sh.2000.

Complete the table.

Item	Unit cost	Total cost
2kg of meat	sh 14000	sh 28000
3 fish	sh 6000	sh 18000
$1\frac{1}{2}$ kg of chicken	sh 15000	sh 22500
		sh 68500

Sh. 14000

$$\times \frac{2}{3} \\ \hline \text{Sh. } 28000$$

$$\begin{array}{r} \text{Sh. } 18000 \\ \hline 3 \\ = \text{Sh. } 6000 \end{array}$$

$$\begin{aligned} \text{Total expenditure} &= 70,000 - (2000) \\ &= 68000 + 500 \\ &= 68500 \end{aligned}$$

68500

746000

22500

22500

3%

= 22500  $\div \frac{3}{2}$

= 75

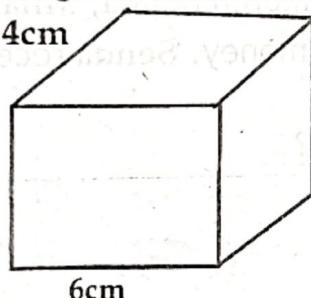
= 22500  $\times \frac{2}{3}$

= 15000

(05marks)

27

Study the figure below and use it to answer the questions that follow.



(a) Calculate its T.S.A.

(03marks)

$$\begin{aligned} \text{T.S.A.} &= 2(L \times W) + 2(L \times H) + 2(W \times H) \\ &= 2(6 \times 4) + 2(6 \times 5) + 2(4 \times 5) \\ &= 2(24) + 2(30) + 2(20) \\ &= 2 \times 24 + 2 \times 30 + 2 \times 20 \\ &= 48 + 60 + 40 \\ &= 148 \text{ cm}^2 \end{aligned}$$

(b) Work out its volume.

(02marks)

$$V = l \times w \times h$$

$$V = 6 \text{ cm} \times 4 \text{ cm} \times 5 \text{ cm}$$

$$V = 120 \text{ cm}^3$$

- 28 A parent spends  $\frac{2}{7}$  of her salary on food and the rest on fees. If she spends sh.210,000 more on fees than food. Calculate her total monthly salary. (05marks)

Let her monthly salary be  $m$ .

$$\begin{aligned} \text{Fees} &= \frac{2}{7}m \\ &= \frac{2}{7} \\ \text{more} &= \frac{5}{7} - \frac{2}{7} \\ &= \frac{3}{7} \end{aligned}$$

$$\begin{aligned} \frac{3}{7}m &= 210,000 \\ \frac{1}{7}m &= 210,000 \times 7 \\ \frac{1}{7}m &= \frac{210,000 \times 7}{7} \\ m &= \text{sh. } 490,000 \end{aligned}$$

- 29 The interior and exterior angles of a regular polygon are  $3d$  and  $2d$  respectively. Name the polygon.

$\begin{array}{c} 3d \\ \diagdown \\ 2d \end{array}$

$$\begin{aligned} 3d + 2d &= 180^\circ \\ 5d &= 180^\circ \\ \frac{5d}{5} &= \frac{180^\circ}{5} \\ d &= 36^\circ \end{aligned}$$

$$\begin{aligned} \text{ext+L} &= 2d \\ &= 2 \times 36^\circ \\ &= 72^\circ \\ n &= \frac{360^\circ}{\text{ext+L}} \\ n &= \frac{360^\circ}{72^\circ} \end{aligned}$$

$$n = 5 \text{ sides}$$

$\therefore$  It is a pentagon.

- 30 A mother shared part of her money to three children Senda, Mila, and Kilo. Mila received  $\frac{1}{3}$  while Kilo received  $\frac{1}{5}$  of the money. Senda received  $\frac{1}{2}$  of the remainder.

(a) What fraction of the money was shared out?

(03 marks)

Mila	Kilo	Remainder	Senda	Total
$\frac{1}{3}$	$\frac{1}{5}$	$\frac{15-8}{15}$	$\frac{1}{2} \times \frac{7}{15}$	$= \frac{8}{15} + \frac{7}{30}$

$$\begin{aligned} \frac{1}{3} + \frac{1}{5} &= \frac{5+3}{15} \\ &= \frac{8}{15} \end{aligned}$$

$$\begin{aligned} \frac{1}{2} \times \frac{7}{15} &= \frac{7}{30} \\ &= \frac{23}{30} \end{aligned}$$

(b) If the mother remained with sh49,000, how much money did she have at first?

Let her total amount at first be  $n$ .

$$\begin{aligned} &= \frac{30}{30} - \frac{23}{30} \\ &= \frac{7}{30} \\ \frac{7}{30} \times n &= 49000 \\ \frac{1}{30} \times n &= 49000 \times 30 \\ n &= 7000 \times 30 \\ n &= \text{sh. } 210,000 \end{aligned}$$

- 31 A man was 27 years older than his son 10 years ago. His wife is four years younger than he is. If their total age is 116 years now, how old is the son? Let the son's age be  $x$ . (04marks)

	son	man	wife	Total
10 years ago	$x$	$x+27$		
now	$x+10$	$x+27+10$	$x+37-4$	116

$$3x + 84 - 4 = 116$$

$$3x + 80 - 80 = 116 - 80$$

$$\frac{3x}{3} = \frac{36}{3}$$

$$x = 12$$

$$\therefore \text{Son} = 12 + 10$$

(b) How old is the wife? (01marks)

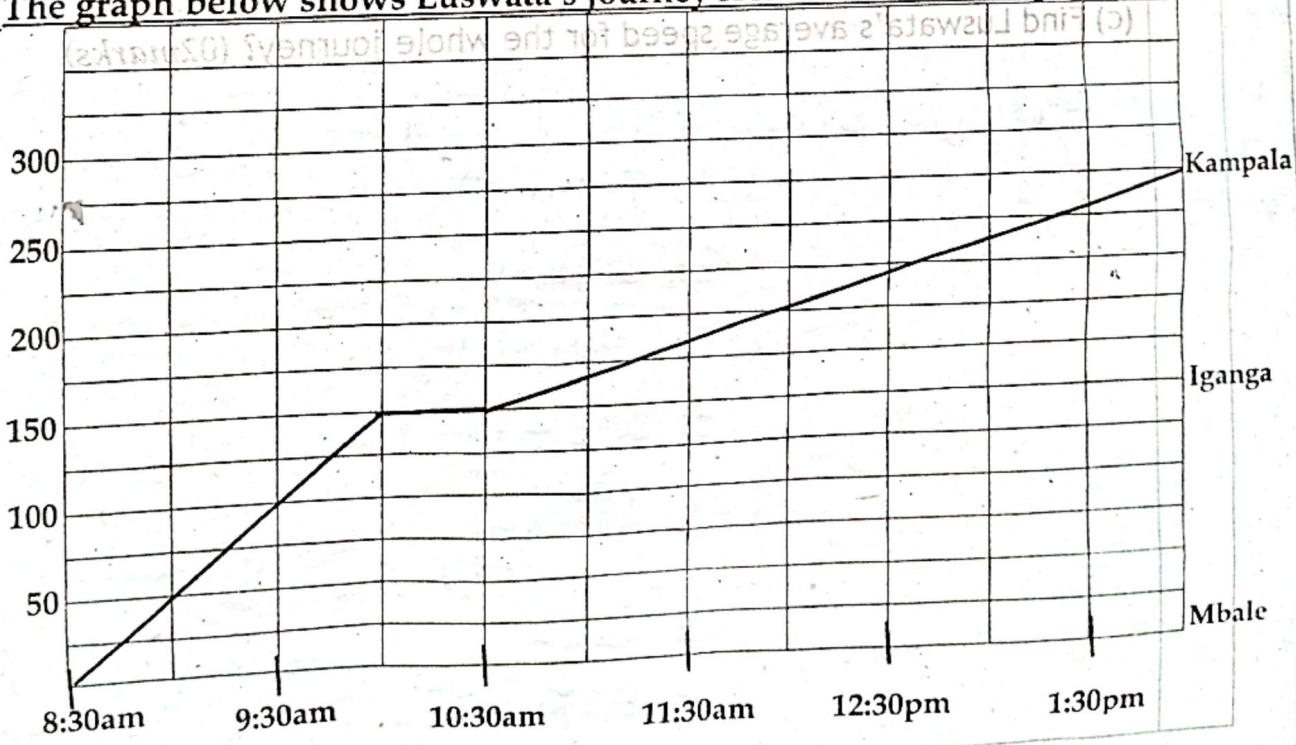
$$\text{wife} = x + 33$$

$$= x + 33$$

$$= 12 + 33$$

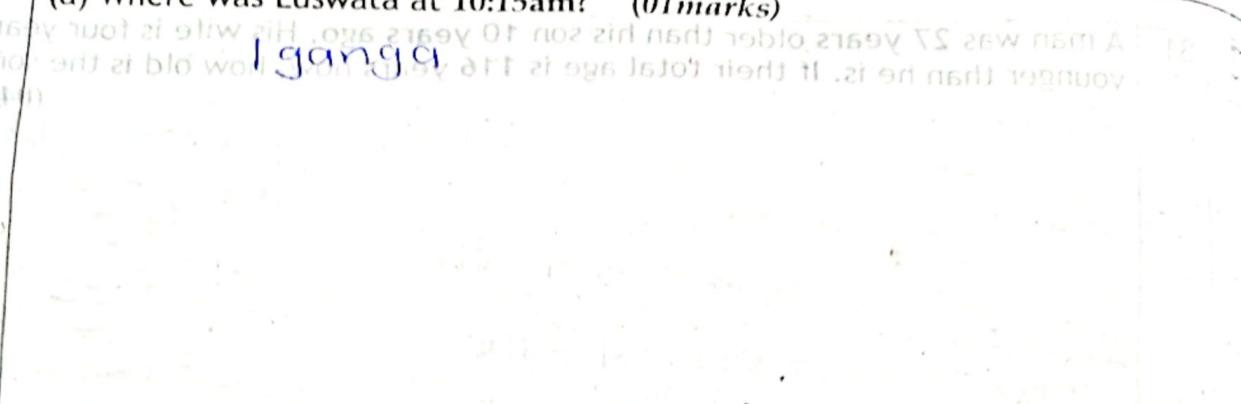
$$= 45 \text{ years.}$$

- 32 The graph below shows Luswata's journey from Mbale to Kampala via Iganga.



(a) Where was Luswata at 10:15am? (01marks)

Iganga



(b) At what speed was Luswata travelling ~~at~~ from Mbale to Iganga? (02marks)

$$D = 150 \text{ km}$$

$$T = 1\frac{1}{2} \text{ hours}$$

$$S = \frac{D}{T}$$

$$= 150 \div \frac{3}{2}$$

$$= 150 \times \frac{2}{3}$$

$$= 50 \times 2$$

$$= 100 \text{ km/hr}$$

(c) Find Luswata's average speed for the whole journey? (02marks)

Average Speed = total distance

total time

$$= \frac{275 \text{ km}}{5\frac{1}{2} \text{ hours}}$$

$$= 275 \div \frac{11}{2}$$

$$= \frac{275}{11} \times \frac{2}{1}$$

$$= 25 \times 2$$

$$= 50 \text{ km/hr}$$