

AREA OF FOCUS	TABLE OF CONTENTS	PAGES USED
The four basic operations	<ul style="list-style-type: none"> <li>• Addition, subtraction, multiplication and division</li> </ul>	1-4
Place value, approximation and estimation	<ul style="list-style-type: none"> <li>• Writing and correcting numbers to the nearest tenths, hundredths, thousandths, ones, tens, hundreds, thousands and expressing numbers up to four significant figures</li> </ul>	4-6
Metric system	<ul style="list-style-type: none"> <li>• Converting units of metric system from a higher digit to a lower one and viceversa</li> </ul>	6-8
Common fractions	<ul style="list-style-type: none"> <li>• Solving practical problems on fractions</li> <li>• Arranging fractions and numbers in ascending and descending order</li> </ul>	8-11
Types and properties of triangles and quadrilaterals	<ul style="list-style-type: none"> <li>• Drawing and identifying triangles and quadrilaterals.</li> <li>• Finding area and perimeter of a rectangle, triangle, square parallelogram, trapezium and a circle.</li> <li>• Calculation of a hidden measurement (dimension) when others are given.</li> </ul>	11-24
Volume and capacity	<ul style="list-style-type: none"> <li>• Calculation of volume and capacity</li> <li>• Finding the hidden measurement when others are given</li> </ul>	24-26
Time intervals	<ul style="list-style-type: none"> <li>• Definitions of the various time intervals; e.g golden jubilee, silver Jubilee and human generation etc.</li> <li>• Handling typical MANEB model questions on time intervals</li> </ul>	26-28

Distance, speed and time	<ul style="list-style-type: none"> <li>Calculation of time, speed and distance</li> </ul>	29
Profit and loss	<ul style="list-style-type: none"> <li>Calculation of loss and profit</li> <li>Handling typical MANEB questions on loss and profit</li> </ul>	29-31
Ratio and proportion	<ul style="list-style-type: none"> <li>Solving practical problems on common fractions in relation to ratio and proportion</li> </ul>	31-32
Graphs	<ul style="list-style-type: none"> <li>Drawing, plotting and interpreting graphs</li> </ul>	32-34
Averages	<ul style="list-style-type: none"> <li>Calculations of mean, mode and median</li> <li>Solving practical problems involving mean, mode and median</li> </ul>	34-36
Scale	<ul style="list-style-type: none"> <li>Scale drawing</li> <li>Interpreting scale</li> <li>Construction of figures according to the scale given</li> </ul>	36-40
Area of border	<ul style="list-style-type: none"> <li>Calculation of area of border when the measurements of a small and a big rectangle are given</li> <li>Calculation of area of the border when measurements of one rectangle and the width of the border are given.</li> <li>Knowledge of the other related words to area of border(shaded part, margin, uncovered part, path, flower bed and fire break)</li> <li>Calculation of the area of the border when 2 circles or triangles are given</li> </ul>	40-43
Simple accounts	<ul style="list-style-type: none"> <li>Entering and balancing cash account.</li> <li>Entering and balancing bank account</li> <li>Entering and balancing cash book</li> </ul>	43-46
Angles	<ul style="list-style-type: none"> <li>Drawing angles by turning using cardinal points</li> <li>Identifying types of angles made by turning</li> </ul>	46-48

## **FORWARD AND ACKNOWLEDGEMENT**

**THIS PAMPHLET HAS BEEN DESIGNED FOR CANDIDATES WHO ARE PREPARING TO SIT FOR STD 8 PSLCE EXAMS**

**THIS BOOKLET WAS ASSORTED AND COMPILED BY WICKSON MKANDA WIRE THE PEA PROFESSOR HEKELEHIKO MAMBO ONLY BINDED IT AND DESIGNED THE COVER PAGE PROFESSOR HEKELEHIKO KNOWS (HEBREW,GREEK,LATIN AND ARABIC): HEKELEHIKO studied in Hungary and did his Practical's in Thessalonica. He is able to speak Hebrew, Greek, Latin, Arabic and Aramaic. He has been a Lecture of Languages at University of Livingstonia for Five years by the time he is compiling this booklet;**

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**Prof: Hekelehikos explicit and acknowledgments of help in the composition of this volume is due to WICKSON MKANDA WIRE and Different Primary Teachers of **Euthini Zone** in the Inkosi Chindi Cheaf Dom. They have helped very much ,they were the first to Make all there Zone mock Exam OF 2019 last term to Hekelehiko Shop Which guided much to come up with this book .THE TWO WOMEN TEACHER THEIR NAMES-**

---

**and**

**THE TEACHER WASAUKA WHO WAS ALSO MY CLASS MATE AT EUTHINI SECONDARY SCHOOL, SPOKE GOOD OF ME UNTILL THE FIRST MOCK EXAM WAS HANDED TO OUR SHOP I CANT FORGET HIM.**

**WE THANK WICKSON FOR THE GOOD WORK HE HAD DONE. AND ALSO TO ACCEPT OUR TOKEN THAT WE GAVE HIM AS A THANK TO THE WORK DONE. HE WAS THE FIRST TO HAND HIS WORK TO BOOK ILI WANA WAKUKWELA CHOMENE MASAMU. WE HAVE RECEIVED WITNESS. LIKWIZANGA SUM BY SUM PA MAYESO**

## HANDLING TYPICAL PSLCE MANEB MODEL QUESTION FOR SECTION:

A

**TASK A: ON THE FOUR BASIC OPERATIONS (i.e.: +, -, × AND ÷)**

(1) Evaluate:  $8 - 4 \div 2 + 4$ .

- (A) 6, (B) 4, (C) 2, (D) 10

### WORKING

Evaluating  $8 - 4 \div 2 + 4$

$$= 8 - (4 \div 2) + 4$$

$$= 8 - 2 + 4$$

$$= \underline{10} \text{ Answer}$$

(2) Simplify:  $(0.2 + 35.5) \times 0.4$

- (A) 142.8, (B) 1.428, (C) 14, (D) 14.28

### WORKING

Simplifying:  $(0.2 + 35.5) \times 0.4$

$$= 35.7 \times 0.4$$

$$= 35.7$$

$$\times 0.4$$

$$= \underline{14.28} \text{ answer}$$

(3) Reduce 2 hours 20mins to minutes.

- (A) 220 mins, (B) 140 mins (C) 120mins  
(D) 230 mins

### WORKING

Reducing 2 hours 20mins to min.

Hours	Minutes
2	20
$\times 60$	$+120$
120	140

$$\therefore 2 \text{h } 20\text{mins} = \underline{140 \text{ minutes}}$$

(4) Simplify:  $1\frac{1}{8} - 2\frac{2}{5} \text{ of } \frac{1}{2}$

- (A)  $\frac{37}{40}$ , (B)  $\frac{29}{80}$ , (C)  $\frac{1}{2}$ , (D)  $1\frac{3}{4}$

### WORKING

Simplifying:  $1\frac{1}{8} - 2\frac{2}{5} \text{ of } \frac{1}{2}$

$$= 1\frac{1}{8} - (\frac{2}{5} \text{ of } \frac{1}{2})$$

$$= 1\frac{1}{8} - (\frac{2}{5} \times \frac{1}{2})$$

$$= 1\frac{1}{8} - \frac{1}{5}$$

$$= 1\frac{5-8}{40}$$

$$= \frac{45-8}{40}$$

$$= \frac{37}{40} \text{ Answer}$$

(5) Solve the inequality

$$2x - 3 \leq 5$$

- (A)  $x \leq 2$  (B)  $x \leq 4$  (C)  $x \leq 8$  (D)  $x \leq 6$

### WORKING

Solving  $2x - 3 \leq 5$

$$2x - 3 + 3 \leq 5 + 3$$

$$\underline{\underline{2x}} \leq \underline{\underline{8}}$$

$$\underline{\underline{2}} \leq \underline{\underline{8}}$$

$$X \leq 4 \text{ answer}$$

(6) By how much does the sum of 15.07 and 84.63 exceed 65.5?

- (A) 99.7 (B) 34.2 (C) 23 (D) 0.56

### WORKING

$$(15.07 + 84.63) - 65.5$$

$$\begin{array}{r} 15.07 \\ + 84.63 \\ \hline \end{array}$$

$$\begin{array}{r} 99.70 \\ - 65.5 \\ \hline \end{array}$$

$$\begin{array}{r} 34.2 \\ \hline \end{array}$$

2

∴ The sum of 15.07 and 84.63 exceeds 65.5.  
by 34.2 Answer

(7) Simplify:

(i)  $\frac{0.4 \times 0.12}{2.4}$   
(A) 0.5 (B) 0.02 (C) 0.6 (D) 0.2

### WORKING

Simplifying  $\frac{0.4 \times 0.12}{2.4}$

$$= \frac{(0.4 \times 10) \times (0.12 \times 100)}{(2.4 \times 1000)}$$
$$= \frac{4 \times 12}{2400}$$
$$= \frac{1}{50}$$

$$\begin{array}{r} 0.02 \\ \hline 50 \quad \boxed{1} \\ -0 \\ \hline 10 \\ -0 \\ \hline 100 \\ -0 \\ \hline 100 \end{array}$$

= 0.02 Answer

OR

Simplifying  $\frac{0.4 \times 0.12}{2.0}$

$$= \frac{(0.4 \times 10) \times 0.12}{(2.4 \times 10)}$$
$$= \frac{4 \times 0.12}{24}$$
$$= 0.12 \div 6$$
$$= \frac{0.02}{6}$$
$$= \frac{0.02}{12}$$
$$= \frac{1}{6}$$

= 0.02 Answer

(ii)  $0.25 \div 0.5$

- (A) 25, (B) 0.25, (C) 0.5, (D) 5

### WORKING

$$0.25 \div 0.5$$
$$= (0.25 \times 10) \div (0.5 \times 10)$$
$$= 2.5 \div 5$$

$$\begin{array}{r} 0.5 \\ \hline 5 \quad \boxed{2} \\ -0 \\ \hline 25 \\ \boxed{2} \\ -0 \\ \hline 0 \end{array}$$

∴ 0.25 ÷ 0.5 = 0.5 Answer

(7) Express  $0.26 \text{ dm}^3$  in litres if 1L is equal to  $1000 \text{ cm}^3$

NB: First change  $0.26 \text{ dm}^3$  to  $\text{cm}^3$  and then proceed calculating no. of litres.

$$0.26 \text{ dm}^3 = (0.26 \times 1000 \text{ cm}^3)$$
$$= 260 \text{ cm}^3$$

If  $1000 \text{ cm}^3 = 1\text{L}$   
∴  $260 \text{ cm}^3 = ? \text{ Litres}$

$$= \frac{260 \text{ cm}^3}{1000 \text{ cm}^3} \times 1\text{L}$$
$$= 0.26 \text{ litres}$$

(8) Express  $540^\circ$  in right angles.

- (A) 54 (B) 90 (C) 6 (D) 8

3

## WORKING

Expressing  $540^\circ$  in right angles.

$$= \frac{3}{4}$$

If  $90^\circ = 1$  right angle

$$\therefore 540^\circ = \frac{540}{90} \times 1 \text{ right angle}$$

$$\therefore 540^\circ = 6 \text{ right angles Answer}$$

(9) The area of a rectangle is  $120\text{cm}^2$ . If its width is 8cm, what is its length?

- (A) 56cm (B) 30cm (C) 52cm (D) 15cm

## WORKING:

To find length = Area of a rectangle  
Width

$$= \frac{120}{8} \text{ cm}^2 \\ = 15 \text{ cm}$$

$$\therefore \text{Length} = 15\text{cm Answer}$$

(10) Mrs Phiri gives  $\frac{1}{4}$  of a cake to her daughter,  $\frac{1}{6}$  to her son and  $\frac{1}{3}$  to her husband. What is the fraction of the cake left?

- (A)  $\frac{1}{6}$  (B)  $\frac{1}{4}$  (C)  $\frac{3}{10}$  (D)  $\frac{4}{9}$

## WORKING

Fraction given to daughter, son and Husband:

$$= \frac{1}{4} + \frac{1}{6} + \frac{1}{3} \\ = \frac{3+2+4}{12} \\ = \frac{9}{12}$$

$\therefore$  Fraction of the cake left:

Total Fraction — fraction given out.

$$= \frac{4}{4} - \frac{3}{4} \\ = \frac{1}{4}$$

$$\therefore \text{Fraction of the cake left} = \frac{1}{4} \text{ Answer}$$

CAN YOU NOW PRACTICE SOLVING THESE PROBLEMS BASED ON THE EXAMPLES ABOVE?

(a) Evaluate  $20+6 \div 2 + 5$

- (A) 8, (B)  $3\frac{5}{7}$ , (C) 28, (D) 21

✓ (b) Find the sum of : 12, 1.2, 2 and 7.5

- (A) 10.1 (B) 9.02 (C) 10.82, (D) 22.7

✓ (c) Simplify :  $\frac{3}{4} \div \frac{3}{16}$  of  $\frac{1}{2}$

- (A) 2 (B)  $\frac{1}{8}$  (C) 8 (D)  $2\frac{1}{2}$

(d) Solve the inequality  $3y + 3 \leq 15$

- (A)  $y \leq 4$  (B)  $y \leq 5$  (C)  $y \leq 6$  (D)  $y \leq 12$

(e) Simplify:  $\frac{5.6 \times 0.2}{0.004}$

- (A) 4.2 (B) 0.562 (C) 280 (D) 250

(f) By how much does the sum of 2.5 04 and 96.75 exceed 72.5?

- (A) 49.29 (B) 194.29 (C) 121.79 (D) 72.5

(g) Evaluate  $0.08 \div 0.016$

4

(A) 0.5 (B) 80 (C) 5 (D) 0.85

(h) Convert :

✓ (i) LXIV to Hindu – Arabic

(A) 44 (B) 64 (C) 49 (D) 54

(ii) 29 to Roman numeral.

(A) XXIX (B) XXIX (C) XIXX  
(D) XXXI

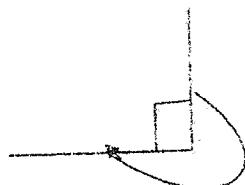
(I) Solve the equation  $2x - 7 = x + 2$

(A)  $x=3$ , (B)  $x=9$ , (C)  $x=5$ , (D)  $x=2$

(j) Divide 92 kg 15g by 7.

(A) 13kg17g (B) 18kg 13g (C) 20kg 45g  
(D) 13kg 145g

(k) The figure below shows an amount of turn



The turn shown is a \_\_\_\_\_ turn

(A)  $\frac{1}{4}$  (B)  $\frac{1}{3}$  (C)  $\frac{3}{4}$  (D) 1

Simplify:  $3t - 4r + t + 8r$

(A)  $8t + r$  (B)  $4r - 4t$  (C)  $4t + 4r$  (D)  $4t - 12r$

(m) The volume of water tank is  $60\text{m}^3$ . If the tank is 5m long and 3m high, find its width.

(A) 4m (B) 6m (C) 4.5 (D) 5m

5

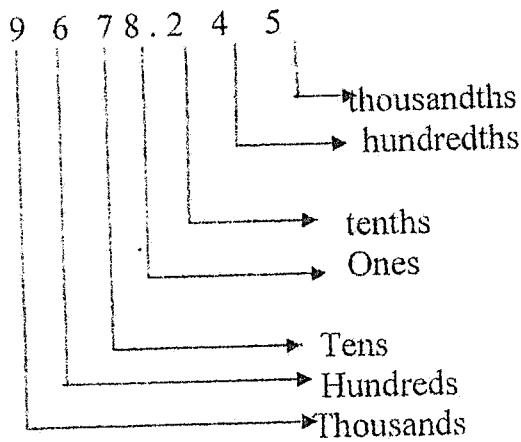
## (2) TASK: B

### AREA OF FOCUS:

PLACE VALUE, APPROXIMATION AND ESTIMATION.

### (a) PLACE VALUE OF NUMBERS

QUESTION: What is the value of each number in the figure given below: 9678.245



### (b) APPROXIMATION AND ESTIMATION

NOTE: (i)  $\frac{1}{10}$  as a decimal fraction is 0.1.

∴ Writing any figure correct to the nearest Tenth means correcting that given figure to one decimal place e.g.:

$9678.245 = 9678.2$  (This is correct to the nearest tenth)

(ii)  $\frac{1}{100}$  as a decimal fraction is 0.01

∴ writing any figure correct to nearest Hundredth means correcting that given Figure to two decimal places e.g.

$9678.527 = 9678.53$  (correct to the nearest hundredth)

(iii)  $\frac{1}{1000}$  as decimal fraction is 0.001

∴ Writing any figure correct to the nearest thousandth means writing that figure

Correct to three decimal places e.g:  
 $6985.4905 = 6985.491$  (correct to the nearest thousandth).

(IV) Writing any figure correct to the nearest one means writing that given figure  
Correct to the nearest whole number e.g.:

- (a)  $12.4 = 12$  correct to the nearest one  
Or whole number.
- (b)  $12.56 = 13$  correct to the nearest whole number or one.
- (c)  $6985.4895 = 6985$  (correct to the nearest whole number).
- (d)  $6985.856 = 6986$  (correct to the nearest whole number or one).

I.  
(v) Writing any figure correct to the nearest ten means taking any figure between 5 and 9 under ones column as ten e.g.  $15 = 20$ ; and representing any figure below four with a zero (0) e.g.  $14 = 10$ .

Other examples are as follows:

- (1)  $46 = 50$  (correct to the nearest ten )  
(2)  $43 = 40$  (correct to the nearest ten )  
(3)  $28.75 = 30$  ( correct to the nearest ten)  
(4)  $799.56 = 800$  (correct to nearest ten)  
(5)  $794.56 = 790$  (correct to the nearest ten)

(vi) Writing any figure correct to the nearest hundred means taking any figure 5 and 9 under tens column as one hundred; and anything below 5 represent it with a zero e.g.:  
 $56 = 100$  (correct to the nearest Hundred).

$45 = 0$  (correct to the nearest hundred);

$995 = 1000$  (correct to the nearest hundred)

$995.768 = 1000$  (correct to the nearest hundred).

(VII) Writing any figure correct to the nearest thousand means taking any figure between 5 and 9 under Hundreds column as one thousand; and anything below 5 to be regarded as a zero (0) e.g.

$995 = 1000$  (correct to the nearest thousand)

$3514 = 4000$  (correct to the nearest thousand).

$3465 = 3000$  (correct to the nearest thousand).

CAN YOU NOW PRACTISE SOLVING THESE PROBLEMS BASED ON THE ABOVE EXAMPLES.

Write:

- (1) 27 to the nearest ten  
(A) 30, (B) 28, (C) 27
- (2) 26 to the nearest ten  
(A) 27, (B) 30, (C) 26
- (3) 0.27 to nearest tenth  
(A) 0.37, (B) 0.3, (C) 2
- (4) 5 to the nearest ten  
(A) 5, (B) 6, (C) 10
- (5) 964.58 to the whole number  
(A) 964.5, (B) 964 (C) 965
- (6) 964.58 to the nearest one  
(A) 964.5 (B) 964 (C) 965
- (7) 23798 to the nearest thousand  
(A) 23800 (B) 24000 (C) 23798
- (8) 0.005 to the nearest thousandth

6

(A) 0.00546 (B) 0.0546 (C) 0.005

(9) 28974 to the nearest thousand  
(A) 28000 (B) 29000 (C) 29

(10) 6476874 to the nearest thousand  
Million:  
(A) 656874 (B) 6000000 (C) 6506874

### EXPRESSING NUMBERS UP TO FOUR SIGNIFICANT FIGURES

**NOTE:** When is zero (0) considered important?

It's when it is between the figures. For example:

A zero (0) is not significant when it is at the beginning of the given figure e.g. In 872103, the zero is important whereas in 0.0375, the two zeros at the beginning are insignificant.

It is for this reason that when we look at significant figures a zero is only counted as a figure when it is between numbers. Look at these specific examples:

(1) Write 872103 correct to four significant figures.

872100 (answer)

(2) Express 0.0307 correct to **two** significant figures. (0.031 answer)

(3) Write 19674 correct to 2 significant figures.

(20.000 answer)

### **CAN YOU TRY TO SOLVE THESE PROBLEMS ON SIGNIFICANT FIGURES**

(1) Write 89 correct to one significant figure.

(A) 9 (B) 90 (C) 8.9

(2) Write 89 correct to the nearest ten.  
(A) 9 (B) 90 (C) 8.9

(3) Write 2658 correct to one significant figure.  
(A) 2660 (B) 3000 (C) 265.8

(4) Write 2658 correct to three significant figures.  
(A) 2660 (B) 2.658 (C) 2600

(5) Write 2658 correct to two significant figures.  
(A) 2700 (B) 26.58. (C).2600

(6) multiply 1.2 by 0.42 and give your answer correct to two significant figures.  
(A) 0.504 (B) 0.50 (C) 0.51

(7) Write 78, 97684 correct to one significant Figure.

(A) 800 000, (B) 7.897684 (C) 7897680

(8) Write 12.56 correct to three significant figures.

(A) 1.25 (B) 12.6 (C) 13.0

(9) Find the total population of the three towns below and give your answer correct to three significant figures.

Mzuzu: 26576, Lilongwe: 4647 and Blantyre 62574.

(A) 0.33 (B) 0.3 (C) 136 000

(10) Express  $\frac{1}{3}$  as a decimal fraction and give Your answer correct to two significant figures.

(A) 0.33 (B) 0.3, (C) 0.333

(2) **TASK: C.**

### **AREA OF FOCUS: METRIC SYSTEM**

HEKELEHIKO PHOTO COPY AND STATIONARY TILI PA EKWENDENI,  
EUTHINI, CHAMPHIRA, LUNDAZI, KASUNGU ,BORERO NA ZOMBA

CELL:0882140920/0992316341

MZIMBA

**NOTE :**(i) The following are the various units of Measurements for:

- (a) Length is the metre
  - (b) Mass is the kilogram
  - (c) capacity is the litre
  - (d) volume is the cubic metre ( $m^3$ )
  - (e) area is the square metre ( $m^2$ )

(ii) Master these units in their sequence:

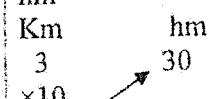
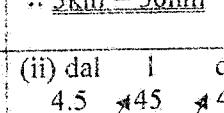
- (a) km hm dam m dm cm m (length)  
 (b) kg hg dag g dg cg mg (mass)  
 (c) kl hl dal l dl cl ml  
 (capacity)  
 (d)  $\text{km}^2$   $\text{hm}^2$   $\text{dam}^2$   $\text{m}^2$   $\text{dm}^2$   $\text{cm}^2$   
 mm (area)  
 (e)  $\text{km}^3$   $\text{hm}^3$   $\text{dam}^3$   $\text{m}^3$   $\text{dm}^3$   $\text{cm}^3$   $\text{mm}^3$   
 (volume)

### (iii) IMPORTANT RULES

- When changing units from a higher digit to a lower one, we multiply by 10 or power of 10.e.g

- (i) Convert 3km to hm
  - (ii) Express 4.5 decalitres to decilitres
  - (iii) Change  $4m^2\ 20cm^2$  to  $cm^2$
  - (iv) Change  $4m^3\ 20cm^3$  to  $cm^3$

## **WORKING:**

METHOD A	METHOD B
<p>(i) converting 3km to hm  <math>3 \text{ km} = 3 \times 10 \text{ hm} = \underline{\underline{30 \text{ hm}}}</math></p>	<p>(ii) converting 3km to hm</p>  $\begin{array}{r} \text{Km} & \text{hm} \\ 3 & \\ \times 10 & \\ \hline 30 & \end{array}$ <p><math>\therefore \underline{\underline{3 \text{ km} = 30 \text{ hm}}}</math></p>
<p>(ii) expressing 4.5 dal to dl  <math>4.5 \text{ dal} = 4.5 \times 100 \text{ dl}</math>  <math>\therefore \underline{\underline{4.5 \text{ dal} = 450 \text{ dl}}}</math></p>	<p>(ii) dal      l      dl</p>  $\begin{array}{r} 4.5 & 45 \\ \times 10 & \times 10 \\ \hline 45.0 & 450 \end{array}$

	$\therefore 4.5\text{dal} = 450\text{dl}$
(iii) change $4m^2 20cm^2$ to $cm^2$	(iii) changing $4m^2 20cm^2$ to $cm^2$
$4m^2 = (4 \times 10000) cm^2 = 40000 cm^2$ $20cm^2 = 20cm^2 = 20cm^2$ $\therefore 4m^2 20cm^2 = 40020cm^2$	$m^2 \quad dm^2 \quad cm^2$ 4      400      20 $\times 100 \nearrow \times 1000 \rightarrow +40000$ <u>400</u> <u>400000</u> <u>40020</u>
(iv) change $4m^3 20cm^3$ to $cm^3$	(iv) changing $4m^3 20cm^3$ to $cm^3$

- When changing units from lower digit to a higher one ,we divide by 10 or power of 10  
e.g.

- (i) Change 30hm to km.
  - (ii) Convert 450 dl to decalitres (dal)
  - (iii) Convert  $40020\text{cm}^2$  to  $\text{m}^2$ .
  - (iv) Express 4000 020  $\text{cm}^3$  in  $\text{m}^3$ .
  - (v) Change 7056 cg to decagrams (dag)

METHOD A	METHOD B
(i) changing 30hm to km  $30\text{hm} = \left(\frac{30}{10}\right)\text{km} = \underline{\underline{3\text{km}}}$	(i) changing 30hm to km  If $10\text{hm} = 1\text{km}$ $\therefore 30\text{hm} = \frac{30\text{ hm}}{10\text{ hm}} \times \frac{1\text{ km}}{1}$ $\therefore \underline{\underline{30\text{hm} = 3\text{km}}}$
(ii) converting 450 decilitres to decalitres  $450\text{dl} = \left(\frac{450}{100}\right)\text{decalitres}$	(ii) Converting 450dl to decalitres(dal)  If $100\text{dl} = 1\text{dl}$ $\therefore 450\text{dl} = \frac{450\text{ dl}}{100\text{ dl}}$

$$= 4.5 \text{ dal}$$

$$\therefore 450 \text{ dl} = \frac{45}{10} \text{ dal}$$

$$\therefore 450 \text{ dl} = 4.5 \text{ dal}$$

(iii) changing  $4\text{m}^2 20\text{cm}^2$   
to  $\text{m}^2$   
 $4\text{m}^2 = 4.0 \text{ m}^2$   
 $20\text{cm}^2 = \left(\frac{20}{10000}\right)\text{m}^2$   
 $= 0.002\text{m}^2$

$$\therefore 4\text{m}^2 20\text{cm}^2 = 4.002\text{m}^2$$

(iii) changing  $4\text{m}^2 20\text{cm}^2$   
to  $\text{m}^2$   
 $4\text{m}^2 = 4.0\text{m}^2$   
If  $10000 = 1\text{m}^2$

$$\therefore 20\text{cm}^2 = \frac{20\text{cm}^2}{10000\text{cm}^2} \times 1\text{m}^2$$

$$= \frac{2}{1000} = 0.002$$

$$\therefore 4\text{m}^2 20\text{cm}^2 = 4.002\text{m}^2$$

(iv) expressing  
 $4000020\text{cm}^3$  to  $\text{m}^3$   
 $4000020\text{cm}^3 = \frac{4000020\text{m}^3}{1000000}$

$$\therefore 4000020\text{cm}^3 = 4.00002\text{m}^3$$

(iv) expressing  
 $4000020\text{cm}^3$  to  $\text{m}^3$   
If  $1000000 = 1\text{m}^3$   
 $4000020\text{cm}^3 = \left(\frac{400020}{1000000}\right)\text{m}^3$

$$\therefore 4000020\text{cm}^3 = 4.00002\text{m}^3$$

(v) changing 7056cg to decagrams(dam)

$$7056\text{cg} = \frac{7056 \text{ dag}}{1000}$$

$$\therefore 7056\text{cg} = 7.056\text{dag}$$

(v) changing 7056cg to dag

$$\text{If } 1000\text{cg} = 1\text{dag}$$

$$\therefore 7056\text{cg} = \frac{7056 \text{ cg}}{1000} \times 1\text{dag}$$

$$\therefore 7056\text{cg} = 7.056\text{dag}$$

(4) Divide 9kg 5dag 1g by 7

- (A) 1kg 29dag 1g (B) 1kg 29dag 3g
- (C) 1kg 291g (D) 1kg 293g.

(5) Multiply 3hm 9m 82 cm by 12

- (A) 36hm 18m 84cm (B) 36hm 9m 82cm
- (C) 37hm 17m 84 cm (D) 37 hm 20cm

(6) Change  $5\text{m}^2$  to  $\text{dm}^2$

- (A)  $5\text{dm}^2$  (B)  $50\text{cm}^2$  (C)  $500\text{dm}^2$  (D)  $100\text{m}^2$

NB (a) if 1L of water occupies amount of space of  $1\text{dm}^3$  or  $1000\text{cm}^3$ , calculate how many Litres of waters are in a cuboid with the following volumes:

- (i)  $20\text{dm}^3$  (ii)  $8500\text{cm}^3$  (iii)  $350\text{ dm}^3$

(b) If 1L of water can occupy  $1000\text{cm}^3$  or  $1\text{dm}^3$  exactly, calculate the following:

- (i) How much volume in  $\text{cm}^3$  is a cuboid with a capacity of 20L, 3.5L and 10L?

#### TASK D:

#### AREA OF FOCUS: SOLVING PRACTICAL PROBLEMS ON FRACTIONS

- Look at the problem given below and study how it has been worked out and then later try to solve the proceeding related problems.

Example (a) In a class,  $\frac{3}{5}$  of the learners are girls, 20 learners are boys. How many girls are there?

#### IMPORTANT POINTS TO GRASP FROM THE PROBLEM GIVEN:

- Ask oneself these questions
- (a) If  $\frac{3}{5}$  of the class is for girls:

- (i) What is the total fraction for the whole class?

9

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(ii) What is the fraction for the boys if the girls' fraction is  $\frac{3}{5}$ .

(b) If 20 learners are boys, which fraction from above responses is equivalent to 20 learners?

(c) Is the answer, I am going to find, going to Be more or less?

**NB:** The leaner should have all these questions in his/her head before the problem is worked out. One has to make a decision as to whether the answer will be more or less. He/she should then decide which should be the numerator and denominator out of the two quantities that are being compared above. This now is the ratio.

#### WORKING:

$$\text{Number of learners} = \frac{5}{5}$$

$$\text{Number of girls} = \frac{3}{5}$$

$$\therefore \text{Number of boys} = \frac{5}{5} - \frac{3}{5} \\ = \frac{2}{5}$$

$$\text{If } \frac{2}{5} = 20 \text{ boys}$$

$$\therefore \frac{3}{5} = \frac{3}{5} \times \frac{20 \text{ girls}}{1}$$

$$= \frac{3}{5} \times \frac{5}{2} \times \frac{20}{1}$$

$$= 3 \times 5 \times 2 \text{ girls}$$

= 30 girls Answer

**NB:** For one to get the answer correct to problems like the one above, it should always be borne in mind to calculate (find) the right

fraction which is equivalent to the given number in the problem.

For example, the equivalent fraction to 20 boys is  $\frac{2}{5}$  in the above problem.

Look at this second example and note the point which has just been stressed above.

#### EXAMPLE: B

✓ In a class,  $\frac{2}{5}$  of the learners are boys; 30 learners are girls. How many boys are there?

#### WORKING:

$$\text{Number of learners} = \frac{5}{5}$$

$$\text{Number of learners} = \frac{2}{5}$$

$$\therefore \text{Number of girls} = \frac{5}{5} - \frac{2}{5} \\ = \frac{3}{5}$$

$$\text{If } \frac{3}{5} = 30 \text{ girls.}$$

$$\therefore \frac{2}{5} = \frac{2}{5} \times \frac{30 \text{ boys}}{1}$$

$$= \frac{2}{5} \times \frac{5}{3} \times \frac{10}{1} = 20 \text{ boys}$$

∴ They are 20 boys Answer

#### EXAMPLE C.

In a class,  $\frac{2}{5}$  of the learners are boys. If 20 are boys. How many learners are in this class?

#### WORKING:

$$\text{Fraction of boys in class} = \frac{2}{5}$$

$$\text{Actual number of boys} = 20$$

10

Total fraction of all learners =  $\frac{5}{5}$

If  $\frac{2}{5} = 20$  learners (boys)

$$\therefore \frac{5}{5} (\text{Whole class}) = \frac{5}{2} \times 20 \text{ learners}$$

$$= \frac{5}{5} \times \frac{5}{2} \times \frac{20}{1} \text{ learners}$$

$$= 5 \times 10 \text{ learners}$$

$$= 50 \text{ learners}$$

i. In a class, there are 50 learners.

CAN YOU TRY TO SOLVE THESE PROBLEMS WHICH HAVE BEEN BASED ON ABOVE EXAMPLES?

(1) After spending  $\frac{1}{8}$  of her money, Jane remainder with K5, 600. How much money had she at first?

(A) K44800 (B) K 6400, (C) K 700

(2) In a class,  $\frac{7}{9}$  of the learners put on shoes. If 16 learners do not put on shoes, how many learners are in the class?

(A) 72 (B) 100 (C) 56

(3) Tupa, Maria and Mwai shared a sum of money as follows: Tupa got  $\frac{1}{2}$  of the money. Maria got  $\frac{2}{3}$  of the remainder. How much did Maria and Mwai get if Tupa got K180? (A) K180 and K60, (B) K120 and K60, (c) K180 and K 360

(4) In a khola,  $\frac{2}{3}$  of the goats were white and the rest were black. If there were 10 black goats, how many goats were there altogether?

(A) 60 goats, (B) 15 goats, (C) 30 goats (D) 90 goats

(5) Jane covered  $\frac{1}{5}$  of the journey. If she had 20 km to cover, what was the total distance of the whole journey?

(A) 75 km (B) 80km (C) 100km (D) 25 km

(6) After spending  $\frac{3}{7}$  of her salary on water bill, Mrs Tembo remained with K28000. what is her salary?

(A) K40000 (B) K12000 (C) K49000

#### TASK E:

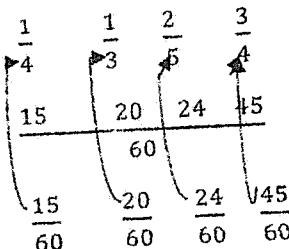
AREA OF FOCUS: ARRANGING FRACTIONS AND NUMBERS IN ASCENDING AND DESCENDING ORDER.

(a) Writing fractions or any given numbers in ASCENDING ORDER means beginning writing with the smallest and ending with the largest.

Example 1: Arrange the following fractions in ascending order:

$$\frac{1}{4}, \frac{1}{3}, \frac{2}{5} \text{ and } \frac{3}{4}$$

Assist learners to come up with the lowest common denominator and then let them make judgement as to which fraction to start and end with: e.g



∴ Writing the fractions above in ascending order

$$= \frac{1}{4}, \frac{1}{3}, \frac{2}{5} \text{ and } \frac{3}{4}$$

(b) Writing a given set of numbers or fractions in descending order means beginning writing with the largest and ending with the smallest number. For example:

$\frac{1}{4}, \frac{1}{3}, \frac{2}{5}$  and  $\frac{3}{4}$  arranging in descending

Order is:  $\frac{3}{4}, \frac{2}{5}, \frac{1}{3}$  and  $\frac{1}{4}$ .

### RIGHT! NOW HAVE PRACTICE ON THESE:

(i) Arrange the following in ascending orders:

$$\frac{1}{2}, \frac{1}{20}, \frac{7}{8}, \frac{3}{7} \text{ and } \frac{1}{4}.$$

(ii) Arrange in descending order:

$$\frac{1}{2}, \frac{1}{20}, \frac{7}{8}, \frac{3}{8}, \text{ And } \frac{1}{4}$$

(iii) Arrange: XL, CM, D, and DCXX in ascending order.

(iv) Arrange: XL, CM, DCM and D in descending order.

(v) Arrange: 0.5, 0.8, 0.725 and 0.25 in ascending order.

(vi) Arrange: 0.425, 0.8, 0.125 and 0.5 in descending order.

12

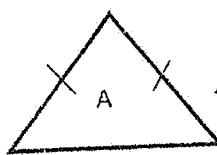
### HANDLING TYPICAL PSLCE MANEB MODEL QUESTIONS FOR EITHER SECTION A OR B.

#### TASK: A

AREA OF FOCUS: IDENTIFYING TYPES AND PROPERTIES OF TRIANGLES AND QUADRALSATERALS:

##### (1) TRIANGLES

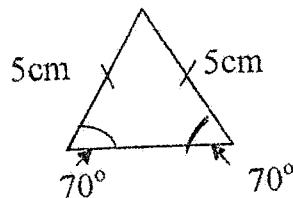
(i)



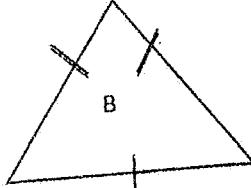
A is isosceles triangle

Properties of an isosceles triangle

- (a) Two sides are equal.
- (b) Two angles are equal.



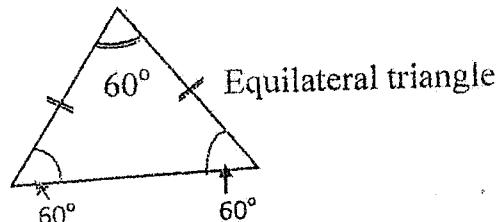
(ii)



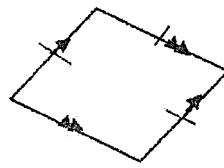
B is an equilateral triangle

Properties of equilateral triangle:

- All the three sides of a triangle are equal.
- All three angles are equal and are  $60^\circ$  each



(c) A RHOMBUS



Properties of a rhombus:

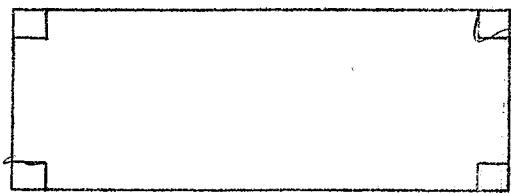
- All the four sides are equal
- A pair of opposite sides is parallel.
- The corners are not straight i.e. do not make  $90^\circ$

Properties of scalene triangle:

- (a) All the three sides are different.
- (b) All the angles are different.

✓ (II) IDENTIFYING QUADRILATERALS:

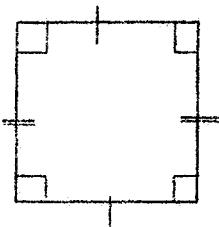
(a) A RECTANGLE:



Properties of a rectangle:

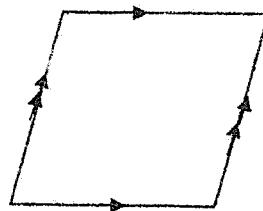
- A pair of opposite sides are equal and parallel
- The corners form  $90^\circ$  or are right angles.

(b) A SQUARE



- All the four sides are equal and parallel.
- The corners form  $90^\circ$  (They are straight forming right angles).

(D) A PARALLELOGRAM



Properties of a parallelogram

A pair of its opposite sides are equal and parallel.

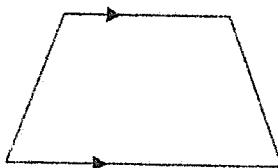
(E) A KITE



Properties of a kite

- A pair of its adjacent sides are equal
- A pair of its opposite angles are equal

(F) A TRAPEZIUM

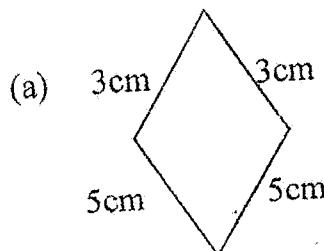


13

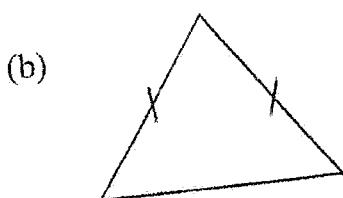
properties:

- Only a pair of its opposite sides are parallel.

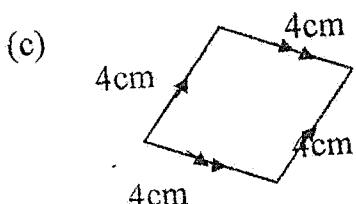
CAN YOU NOW IDENTIFY THE GEOMETRICAL SHAPE SHOWN BELOW?  
WHAT IS ITS NAME?



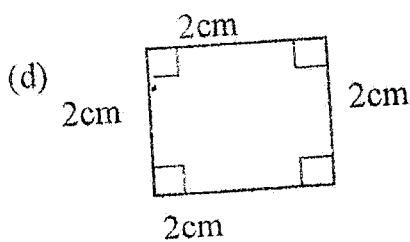
a is \_\_\_\_\_



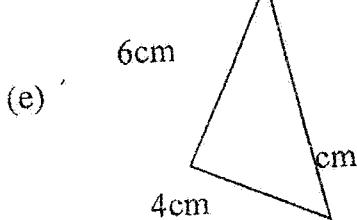
b is \_\_\_\_\_



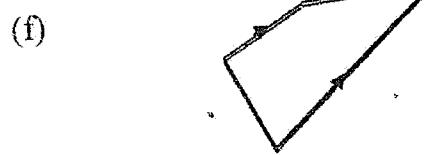
c is \_\_\_\_\_



d is \_\_\_\_\_



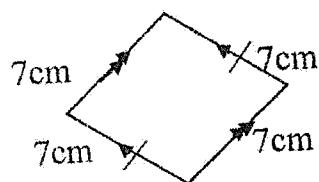
e is \_\_\_\_\_



f is \_\_\_\_\_



g is \_\_\_\_\_



h is \_\_\_\_\_

**TASK :B:**

**AREA OF FOCUS: CALCULATION OF AREA OF A RECTANGLE, TRIANGLE, SQUARE, PARALLELOGRAM, TRAPEZIUM AND A CIRCLE.**

**THOUGHT PROVOKING QUESTION:**

How many msekeses leaves of this size can be used on the ground to cover this  
Amount of surface area:



This illustration simply demonstrates the concept of area. Instead of using leaves, hands or anything we may choose to use, a square metre ( $m^2$ ) is used as standard measure in metric system.

For smaller surfaces or bigger surfaces, we may also use the  $cm^2$ ,  $mm^2$ ,  $hm^2$ ,  $dam^2$  etc.

14

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### (a) calculation of an area of a rectangle

(i) Find area of a rectangle 8m long by 4m wide.

#### WORKING:

$$\begin{aligned}\text{Area of a rectangle} &= L \times B \\ &= 8\text{m} \times 4\text{m} \\ &= 32\text{m}^2\end{aligned}$$

(ii) The area of rectangle is  $32\text{m}^2$ . If its width is 4m, calculate its length.

#### WORKING:

$$\begin{aligned}\text{To find length of a rectangle} &= \frac{\text{Area}}{\text{Width}} \\ L &= \frac{32\text{m}^2}{4\text{m}} \\ L &= 8\text{m}\end{aligned}$$

$$\underline{\text{Length}} = 8\text{m} \text{ Answer}$$

(iii) A rectangular lawn has an area of  $29\text{m}^2$ . Calculate its length correct to one decimal place if its width is 4m.

#### WORKING:

$$\begin{aligned}\text{To find length of a rectangle} &= \frac{\text{Area}}{\text{Width}} \\ L &= \frac{29\text{m}^2}{4\text{m}}\end{aligned}$$

$$\underline{\text{Length}} = \frac{29\text{m}^2}{4\text{m}}$$

$$\begin{array}{r} 7.25\text{m} \\ \hline 4 \quad | \quad 29 \\ \quad 28 \\ \hline \quad 10 \\ \quad - 8 \\ \hline \quad 20 \\ \quad - 20 \\ \hline \quad 0 \end{array}$$

15

$$\underline{\text{Length}} = 7.25\text{m}$$

$\therefore \text{Length} = 7.3\text{m}$  (correct to one decimal place) **Answer**

Need for thinking beyond the horizon of MANEB maths on area of a rectangle! These are typical maths PSLCE model questions which learners fail to handle.

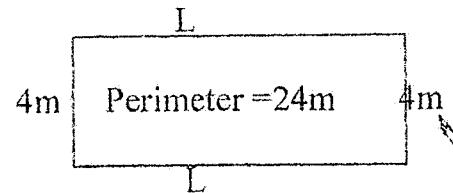
(a) The perimeter of a rectangular lawn is 24m. Calculate its area if its width is 4m.

Before the learner can start working out the problem, he/she should raise these questions:

- What is the formula for finding area of a rectangle?
- What is it that is given in this problem?
- What is it that is missing in the question?
- What was done to find the given fact?
- What should I do to find the missing measurement i.e. the length?

**NB:** These questions come to test if learners can apply gained knowledge from area and perimeter of a rectangle already covered.

#### WORKING: METHOD (A)



$$L + L + W + W = 24\text{m}$$

$$2L + 4\text{m} + 4\text{m} = 24\text{m}$$

$$2L + 8\text{m} = 24\text{m}$$

$$2L + 8\text{m} - 8\text{m} = (24 - 8)\text{m}$$

$$\underline{\underline{\frac{2L}{2}}} = \frac{16\text{m}}{2}$$

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$$\therefore \text{length} = 8\text{m}$$

To find the area of a rectangle =  $L \times B$

$$= 8 \times 4\text{m}^2$$

$$= 32\text{m}^2 \text{ Answer}$$

### METHOD (B)

Perimeter of a rectangle =  $2(L+B)$

$$\begin{array}{lcl} \text{Perimeter given} & = 24\text{m} \\ \text{width given} & = 4\text{m.} \end{array}$$

$$\text{If } 2(L+B) = 24\text{m}$$

$$\therefore 2(L+B) = 24\text{m}$$

$$2L + (2 \times 4)\text{m} = 24\text{m}$$

$$2L + 8\text{m} = 24$$

$$2L + \cancel{8\text{m}} - \cancel{8\text{m}} = (24 - 8)\text{m}$$

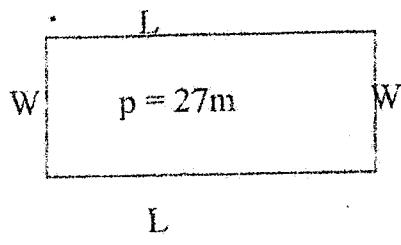
$$\frac{2L}{2} = \frac{16\text{m}}{4}$$

$$L = 8\text{m}$$

To find area of a rectangle =  $L \times B$

$$\begin{array}{l} = (8 \times 4)\text{m}^2 \\ = 32\text{m}^2 \text{ Answer} \end{array}$$

(b) The rectangular flower bed has a perimeter of 27m. Calculate its area if its length is twice as long as its width.



### METHOD A:

Ratio of length to width

$$= 2 : 1$$

$\therefore$  Total ratio of all the sides of a rectangle

$$= L + W + L + W$$

$$= 2 + 1 + 2 + 1$$

$$= 6$$

To find its length

$$\text{Length} = \frac{2}{6} \times \text{perimeter}$$

$$L = \frac{2}{6} \times \frac{27}{1}\text{m}$$

$$\text{Length} = 9\text{m}$$

To find width =  $\frac{1}{6} \times 27\text{m}$

$$W = \frac{1}{6} \times \frac{27}{1}$$

$$\frac{1}{2}$$

$$W = \frac{9\text{m}}{2} = 4.5\text{m}$$

$$\text{Width} = 4.5\text{m}$$

$\therefore$  Area of a rectangle

$$= L \times B$$

$$= 9 \times 4.5\text{ m}^2$$

$$= 40.5\text{ m}^2 \text{ Answer}$$

### METHOD B:

Ratio of  $L : W = 2 : 1$

Perimeter of a rectangle

$$= 2(L + B)$$

$$= 2(2 + 1)$$

$$= 2 \times 3$$

$$= 6$$

To find length =  $\frac{2}{6} \times \text{perimeter}$

$$\frac{2}{6} \times \frac{27}{1}\text{m}$$

$$L = 9\text{m}$$

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16

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To find width =  $\frac{1}{6} \times 27\text{m}$  perimeter

$$\begin{aligned} &= \frac{1}{6} \times \frac{9}{1} \text{m} = \text{Area of a rectangle} \\ &= \frac{9}{2} \text{m} \\ &= 4.5 \text{ m} \end{aligned}$$

Area of a rectangle =  $L \times B$   
 $= 9\text{m} \times 4.5\text{m}$   
 $= 40.5\text{m}^2$  Answer

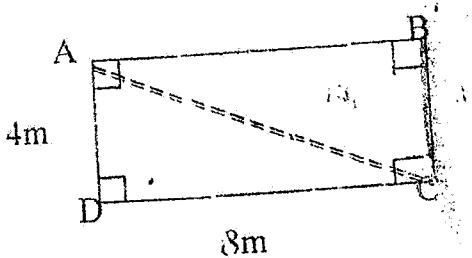
### (b) CALCULATING AREA OF TRIANGLE

To find area of triangle  
 $= \frac{1}{2} \text{ base} \times \text{height}$  or  $= \frac{1}{2} b \times h$

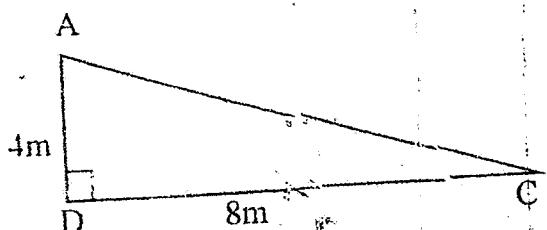
Questions to raise:

- (i) Where does the  $\frac{1}{2}$  come from?
- (ii) Where do the base and height come from?

N.B. Look at the diagram of a rectangle which has been divided into two equal parts.



$$\begin{aligned} AB &= DC \text{ (Lengths)} \\ AD &= BC \text{ (Widths)} \end{aligned}$$



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- Area of triangle is  $\frac{1}{2}$  area of the rectangle. That is why we use  $\frac{1}{2}$  when calculating area of a triangle.
- The width of a rectangle becomes a height in a triangle.
- The length of a rectangle becomes base in a triangle.

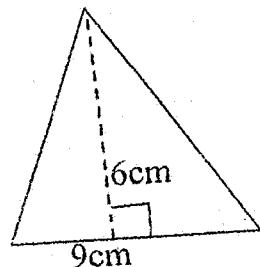
(1) Find area of a triangle whose base is 8m and height is 4m.

To find area of a triangle  
 $= \frac{1}{2} b \times h$

$$= \frac{1}{2} \times \frac{8}{1} \text{m} \times \frac{4}{1} \text{m}$$

Area of a triangle = 16m<sup>2</sup> Answer

(2) Calculate the area of a triangle below



Area of a triangle

$$= \frac{1}{2} b \times h$$

$$= \frac{1}{2} \times \frac{9}{1} \text{cm} \times \frac{6}{1} \text{cm}$$

= 27 cm<sup>2</sup> Answer

THINKING BEYOND MANEB PSLCE TACTICS ON THIS SECTION (TRIANGLE)

(1) A triangle has an area of 27cm<sup>2</sup>. If its base is 9cm, calculate its height.

17

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## WORKING:

$$\text{Area of triangle} = 27 \text{ cm}^2$$

$$\text{Base given} = 9 \text{ cm}$$

∴ To find height of a triangle

$$= \frac{2 \times \text{Area}}{\text{Base}}$$

$$= \frac{2 \times 27}{9} \text{ cm}^2$$

$$= 6 \text{ cm} \quad \text{Answer}$$

**NB** Why do we multiply the area of a triangle by 2 before carrying out division by a given measurement?

Response: We want to have the original rectangle from which the triangle was made.

(2) A triangle whose height is 6cm has an area of  $27 \text{ cm}^2$ . Calculate its base.

$$\text{Area of triangle} = 27 \text{ cm}^2$$

$$\text{Height of a triangle} = 6 \text{ cm}$$

$$\therefore \text{To find base} = \frac{2 \times \text{Area}}{\text{Height}}$$

$$\text{Base} = \frac{2 \times 27}{6} \text{ cm}^2$$

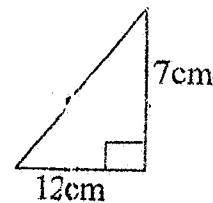
$$\text{Base} = 9 \text{ cm} \quad \text{Answer}$$

## TYPICAL MANEB MODEL PSLCE QUESTIONS IN RELATION TO THE TRIANGLE (i.e when one dimension is hidden)

(1) A triangle whose area is 16 cm has a height of 4cm. Calculate its base.

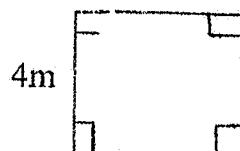
(2) The triangular lawn has an area of  $24 \text{ dm}^2$ . Find its height if its base is  $8 \text{ dm}^2$

(3) Calculate the area of the figure given below



## (C) CALCULATING AREA OF SQUARE

(1) Calculate area of a square whose side length is 4m



$$\text{Area of a square} = L \times L \text{ or } L^2$$

$$= 4 \text{ m} \times 4 \text{ m}$$

$$= 16 \text{ m}^2 \quad \text{Answer}$$

(2) Find the area of a square whose side is 8m.

(b) Calculate its perimeter

## WORKING:

(i) Area of a square

$$= L \times L$$

$$= 8 \text{ m} \times 8 \text{ m}$$

$$= 64 \text{ m}^2$$

(ii) Perimeter of square is

$$= 4 \times L$$

or

$$= 2(L + B)$$

$$= 4 \times 8 \text{ m}$$

$$= 32 \text{ m}$$

(3) The perimeter of a square is 32m. calculate its area

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**:0882140920, 0992316341**

**13 MZIMBA**

### WORKING:

$$\begin{aligned}\text{Perimeter of a square} &= 4 \times L \\ &= 4L \\ \text{Perimeter given} &= 32\text{m}\end{aligned}$$

$$\text{If } 4L = 32 \text{ m}$$

$$\therefore L = \frac{32}{4} \text{m}$$

$$\underline{\text{Length}} = 8\text{m}$$

$$\text{Area of a square} = L \times L$$

$$= 8\text{m} \times 8\text{m}$$

$$= 64\text{m}^2 \underline{\text{Ans}}$$

**THINKING BEYOND PSLCE MANEB TACTICS HORIZON. (TRY TO WORK OUT THESE PROBLEMS)**

(1) Calculate area of a square whose length is 5m.

(2) The perimeter of a square is 20m.

Caculate:

(i) Its length:

(ii) Its area:

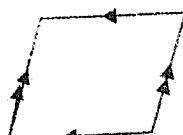
(3) The area of a square is  $25\text{dm}^2$ . Find:

(i) It length of one side of the square.

(ii) Its perimeter.

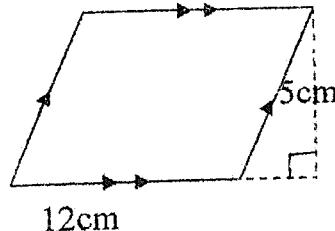
### **(D) CALCULATING AREA OF A PARALLELOGRAM.**

- A parallelogram is a quadrilateral (four-sided figure) whose opposite sides are parallel and equal.



A parallelogram

(1) Find the area of the parallelogram below



Area of the parallelogram

= Base x Height .

$$= 12\text{cm} \times 5\text{cm}$$

$$= 60\text{cm}^2 \underline{\text{Ans}}$$

(N.B.) The perpendicular distance (height or a straight line which stands on the base and forms  $90^\circ$  angle) is the same in length between the parallel sides of the parallelogram.

(2) The area of a parallelogram is  $60\text{cm}^2$ .

If perpendicular distance (height) between the parallelogram sides is 5cm, calculate its base.

$$\text{Area of the parallelogram} = 60\text{cm}^2$$

$$\text{Height} = 5\text{cm}$$

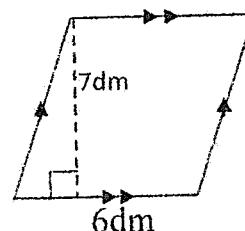
$$\therefore \text{To find base} = \frac{\text{Area}}{\text{Height}}$$

$$= \frac{12}{5} \text{cm}$$

$$\underline{\text{Base}} = 12\text{cm Ans.}$$

### **EXERCISE ON AREA OF THE PARALLELOGRAM.**

(1) Find area of the figure below.



19

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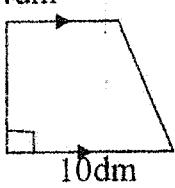
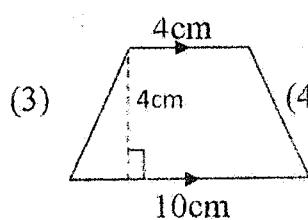
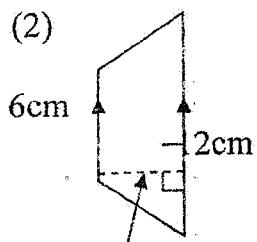
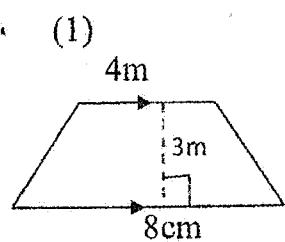
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- (2) The area of the parallelogram is  $120\text{m}^2$ . If its height is 6cm, calculate its base.  
 (3) Find the perpendicular distance of a parallelogram whose area is  $96\text{m}^2$  and base is 12m.

### (E) CALCULATING AREA OF A TRAPEZIUM.

- A trapezium is a quadrilateral (four sided figure) which has only one pair of its opposite sides parallel. Look at these trapeziums:



### FORMULA FOR AREA OF A TRAPEZIUM

- Area of trapezium  
 $= \frac{1}{2}$  sum of parallel sides  $\times$  Height.
- A question may be raised, why sum of parallel sides? Look at the parallel sides above. They are not equal. They are not like that of a rectangle. So to come up with AVERAGE LENGTH, that is why the two lengths of the parallel sides are divided by two. Finally, the result is multiplied by height to get area of a trapezium.

- Mentally, learners should be trained to add the two lengths which are parallel sides and then divide by two, and then finally multiply by height to come with its area.

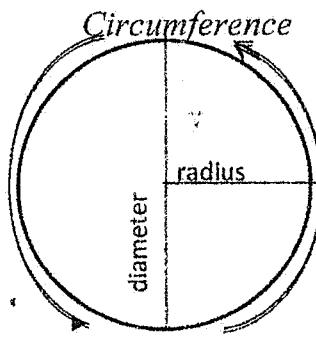
### EXERCISE:

- (1) Mentally, calculate area of trapeziums shown above : (1) (2) (3) and (4).

### TASK: C

#### AREA OF FOCUS : THE CIRCLE

##### (a) PARTS OF THE CIRCLE



#### MEANING OF EACH ONE ABOVE :

- CIRCUMFERENCE:
  - It is the perimeter of the circle.
  - It is a distance round the circle.
- DIAMETER:
  - It is any straight line from one part of the circumference passing through the centre of the circle to the other part of the circumference.
- RADIUS:
  - It is any line drawn from the centre of the circle to any part of the circumference.

**(c) RELATIONSHIP BETWEEN CIRCUMFERENCE AND DIAMETER; AND RADIUS OF THE CIRCLE.**

- Diameter is contained  $3\frac{1}{7}$  times in the circumference of the circle.

**NB:** This is the origin of the pie  $\pi = 3\frac{1}{7}$  or  $\frac{22}{7}$  or 3.14 ...

Therefore, it follows then that the formula for finding **circumference** of the circle is  $\pi D$ .

- Radius is contained twice in a diameter of a circle.
- It follows then that the other formula for finding circumference once radius is given is  $2\pi r$ .

Where does 2 come from in the above formula? The 2 above is there to multiply radius so that we can have the diameter as in bullet one above.

**NB:** Engage learners into activities, practical ones, on how  $\pi$ , diameter and radius are found. Once this is done, learners will easily work out circumference of a circle. Why? Just because by then they will have known the relationship between  $\pi$  and diameter, circumference and diameter.

**(D) TYPICAL MANEB MODEL QUESTIONS ON PSLCE.**

- (a) Calculate the circumference of a circle whose (i) diameter is 3.5m  
(ii) radius is 9m

**WORKING:**

$$(a)(i) \text{ Circumference of a circle} = \pi D$$

$$= \frac{22}{7} \times \frac{3.5m}{1}$$

$$= 3.5 m$$

$$\begin{array}{r} \underline{\times 22} \\ \underline{70} \end{array}$$

$$\begin{array}{r} 11 \\ 7 \boxed{77.0} m \\ \hline 77.0 \\ \hline 0 \end{array}$$

11m Answer

$\therefore \text{Circumference} = 11m \text{ Ans}$

**(a)(ii) circumference of the circle**

$$= 2\pi r$$

$$= 2 \times \frac{22}{7} \times 9 \text{ cm}$$

$$= \frac{44 \times 9 \text{ cm}}{7}$$

$$= \frac{396}{7}$$

$$\begin{array}{r} 56 \\ 7 \boxed{396} \\ \hline 35 \\ 46 \\ - 42 \\ \hline 4 \end{array}$$

$$= 56\frac{4}{7} \text{ cm}$$

$\therefore \text{Circumference} = 56\frac{4}{7} \text{ cm Ans}$

- (b) The circumference of a circle is 22cm, find its diameter.

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### WORKING

To find diameter of a circle =  $\frac{\text{circumference}}{\pi}$

$$\text{Diameter} = \underline{22\text{cm}}$$

$$3\frac{1}{7}$$

$$= \frac{22}{1} \times \frac{7}{22} \text{ cm}$$

$$\underline{\text{Diameter} = 7\text{cm. Ans}}$$

(c) Calculate radius of the circle whose circumference is 11m.

To find radius of a circle

$$= \frac{\text{circumference}}{2\pi}$$

$$= \frac{11\text{m}}{2 \times \frac{22}{7}}$$

$$= \frac{11}{2} \times \frac{7}{22} \text{ m}$$

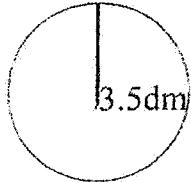
$$R = \frac{7}{2} \text{ m}$$

$$\text{radius} = 3\frac{1}{2} = 3.5$$

$$\underline{\text{radius} = 3.5 \text{ metres Ans}}$$

CAN YOU TRY TO WORK OUT THESE PROBLEMS !

(1)



What is circumference of the circle shown above?

(A) 44 dm (B) 21dm (C) 22dm (D) 88dm

(2) Calculate diameter of a circle whose circumference is 44m.

(A) 56cm (B) 44cm (C) 28cm (D) 14cm

(3) Find the radius of a circle whose circumference is 176dm.

(A) 28dm (B) 20dm (C) 14dm (D) 7dm

(4) A circle has a radius of 10.5cm calculate its circumference.

(A) 78cm (B) 66cm (C) 21cm (D) 15cm

TASK: AREA OF OF A CIRCLE:

$$\text{Area of circle} = \pi r^2$$

$$\text{Area of a semi circle} = \frac{1}{2} \pi r^2$$

EXAMPLES OF PROBLEMS ON AREA OF A CIRCLE SEMI (HALF) CIRCLE.

(a) Calculate area of a circle whose diameter is 7cm.

### WORKING:

$$\text{Diameter} = 7\text{cm}$$

$$\therefore \text{Radius} = 3\frac{1}{2}\text{cm}$$

To find area of the circle =  $\pi r^2$

$$= \frac{22}{7} \times \frac{1}{2} \times \frac{77}{2} \text{ cm}^2$$

$$= \frac{77}{2} \text{ cm}^2$$

$$= 38\frac{1}{2} \text{ cm}^2$$

$$\therefore \text{Area of the circle} = 38.5\text{cm}^2 \text{ Ans}$$

(b) A circular flower bed has a radius of 7cm, find its area.

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**22 M2IMBA**

**WORKING:**

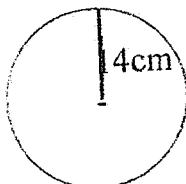
Area of circle of a circular bed =  $\pi r^2$

$$= \frac{22}{7} \times \frac{2}{1} \times \frac{7\text{cm}^2}{1}$$

$$= 154 \text{ cm}^2 \text{ Ans}$$

**CAN YOU TRY TO WORK OUT THESE PROBLEMS**

(i) Find area of a circle below:



(A) 56cm<sup>2</sup> (B) 616cm<sup>2</sup> (C) 154cm<sup>2</sup>

(ii) Calculate area of a circle whose diameter is 7cm

(A) 56 cm<sup>2</sup> (B) 128cm<sup>2</sup> (C) 154cm<sup>2</sup>

(iii) The length of a minute hand of a clock is 12cm. Find the distance that the tip of the minute hand moves in 60 minutes. (Take  $\pi = 3.14$ )

**WORKING:**

**NOTE:** 60 minutes = 1hr = 1 round  
The minute hand = radius.

To find circumference

$$\begin{aligned} &= 2\pi r \\ &= 2 \times 3.14 \times 12\text{cm} \\ &= 6.28 \times 12\text{cm} \end{aligned}$$

$$\begin{array}{r} 6.28 \text{ cm} \\ \times \quad 12 \\ \hline 12 \quad 56 \\ + 62 \quad 8 \\ \hline 85.36\text{cm} \end{array}$$

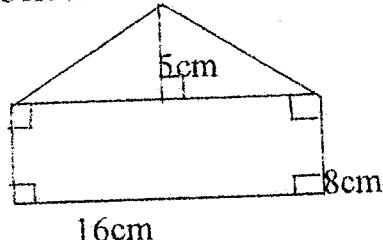
$\therefore$  The minute hand will cover 85.36cm

**TASK : D****AREA OF FOCUS : COMPOSITE FIGURES (SHAPES)**

- Areas of various shapes such as a rectangle, triangle, square, parallelograms and trapeziums have been looked into.
- Now we are going to have a revision through combining the above shapes.
- A combination of shapes is called a **composite figure**.
- This work becomes simple if the learners have mastered all the formulas of the different shapes.

**Examples of each composite shape and how to calculate the area.**

(1) Find area of the composite figure below:

**WORKING:**

Area of a triangle =  $\frac{1}{2} \times b \times h$

$$\begin{aligned} &= \frac{1}{2} \times \frac{16}{1} \times 5 \\ &= 40 \text{ cm}^2 \end{aligned}$$

Area of a rectangle

$$\begin{aligned} &= L \times B \\ &= 16 \times 8 \text{ cm}^2 \\ &= 128 \text{ cm}^2 \end{aligned}$$

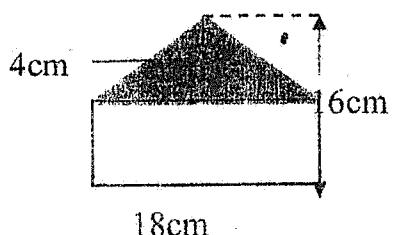
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**:0882140920, 0992316341**

$$\begin{aligned}
 &\text{: Area of the whole figure} \\
 &= \text{Area of a triangle} + \text{Area of a rectangle} \\
 &= 40 \text{ cm}^2 + 128 \text{ cm}^2 = 168 \text{ cm}^2 \\
 &= \underline{\underline{168 \text{ cm}^2 \text{ Answer}}}
 \end{aligned}$$

(2)(a) Calculate area of the shaded part in the composite figure below.



(b) Calculate area of the unshaded part.

(c) Calculate area of both shaded and unshaded parts (composite figure)

#### WORKING:

(2) (a) Area of the triangle (shaded part)

$$\begin{aligned}
 &= \frac{1}{2} b \times h \\
 &= \frac{1}{2} \times \frac{9}{1} \times \frac{4}{1} \times \text{cm}^2 \\
 &= 9 \text{ cm} \times 4 \text{ cm} \\
 &= \underline{\underline{36 \text{ cm}^2}}
 \end{aligned}$$

$$\begin{aligned}
 &\text{(b) area of the unshaded part} = \text{a rectangle} \\
 &= L \times B \\
 &= 18 \text{ cm} \times (16-4) \text{ cm} \\
 &= 18 \text{ cm} \times 10 \text{ cm} \\
 &= \underline{\underline{180 \text{ cm}^2}}
 \end{aligned}$$

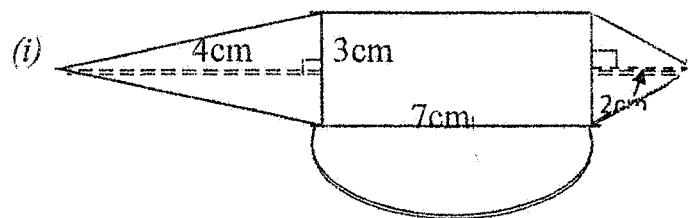
(2) (c) Area of the composite figure (the whole figure)

= Area of a triangle + Area a rectangle

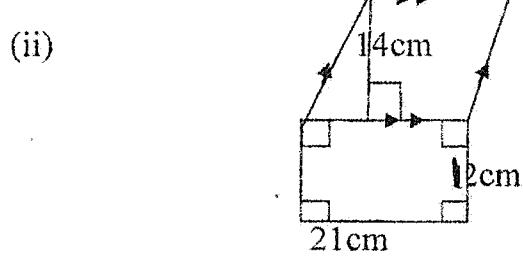
$$\begin{aligned}
 &= 36 \text{ cm}^2 + 180 \text{ cm}^2 \\
 &= \underline{\underline{216 \text{ cm}^2}}
 \end{aligned}$$

CAN YOU TRY TO WORK OUT  
ANSWERS FORTHESE COMPOSITE  
FIGURES AS PER INSTRUCTION  
GIVEN:

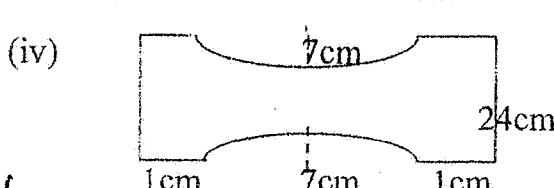
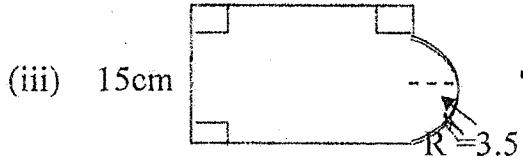
(a) CALCULATE AREA FOR EACH OF  
THE COMPOSITE FIGURES BELOW:



- (A) 197 cm<sup>2</sup> (B) 215 cm<sup>2</sup> (C) 184 cm<sup>2</sup> (D) 16 cm<sup>2</sup>



18cm



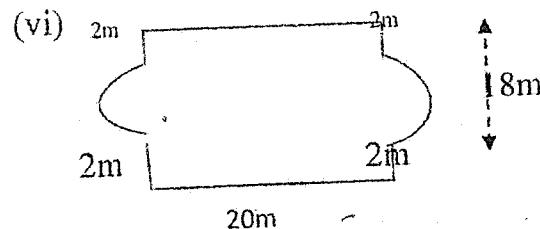
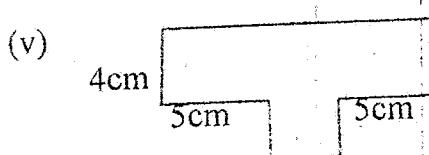
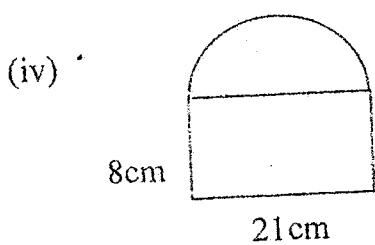
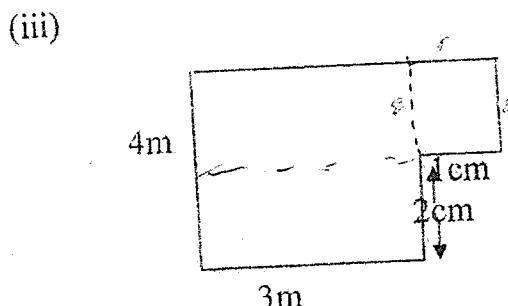
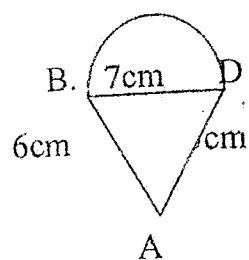
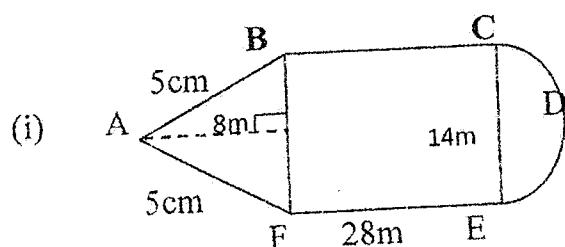
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**(b) CALCULATE PERIMETER OF EACH OF THE FIGURE BELOW:**



**TASK E  
AREA OF FOCUS: -VOLUME AND CAPACITY**

- The standard unit for volume is the cubic metre ( $m^3$ )
- Volume is the amount of space occupied by an object.
- A cube is a figure whose length, width and height are equal. For example :
  - (i)  $1\text{cm}^3$  (cubic meter) means a cube (a figure) which has length width and height one metre (1m) each side.
  - (ii)  $1\text{ cm}^3$  (cubic centimetre) means a cube whose length, width and height equals 1cm each side.
- When we look at volume, we are interested in finding out the number of cubes that can occupy amount of given space.
- To find volume, we multiply number of cubes along the length, width and height. So the formula is  $L \times B \times H$ .

**TASK: (A)**

**TYPICAL MANEB PSLCE PROBLEMS**

- (1) Find the volume of a box of soap which is 45cm high 40cm wide and 50cm long.

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LUNDAZI, KASUNGU, BORERO NA ZOMBA** 25  
**:0882140920, 0992316341** MZIMBA

### WORKING:

$$\begin{aligned}\text{Volume of a box} &= L \times B \times H \\ &= 50\text{cm} \times 40\text{cm} \times 45\text{cm}\end{aligned}$$

Volume of the box =  $90,000\text{cm}^3$

(2) The volume of a box of soap is  $90000\text{cm}^3$ . If the box is 50cm long and 40cm wide, find its height?

### WORKING:

$$\text{To find height: } = \frac{\text{volume}}{L \times B}$$

$$\begin{aligned}&= \frac{90000\text{cm}^3}{50\text{cm} \times 40\text{cm}} \\ &= \frac{45}{4}\end{aligned}$$

$\therefore \text{Height of the box} = 45 \text{ cm Ans}$

(3) The volume of water tank is  $60\text{m}^3$ . If the tank is 5m long and 3m high, find its width.

$$\text{To find width} = \frac{\text{volume}}{L \times H}$$

$$= \frac{60\text{m}^3}{5\text{m} \times 3\text{m}}$$

$\therefore \text{width} = 4 \text{ m}$

**TASK : (b) TYPICAL MODEL MANEB QUESTIONS ON VOLUME AND CAPACITY.**

To answer correctly these questions, study the relationship between the units that follow:

- $1000 \text{ML} = 1\text{L}$
- $1000 \text{cm}^3 = 1\text{L}$

- $1000 \text{cm}^3 = 1\text{dm}^3 = 1\text{L}$

### EXAMPLES OF QUESTIONS

(1) Express  $32000\text{cm}^3$  in litres

$$\text{If } 1000\text{cm}^3 = 1\text{L}$$

$$\therefore 32000\text{cm}^3 = \frac{32000\text{cm}^3}{1000\text{cm}^3} \times 1\text{L}$$

$32000\text{cm}^3 = 32 \text{ litres Ans}$

(2) A tank measures 700cm long, 600cm wide and 600cm high. How many litres of water will it hold?

### WORKING:

$$\text{Volume of the tank} = L \times B \times H$$

$$\begin{aligned}&= 700\text{cm} \times 600\text{cm} \times 600\text{cm} \\ &= 252000000\text{cm}^3\end{aligned}$$

$$\text{If } 1000 \text{cm}^3 = 1\text{L}$$

$$252000000\text{cm}^3 = \frac{252000000\text{cm}^3}{1000\text{cm}^3} \times 1\text{L}$$

$$= 252000 \text{L}$$

$\therefore \text{The tank will hold 252000 litres Ans}$

(3) Convert 3.5L to  $\text{cm}^3$ .

### WORKING:

$$\text{If } 1\text{L} = 1000\text{cm}^3$$

$$\therefore 3.5\text{L} = \frac{3.5\text{L}}{1\text{L}} \times \frac{1000\text{cm}^3}{1\text{L}}$$

$$= 3.5 \times 1000 \text{cm}^3$$

$\therefore 3.5\text{L} = 3500 \text{cm}^3 \text{ Answer}$

(4) Convert  $22150 \text{cm}^3$  to litres.

### WORKING:

Converting  $22150 \text{cm}^3$  to litres.

26

$$\begin{aligned} \text{If } 1000\text{cm}^3 &= 1\text{L} \\ \therefore 22150\text{cm}^3 &= \frac{22150\text{cm}^3}{1000\text{cm}^3} \times 1\text{L} \\ &= \frac{22150\text{L}}{1000} \\ &= 22.15 \text{ litres Ans} \end{aligned}$$

- (5) A tank 5m long 4m wide and 9m high is half full of water. How many litres of water are in the tank?

### WORKING:

$$\begin{aligned} \text{Volume of the tank} &= L \times B \times H \\ &= 5\text{m} \times 4\text{m} \times 9\text{m} \\ &= 180\text{ m}^3 \end{aligned}$$

$$\begin{aligned} \therefore 180\text{ m}^3 &= \frac{180 \times 1000000}{1000\text{cm}^3} \text{ m}^3 \times 1\text{L} \\ &= \frac{180000000\text{cm}^3}{1000\text{cm}^3} \times 1\text{L} \\ &= 180000 \text{ litres} \end{aligned}$$

$\therefore$  Half full =  $\frac{1}{2}$  of 180000 L  $\frac{1}{2} \times 180000$   
~~180000~~  $\frac{1}{2} \times 90000$  Litres Ans.

- (6) Express 1200 millilitres to  $\text{cm}^3$

### WORKING (METHOD: A)

Expressing 1200 ml to  $\text{cm}^3$ .

$$\text{If } 1000\text{ml} = 1000\text{cm}^3$$

$$\begin{aligned} \therefore 1200\text{ml} &= \frac{1200\text{ml}}{1000\text{ml}} \times \frac{1000}{1}\text{cm}^3 \\ &= 1200\text{cm}^3 \text{ Ans} \end{aligned}$$

### METHOD: B

$$\text{If } 1000\text{ml} = 1\text{L}$$

$$\begin{aligned} \therefore 1200\text{ml} &= \frac{1200\text{ml}}{1000\text{ml}} \times \frac{1\text{l}}{1} \\ &= 1.2\text{L} \end{aligned}$$

$$\text{If } 1\text{L} = 1000\text{cm}^3$$

$$\begin{aligned} \therefore 1.2\text{L} &= \frac{1.2\text{L}}{1\text{L}} \times \frac{1000}{1}\text{cm}^3 \\ &= 1.2 \times 1000\text{cm}^3 \\ &= 1200\text{cm}^3 \text{ Ans} \end{aligned}$$

### TRY TO SOLVE THESE TYPICAL MODEL MANEB QUESTIONS

- Express 25.85 litres in  $\text{cm}^3$   
 (A) 258.5  $\text{cm}^2$  (B) 25.85  $\text{cm}^3$  (C) 25850  $\text{cm}^3$
- A suitcase is 62cm long, 30cm high and 40cm wide. Find the volume of the box.  
 (A) 7400  $\text{cm}^3$  (B) 74400  $\text{cm}^3$  (C) 18600  $\text{cm}^3$
- A box has a square base of side 5cm. If the volume of the box is 750  $\text{cm}^3$ , calculate its height.  
 (A) 35cm (B) 25cm (C) 30cm
- The volume of a rectangular tank is 480  $\text{cm}^3$ . If it has a base area of 60  $\text{cm}^2$ , calculate its height.  
 (A) 12cm (B) 5cm. (C) 8cm

- Calculate the volume of a cube whose side length is 5m.

$$(A) 15\text{m}^3 (B) 125\text{m}^2 (C) 25\text{m}^3$$

- Express  $5\text{m}^3$  in L

$$9(A) 5000000\text{cm}^2 (B) 5000\text{l} (C) 500\text{l}$$

$$\text{NB: } 1000\text{ml} = 1000\text{cm}^3 = 1\text{L} = 1\text{dm}^3$$

### TASK: A

### AREA OF FOCUS: CALCULATING TIME INTERVALS.

TIME INTERVAL	MEANING
Fortnight	14 days (2 weeks)
Bio monthly	Every 2 months

Annually	Yearly
Decade	10 years
Silver-Jubilee	Celebration after 25 years
Golden-jubilee	Celebration after 50years
Human generation	30years
Diamond-Jubilee	Celebration after 60years
Century	100 years
Centenary	Celebration after 100 years
BC	Before Christ
AD(Anno Domini)	After the birth of Christ

### TYPICAL MANEB MDEL PSLCE QUESTIONS ON CALCULATING AND DESCRIBING TIME INTERVALS

1. How many fortnights are there in March?  
Days in March = 31 days

If 14 days = 1 fortnight

$$\therefore 31 \text{ days} = \frac{31}{14} \text{ fortnights}$$

$$= 2\frac{3}{14} \text{ fortnights. Ans}$$

2. Jane will celebrate her diamond Jubilee next year. In which year was she born?

Diamond Jubilee = 60 years

$$\therefore \text{Her birthday} = 2015 - 60 \text{ years}$$

$$= 1995$$

$\therefore \text{She was born in 1995. Ans.}$

3. Mr Banda celebrated his Silver-Jubilee in 2004. How old will he be after a decade?

### WORKING

Silver Jubilee = 25 years

In 2004, Mr Banda was 25 years;

$\therefore$  After a decade, Mr Banda will be  $25 + 10$  years old

$$= 35 \text{ years old.}$$

4. In 2007, Mrs Phiri was 37 years old. In which year will she hold her golden Jubilee celebrations?

### WORKING

Golden jubilee = 50 years

$\therefore$  No of years for Mrs Phiri to reach 50 years

$$50 - 37 \text{ years}$$

$$= 13 \text{ years}$$

She will have her golden jubilee in  $2007 + 13$  years = 2020 Answer

5. Mrs Gonthi celebrated her diamond-jubilee in 2006. How old will she be in 2026?

### WORKING

Diamond jubilee = 60 years

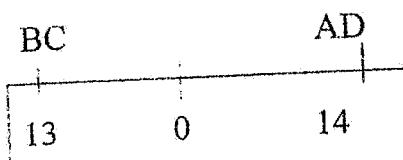
If in 2006 Mr Gonthi was 60 years;

$\therefore$  In 2026 Mr Gonthi will be;

$$60 + (2026 - 2006) = (60 + 20) \text{ years}$$

Gonthi will therefore be 80 years

### DEVELOPING TIME LINES



28

(i). Calculate the number of years in the following.

a) From 13 BC to 14 AD  
 $\therefore \text{Number of years} = 13 + 14$   
 $= 27 \text{ years.}$

(ii). A church celebrated its diamond-jubilee in 11 AD. When was the church established?

### WORKING

Diamond jubilee = 60 years

Year of celebration = 11AD

$\therefore \text{Date when the church was established}$   
 $= (60-11) \text{ BC}$   
 $= 49 \text{ BC Ans}$

(iii). A man was born in 5BC and his wife was born in 11 BC. Who was older between the man and the wife; by how many years?

The man was older than his wife by 6 years.

### CAN YOU TRY TO SOLVE THESE PROBLEMS?

1. Zikani was born in 2001 A.D. When will he celebrate his:

- (i). Silver -Jubilee?
- (ii). Golden-jubilee?
- (iii). Diamond -jubilee?

### WORKING

Zikani will celebrate his;

(i). Silver-jubilee in  $2001 + 25$   
 $= 2026$

(ii). Golden-Jubilee in  $2001 + 50 \text{ years}$   
 $= 2051$

(iii). diamond-jubilee in  $2001 + 60$

$= 2061 \text{ Ans}$

### TASK: A

**AREA OF FOCUS: DISTANCE, SPEED AND TIME..**

**CALCULATION OF TIME TAKEN BETWEEN STARTING POINT AND FINISHING POINT BY A MOVING BODY**

Departure (Starting)	Arrival (finishing)	How-to calculate time	Time taken
7:30am	11:30 am	$(11:30-7:30)\text{hrs}$	4 hours
6:00am	2:30 p.m	Method A $=(1200-600)+2:30\text{h}$ $= 6\text{hrs} + 2\text{hrs } 30\text{mins}$ $= 8\frac{1}{2} \text{ hrs}$	$8\frac{1}{2} \text{ hrs}$
		Method B Starting in hrs=0600 Ending 2:30pm in hours $= 1430$	
		$\therefore \text{Time taken} = 1430-0600$ <u><math>= 8:30</math></u>	
8:20am	4pm	4pm = 1600 hours 8:20 am = <u>0820 hours</u> Difference = 7 hours 40min	7hrs 40 mins
1:20pm	3:30pm	3:30pm = 1530 hours 1:20pm = <u>1320 hours</u> 2hr 10m	2hr 10m

29

**NB:** Remember that when 1 hour is taken (changed) from hour to minutes it becomes 60mins.

### CALCULATE THE TIME TAKEN BY A MOVING OBJECT (CAR, BUS, CYCLIST)

(1) An express bus left Lilongwe at 6:30 am and reached Chisemphere at 1:30pm. Calculate the time the bus took to cover the distance between Lilongwe and Chisemphere?

(2) The train left Chipoka at 8:20 am and reached Salima at 10:15am, Calculate time the train took to cover the distance between the two places above.

(3) A cyclist left Eswazini at 5:30am for Mzimba Boma .If he reached Mzimba Boma at 1:30pm. How long did he take to cover the distance between the two points above?

### SOLVING TYPICAL MANEB MODEL QUESTIONS REGARDING DISTANCE, SPEED, AND TIME.

- Master these formulae

(a) To find distance = Speed  $\times$  Time

(b) To find speed =  $\frac{\text{Distance}}{\text{time}}$

(c) To find time =  $\frac{\text{Distance}}{\text{speed}}$

- Where time has been given indirectly in a given problem, remember to calculate the actual time taken as in the examples discussed earlier on.

(1) A car moving at 80 km/h left Mzuzu at 7:30am for Lilongwe. If it reached Lilongwe at

1:30 pm, calculate the distance between Mzuzu and Lilongwe.

(2) The train left Kitwe at 5:30am and reached Kamposhi at 9:30am. If the distance between Kitwe and Kamposhi is 240km. What was the average speed of the train in km/h?

(3) A bus moving at 50km/h covered a certain distance in  $2\frac{1}{2}$  h. Find the distance that the bus covered.

(4)The bus left Mzalangwe at 8:30am and reached Dowa at 2:10pm. If it was moving at an average speed of 75km/h, calculate the distance between the two places.

(5) A minibus moving at 60km/h left town A at 5:30am and reached town B at 9:30am. If on the way it had a stopover at two places of 10 minutes and 5 minutes respectively. Calculate the distance between town A and town B.

### TASK: A

### AREA OF FOCUS: PROFIT AND LOSS

#### Formulae to remember

- To find profit = Selling Price – Cost Price
- To find loss =Cost price-Selling price
- To find profit percent =  $\frac{\text{profit}}{\text{Cost price}} \times 100\%$
- To find loss percent=  $\frac{\text{loss}}{\text{Cost price}} \times 100\%$

### TYPICAL EXAMPLES OF MANEB PSLCE QUESTIONS FOR SECTION A.

1. A trader bought a bicycle for K 8000 and sold it for K 5,200. What was the loss percent

## WORKING

$$\begin{aligned}\text{Loss} &= \text{Cost price} - \text{Selling price} \\ &= K8000 - K5200 \\ &= K2800\end{aligned}$$

To find loss% =  $\frac{\text{loss}}{\text{Cost price}} \times 100\%$

$$= \frac{2800}{8000} \times \frac{100\%}{1}$$

Loss % = 35% Ans

2. A radio was bought at K4000 and sold at 6000. Calculate the profit percent.

## WORKING

$$\begin{aligned}\text{Profit} &= \text{Selling Price} - \text{Cost Price} \\ &= K6000 - K4000 \\ &= K2000\end{aligned}$$

To find profit % =  $\frac{\text{profit}}{\text{cost price}} \times 100$

$$\begin{array}{r} 1 \quad 50 \\ \text{Profit \%} = \frac{K2000}{K4000} \times \frac{100\%}{1} \\ 2 \quad 1 \end{array}$$

Profit % = 50% Ans

## TYPICAL MANEB MODEL QUESTIONS ON PROFIT AND LOSS FOR SECTION B.

NB. (i) Cost Price in percentage is always 100%

(ii) Selling price in % is always above 100% if profit has been made.

(iii) Selling price in Percentage is always below 100% if the loss has been made.

## LOOK AT THESE PROBLEMS AND HOW TO GO ABOUT THEM

1. After selling a bicycle at K10800, a person made a loss of 10%. At what price must have the person sold it to gain 5%? (5marks)

## WORKING

Cost price of the bicycle in % = 100%

Loss in % made = 10%

$$\begin{aligned}\text{Selling Price in \%} &= (100 - 10)\% \\ &= 90\%\end{aligned}$$

Selling price of the bicycle = K10800

If 90% = K10800

$$\therefore C.P = 100\% = \frac{100\%}{90\%} \times \frac{10800}{1}$$

$$C.P = K12000$$

For the person to gain 5% the selling price should be equal to  $(100\% + 5\%) = 105\%$ .

If the cost price = 100% = K1200

$$\therefore S.P = 105\% = \frac{105\%}{100\%} \times K1200$$

$$= 105 \times K120$$

$$= K12600$$

The person must sell it at K12600 Ans.

2. Duncan lost 3% after selling a radio for K 46560. Find the amount she lost.

31

## WORKING

Cost Price in % = 100%

Loss % = 3%

Selling price in % = CP-SP

Selling price in % = 100%-3%

= 97%

Actual S.P = K46560

If 97% = K46560

$\therefore C.P = 100\% = \frac{100}{120} \times K46560$

= 97%

$$\begin{array}{r} 48000 \\ - 4656000 \\ \hline 97 \end{array}$$

= K 48000

$\therefore$  Loss = Cost price - selling Price

= K48000 - K46560

= K1,440

$\therefore$  She lost K 1,440.00 Ans

3. By selling a computer at K240000, John made 20% profit. At what price did he buy the computer?

## WORKING

Cost price in % = 100%

Profit % = 20%

S.P in % = (100+20) % = 120%

S.P of the computer = K240 000

If 120% = K240000 20

$$\therefore 100\% = C.P = \frac{100}{120} \times K240000$$

$$= 10 \times K 20000$$

$$= K200 000$$

$\therefore$  John bought the computer at K200 000 Ans

## CAN YOU TACKLE THE FOLLOWING PROBLEMS!

1. After selling a house at K55200, Mrs Tembo had a loss of 8%. At what price did Mrs Tembo buy the house?

2. The marked price of a radio is K 10,000. If one buys cash, a discount of 20% is allowed. Calculate the cash price of the radio

3. A trader lost 10% by selling a motor-bike for K125, 000.

(i) What was the cost price of the motorbike?

(ii) At what price should it be sold to make a profit of a 5%?

4. A shirt was sold for K2000.00. If it was sold at a profit of 25%, calculate the cost price.

## TASK:A

**AREA OF FOCUS:** SOLVING PRACTICAL PROBLEMS ON COMMON FRACTIONS- INVOLVING RATIO AND PROPORTION.

**TYPICAL MANEB MODEL PSLCE PROBLEMS:**

## EXAMPLES

1. After spending  $\frac{1}{3}$  of her salary on food and  $\frac{1}{4}$  on water and electricity bills, Mrs Banda remained only with K 6000 of her salary. Calculate Mrs Banda's salary?

32

MZIMBA

## WORKING

$$\begin{aligned}\text{Fraction spent on food, water and} \\ \text{electricity} &= \frac{1}{3} + \frac{1}{4} \\ &= \frac{4+3}{12} \\ &= \frac{7}{12}\end{aligned}$$

Fraction left = Total fraction - Fraction spent

$$\begin{aligned}&= \frac{12}{12} - \frac{7}{12} \\ &= \frac{5}{12}\end{aligned}$$

Money left = K 6000

$$\text{If } \frac{5}{12} = \text{K} 600$$

$\therefore$  Mrs Banda's Salary;

$$\begin{aligned}\frac{12}{12} &=? \text{ More} \\ \frac{12}{12} &\div \frac{5}{12} \times \text{K} 6000 \\ &= \frac{12}{12} \times \cancel{\frac{12}{5}} \times \text{K} 6000^{1200} \\ &= \text{K} 14,400\end{aligned}$$

$\therefore$  Mrs Banda's salary = K 14400 Ans

2. John takes 2 days to dig the trench which Alick takes 4 days to dig the same trench, if they work together, how long would they take to complete digging it?

## WORKING

In 2 days, John completes digging a trench

$\therefore$  In 1 day, he digs  $\frac{1}{2}$

In 4 days, Alick completes digging a trench.

$\therefore$  In 1 day, he digs  $\frac{1}{4}$  of it.

John and Alick in 1 day would dig;

$$\begin{aligned}&\frac{1}{2} + \frac{1}{4} \\ &= \frac{2+1}{4} \\ &= \frac{3}{4} \text{ of the trench.}\end{aligned}$$

If  $\frac{3}{4}$  is dug in 1 day

$$\begin{aligned}\therefore \text{The whole trench} &= \frac{4}{4} = ? \text{ more days} \\ &= \frac{4}{4} \div \frac{3}{4} \times 1 \\ &= \cancel{\frac{4}{4}} \times \cancel{\frac{4}{3}} \times 1 \text{ days} \\ &= 1 \frac{1}{3} \text{ days}\end{aligned}$$

$\therefore$  John and Alick would take  $1 \frac{1}{3}$  days to complete digging the trench Ans

## CAN YOU NOW TRY TO WORK OUT THESE PROBLEMS!

(1) Jane covered  $\frac{1}{4}$  of her journey by walking and  $\frac{1}{8}$  by bus. If she has 15km not yet covered, what is the total distance of her whole journey?

(2)  $\frac{1}{5}$  Of the pole is painted green,  $\frac{1}{2}$  is blue and  $\frac{1}{6}$  is red. If the remaining part is unpainted and is 2m, calculate the length of this pole

(3) Three taps fill water in a tank as follows:

The first tap fills it in 3 hours; second tap fills in 4 hours and third fills in 6 hours. If they all run together, how long will they take to fill the tank?

33

## TASK: A: GRAPHS

### AREA OF FOCUS: DRAWING, PLOTTING AND INTERPRETING GRAPHS.

- Points to remember about graphs:
  - A graph should have y and x axes well labelled
  - A graph should have a scale.
- Always use sharp pencil when plotting and drawing graphs
- Learners to be exposed to graph paper and trained how it should be used in relation to drawing, plotting and use of scale
- Learners to be acquainted with picture line and bar graphs.

### (A) PICTURE GRAPHS

- Bags of maize produced by a farmer for four years:

2008      

2009      

2010      

2011      

NB:  drawing of a bag represents 35 bags.

Study the picture above and then answer the questions:

- How many bags did the farmer produce in 2009?
  - How many bags were produced in 2008 and 2011 altogether?
- Exportation of banana from Malawi to neighbouring countries annually:

ZAMBIA: 

MOZAMBIQUE: 

TANZANIA: 

KENYA: 

 A banana representing 1000 metric tonnes.

### QUESTIONS:

- What is the total number of tonnes of banana exported to neighbouring countries annually?
- Mention the country where the least number of tonnes of banana is exported.

### (B) BAR GRAPH

#### EXAMPLE

- Draw a bar-graph showing number of patients treated for malaria at Mlambe Health centre for six months, using the information given in the table below;

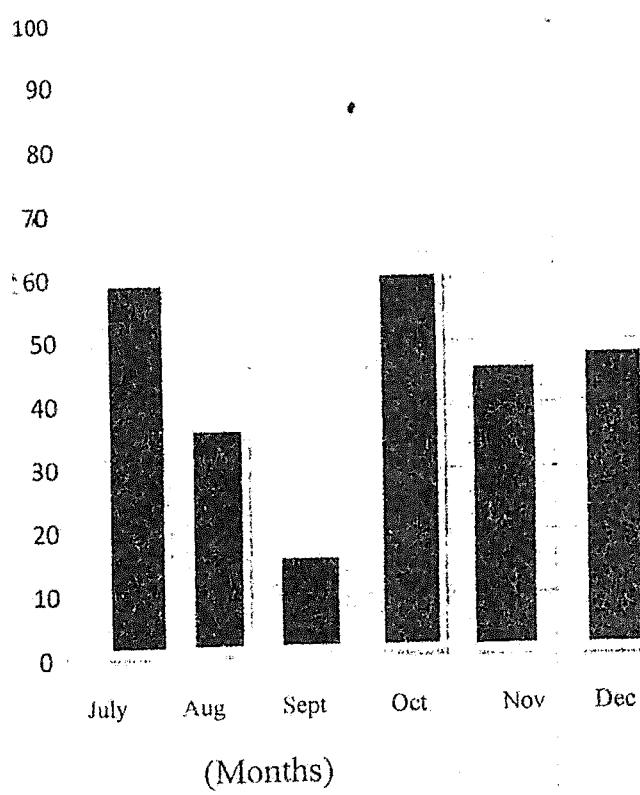
(Scale: 1cm representing 10 patients; 1:10)

Month	No. Of patients treated
July	60
August	35
September	15
October	42
November	15
December	48

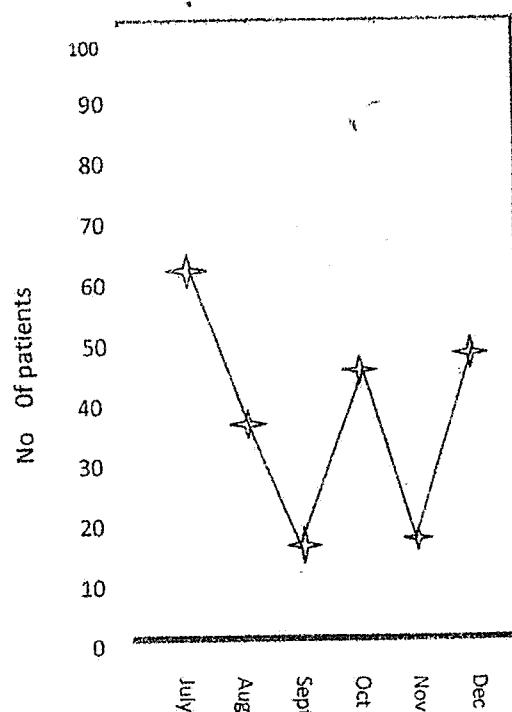
N.B: Can you recall? What are the points to bear in mind when drawing a graph?

34

Number of Patients treated at mlambe H/centre



Patients of malaria at Mlambe H/centre



- (a) Which months had the same number of patients?
- (b) Calculate the total number of patients treated from July to December?
- (ii). Using the same information in the table above, present the information on a line graph.

(a) Which month had the highest number of malaria patients?

(b) What was the difference in numbers of malaria patients between the months of July and November?

N.B: Expose learners to graph paper. Let them practise using graph paper.

#### TASK A: AVERAGES

**AREA OF FOCUS:** calculating mean, mode and median.

**NB:** Mean, mode and median are types of averages

##### 1. CALCULATION OF MEAN

Mean is the sum of all values added divided by the number of the values

35

### Examples

- (i) Find the mean of the following set of numbers; 10, 12, 9, 5

$$\text{To find mean} = \frac{10+12+9+5}{4}$$

$$= \frac{36}{4}$$

Mean = 9 Ans

### EXERCISE:

- (i) Calculate mean of these numbers;

- (a) 10, 12, 18, 24  
 (b) 7, 9, 5, 8, 9, 8, 5, 6, 8, 7

## 2. CALCULATION OF MODE

Mode is the most common or popular number or item in a given data. For example, find the mode from this set of given numbers;

7, 9, 5, 8, 9, 8, 5, 6, 8, 7

Mode = 8 Ans

### Exercise on modes

- (a) Identify the mode from the given set of numbers

- (i) 6, 8, 6, 7, 5, 6  
 (ii) 15, 12, 13, 16, 14, 12, 12

- (b) Zondi collected eggs from his battery cage for five days as follows; 22, 18, 21, 22, 18. Calculate the modal number of eggs.

## (3) CALCULATION OF THE MEDIAN

Median is the middle number when numbers are put in order.

N.B: Before you can pick the median (middle number), remember to arrange a given set of numbers either in ascending order or descending order. For example,

- Find the Median of the following set of numbers;

23, 17, 23, 17, 18, 19, 16

### Method (a)

Arranging numbers in ascending order:

16, 17, 17, 18, 19, 23, 23

$\therefore \text{Median} = 18 \text{ Ans}$

### Method (b)

Arranging numbers in descending order;

23, 23, 19, 18, 17, 17, 16

$\therefore \text{Median} = 18 \text{ Ans}$

- Find the median of the following set of numbers;

23, 17, 23, 17, 18, 19, 15, 16

### WORKING (method a)

Arranging numbers in ascending order:  
 15, 16, 17, 17, 18, 19, 23, 23

$$\therefore \text{Median} = \frac{17+18}{2}$$

$$= \frac{35}{2}$$

Median = 17.5 Ans

### WORKING (method b)

Arranging the numbers in descending order:

23, 23, 19, 18, 17, 17, 16, 15

$$\text{Median} = \frac{18+17}{2}$$

$$\text{Median} = \frac{35}{2}$$

Median = 17.5 Ans

### Exercise on calculation of the Median:

3b

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- (i) In an examination, 10 learners scored the following marks: 50,75,45,60,55,60,70,82,60,63. Find the median
- (ii) In a certain School, eight learners measured their heights and got the following; 142cm, 149cm, 150cm, 145cm, 140cm, 150cm, 145cm, 140cm, 150cm, 145cm. Find the median.
- (iii) Calculate the median of this set of numbers; 7,9,5,8,9,8,5,6,8,7

### FURTHER PRACTICE ON AVERAGES:

#### EXAMPLES

- (i) Three children plucked 10,12,8 oranges respectively. Find the average number of oranges plucked

WORKING

Average number of oranges plucked

$$= \frac{10+12+8}{3}$$

$$= \frac{30}{3}$$

Average= 10 Oranges.

- (ii) The average mass of three bags of groundnuts is 124kg. If two of them have masses of 130kg and 180kg respectively, find the mass of the third bag

#### WORKING

Average mass of 3bags=124kg

$\therefore$  Total of 3 bags

$$= \text{av. Wt} \times 3$$

$$= 124\text{kg} \times 3$$

$$= 372\text{kg}$$

Total mass of 2bags

$$= 130\text{kg} + 180\text{kg}$$

$$= 310\text{kg}$$

$\therefore$  Mass of 3<sup>rd</sup> bag

$$= \text{Total mass of 3bags} - \text{Total mass of two bags}$$

$$= 372\text{kg} - 310\text{kg}$$

$$= 62\text{kg}$$

$\therefore$  Mass of the 3<sup>rd</sup> bag is 62kg Ans

- (iii) The average temperature for 4days is 26°c. If the average temperature for 3 days is 24°c, find the temperature of the fourth day?

#### WORKING

Total temperature for 4 days = av. Temp  $\times$  4

$$= 26^\circ\text{c} \times 4$$

$$= 104^\circ\text{c}$$

Total temperature for 3 days = av. Temp  $\times$  3

$$= 24^\circ\text{c} \times 3$$

$$= 72^\circ\text{c}$$

$\therefore$  Temperature of the 4<sup>th</sup> day

Total temp. for 4 days - total temp. For 3 days

$$= 104^\circ\text{c} - 72^\circ\text{c}$$

Temp for 4<sup>th</sup> days = 32°c Ans

#### EXERCISE

1. A poultry club collected 20, 18,14 and 24 eggs in 4 days. What was the average number of eggs collected per day?
2. The average mass of six bags is 50kg. If the average mass for five bags is 45kg, calculate the mass of the sixth bag?
3. The average mark for the seven tests that John wrote was 70. If the average

37

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mark for the first four tests was 74 and the average mark of the other two tests was 70, calculate the mark that he got in his seventh test.

### TASK: SCALE DRAWING

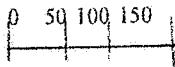
#### AREA OF FOCUS:

- Interpreting scale
- Drawing figures to scale
- Reducing figures to a given scale
- Enlarging figures to a given scale
- Solving practical problems involving scale drawing

Definition of a scale drawing:

- It is the ratio of the size of the drawing to the actual size of the object or geometric shape.

Ways of representing a scale

- i. 1cm representing 50cm
- ii. 1:50
- iii. 1 to 50
- iv.  $\frac{1}{50}$
- v. 

#### TYPICAL MANEB PSLCE MODEL QUESTIONS

##### (a) INTERPRETING SCALE

###### Examples

- (i) The height of a drawing of a house is 4cm. Calculate its real height if the scale used was  $\frac{1}{80}$ .

#### WORKING

$$\text{Scale used} = \frac{1}{80}$$

If 1cm represents 80cm

$$\therefore 4\text{cm} = \frac{4}{1} \times \frac{80}{1}$$

$\therefore$  Real height of the house = 320cm

Height of the house = 3.2m Ans

- (ii) A picture of a tree is 8cm long. If the scale used was  $\frac{1}{4}$ , find the actual length?

#### WORKING

$$\text{Scale used} = \frac{1}{4}$$

If 1cm represents 4cm

$$\therefore 8\text{cm} = \frac{8}{1} \times \frac{4}{1} \text{cm}$$

$$= 32\text{cm}$$

The tree is 32cm Ans

- (iii) A road is 200km long. Find the scale used if the length of the drawing of this road is 8cm?

#### WORKING

Actual length of the road = 200km

Length on the paper = 8cm

If 8cm represents 200km.

$$\therefore 1\text{cm represents } \frac{1\text{cm}}{8\text{cm}} \times \frac{200\text{km}}{1}$$

$$= 25\text{km}$$

Scale: 1cm represents 25km or 1:2500000 Ans

38

(b) DRAWING FIGURES TO SCALE:

(i). A rectangular room is 35m long and 25m wide. Using a scale of 1cm to represent 10m, draw a plan of the room.

**WORKING**

Scale used 1cm: 10m

If 10m is represented by 1cm on paper,

$$\therefore 35m = L = \frac{35m}{10m} \times \frac{1cm}{1}$$

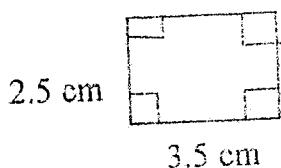
$$\text{Length on paper} = \frac{35}{10} \text{ cm}$$

$$\text{Length on paper} = 3.5 \text{ cm}$$

$$\therefore \text{Width will be } \frac{25m}{10m} \times 1 \text{ cm}$$

$$\text{Width on paper} = 2.5 \text{ cm}$$

$\therefore$  Drawn rectangular plan will be:



(ii). A rectangle is 3200m long and 2800m wide. Draw the diagram of a rectangle using a scale of 1:800

**WORKING**

Scale: 1:800

Real (actual) length = 3200m

$$\therefore \text{Length on paper} = \frac{3200m}{800m} \times \frac{1cm}{1}$$

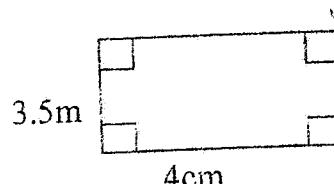
$$\text{Length} = 4 \text{ cm}$$

Actual width = 2800m

$$\therefore \text{Width on paper} = \frac{2800m}{800m} \times \frac{1cm}{1} \\ = \frac{7}{2} \text{ cm}$$

$$\text{Width} = 3.5 \text{ cm}$$

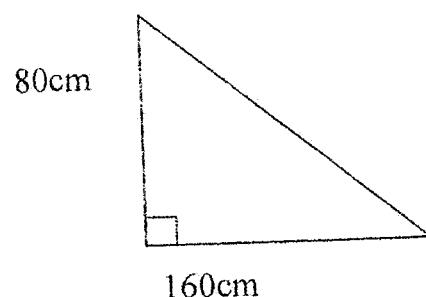
Drawn rectangle;



**EXERCISE**

(1) A book measures 25cm by 20cm. Draw a diagram of a book using a scale of 1cm to represent 5cm.

(2) The figure below shows a triangle ABC in which angle ABC=90, AB=80cm and BC = 160cm



Draw the figure accurately using a scale of 1cm representing 20 cm.

**WORKING:**

Scale used: 1cm to 20

Actual length of AB = 80cm

$$\therefore \text{Length on paper of AB} = \frac{80cm}{20cm} \times \frac{1cm}{1} \\ AB = 4 \text{ cm}$$

Actual length of BC = 160cm

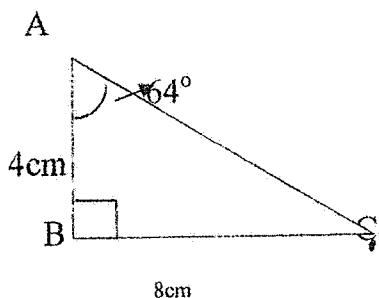
39

39

$$\therefore \text{Length of } BC \text{ on paper} = \frac{160 \text{ cm}}{20 \text{ cm}} \times \frac{1 \text{ cm}}{1}$$

$$BC = 8 \text{ cm}$$

Drawing of a triangle using a scale 1:20

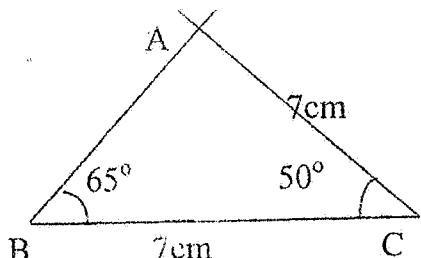


- (b) In your diagram, measure angle BAC and state its value.

$$\text{Angle } BAC = 64^\circ$$

- 3.(a) Using a ruler and a protractor, construct a triangle ABC in which BC=7cm, angle ABC=65° and angle ACB=50°

- (b) Measure and state the length of AC



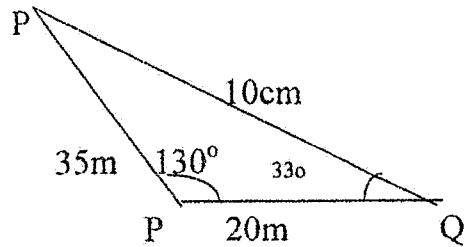
$$AC = 7 \text{ cm}$$

4. The figure below is a triangle PQR in which PQ=35m, PR=20m and angle QPR=130°.

- (a) Draw the figure accurately using a scale of 1cm to represent 5m

- (b) (i). Find angle PQR

- (ii). side QR



Scale: 1cm to 5m

Actual length PQ = 35m

$$\therefore \text{Length of } PQ \text{ on paper} = \frac{35 \text{ m}}{5 \text{ m}} \times \frac{1 \text{ cm}}{1}$$

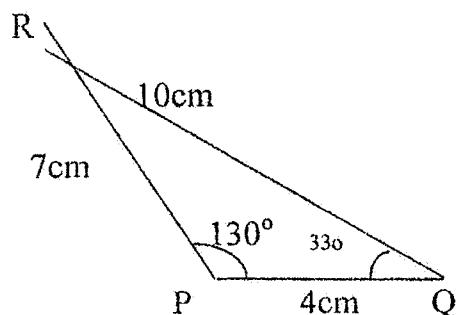
$$PQ = 7 \text{ cm}$$

Actual length on paper of PR

$$\frac{20 \text{ m}}{5 \text{ m}} \times \frac{1 \text{ cm}}{1}$$

$$PR = 4 \text{ cm}$$

Drawing of a triangle on a paper according to scale 1cm to 5m



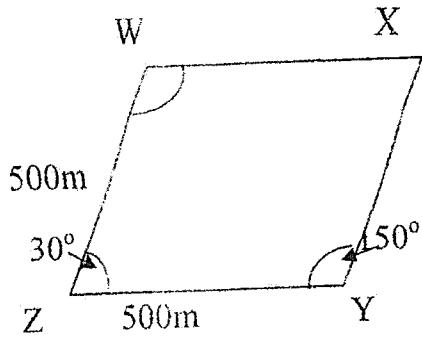
- (b)(i) Angle PQR=33°

- (ii) Side QR= 10cm

- (5) The figure below shows a plot WXYZ in which angle Y=150°, angle z =30° and wz=zy=500m

40

M



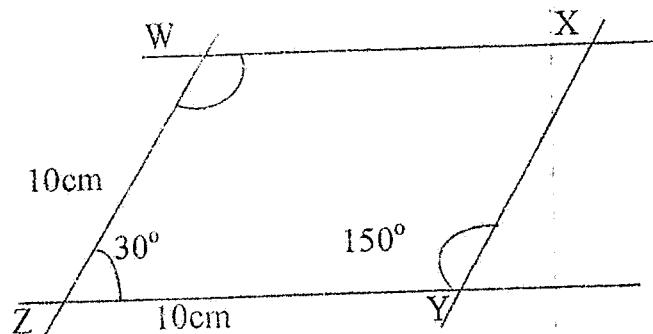
Scale used 1cm representing 50m

Actual length of  $WZ = ZY = 500m$

$\therefore$  Length on paper of  $WZ = ZY$

$$\frac{500m}{50m} \times \frac{1\text{cm}}{1}$$

$$WZ = 10\text{cm}$$



(a)  $WY$  measures 5.5cm

(b) If 1cm represents 50m

$$\therefore 5.5\text{cm} = WY = \frac{5.5\text{cm}}{1\text{cm}} \times \frac{50m}{1}$$

$$= 275.0$$

$$\underline{\underline{WY = 275 \text{ m Ans}}}$$

41

Area of a big triangle =  $\frac{1}{2}bh$

$$= \frac{1}{2} \times \frac{24\text{cm}}{1} \times \frac{32\text{cm}}{1}$$

$$\text{Area of a big triangle} = 384\text{cm}^2$$

$\therefore$  Area of the shaded part (border) = Area of the big triangle (whole figure) - Area of the small triangle.

$$= 384\text{cm}^2 - 144\text{cm}^2$$

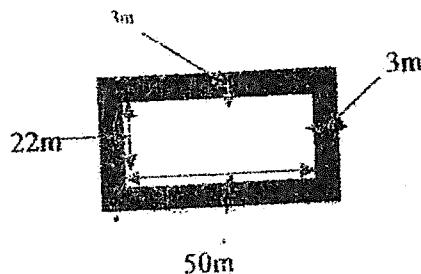
Area of a shaded part (border) = 240cm<sup>2</sup> answer

(b) CALCULATION OF AREA OF BORDER WHEN INTERNAL MEASUREMENTS OF A RECTANGULAR FIGURE AND WIDTH OF THE BORDER HAVE BEEN GIVEN.

#### EXAMPLE: 1

When internal measurements of a rectangular figure have been given but not outside ones.

- (i) A woodlot measuring 50m by 22m has a 2m firebreak all round it. Find area of firebreak.



#### WORKING

Area of a woodlot (small rectangle) =  $L \times B$

$$= 50\text{m} \times 22\text{m}$$

Area of a small rectangle =  $1100\text{m}^2$

Outside length of the big rectangle (whole figure) =  $50 + (3+3)$

$$= 50 + 6$$

Outside length of a big rectangle = 56m

Outside width of the big rectangle (whole figure)

$$= 22 + (3+3)$$

$$= 22 + 6 \text{ m}$$

$$= 28 \text{ m}$$

$\therefore$  Area of the big rectangle =  $L \times B$

$$= 56\text{m} \times 28\text{m}$$

$$\text{Area of a big rectangle} = 1568\text{m}^2$$

$\therefore$  To find area of the firebreak = (Area of the woodlot + Area of the border) - Area of the woodlot alone

$$= 1568\text{m}^2 - 1100\text{m}^2$$

Area of the firebreak = 468m<sup>2</sup> answer

NB: To find outside length or width of a big rectangle we add twice the width of the given border to length and width of the small rectangular figure.

#### EXAMPLE: 2

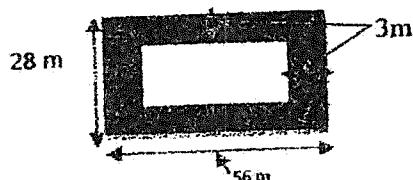
When outside measurements i.e. length and width of a big rectangular figure have been given but not those of smaller rectangular figure inside.

- A woodlot has a 3m firebreak all round it. If the length of the firebreak is 56m and width is 28m

Calculate:

(i) Area of the woodlot

(ii) Area of the firebreak.



42

## WORKING

Internal length of the woodlot:

$$= 56m - (3+3) m$$

$$= 56-6 m$$

Internal length of the woodlot = 50m

Internal width =  $28 - (3+3)$

$$= (28-6) m$$

Internal width = 22 m

$\therefore$  Area of the woodlot =  $L \times B$

$$= 50m \times 22m$$

$$\text{Area of the woodlot} = 1100m^2$$

Area of the whole figure (big rectangle);

$$= L \times B$$

$$= 56m \times 28m$$

$$\text{Area of the big rectangle} = 1568m^2$$

$\therefore$  To find area of firebreak

= Total area - area a woodlot

$$= 1568m^2 - 1100m^2$$

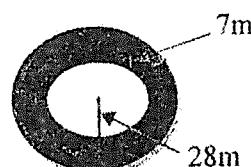
$$\underline{\text{Area of firebreak}} = 468m^2 \text{ answer}$$

(c) Calculation of area of border (shaded part) between two given circles when radius and width of border are given.

NB: Either add to or subtract from width of the border given of the two circles to calculate area of the circles comfortably.

## EXAMPLE: 1

(1) Calculate area of the shaded part of given figure below (use  $\pi = \frac{22}{7}$ )



$$\text{Area of a small circle} = \pi r^2$$

$$= \frac{22}{7} \times \frac{14}{1} m \times \frac{14}{1} m \\ = 616m^2$$

$$\text{Radius of a big circle} = 28m + 7m$$

$$= 35m$$

$$\therefore \text{Area of a big circle} = \pi r^2$$

$$= \frac{22}{7} \times \frac{35}{1} m \times \frac{35}{1} m \\ = 3850 m^2$$

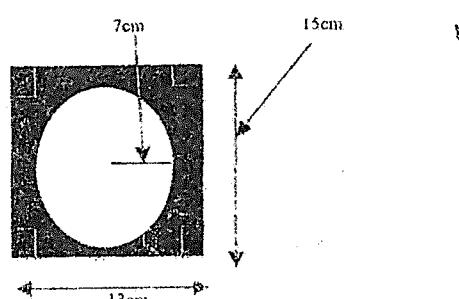
$\therefore$  Area of the shaded part = area of a big circle - area of a small circle

$$= 3850m^2 - 616m^2$$

$$\underline{\text{Area of the shaded part}} = 3234 m^2$$

## EXAMPLE: 2

Calculation of area of the shaded part as indicated below:



43

## WORKING

Area of a circle =  $\pi r^2$

$$= \frac{22}{7} \times \frac{1}{1} \times \frac{7}{1} \text{ cm}$$

$$= 154 \text{ cm}^2$$

Area of the whole figure (rectangle)

$$= L \times B$$

$$= 15 \text{ cm} \times 13 \text{ cm}$$

$$= 195 \text{ cm}^2$$

$\therefore$  Area of the shaded part = Area of the whole figure - Area of circle

$$= 195 \text{ cm}^2 - 154 \text{ cm}^2$$

$$= 41 \text{ cm}^2 \text{ answer}$$

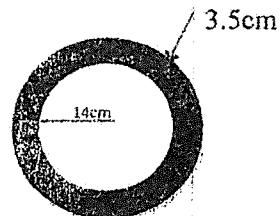
## CAN YOU TRY TO WORK OUT THE FOLLOWING PROBLEMS!

1. A mat measuring 3m by 2.5m is put in a room measuring 4m by 3.5m. Find the area which is not covered by the mat.
2. Calculate area of the shaded part below;

(i)



(ii)

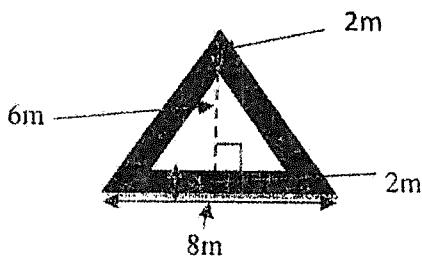


(3) A photograph paper measuring 37 cm by 28 cm has a 2 cm border all round. Find the area covered by a photograph in the photo paper.

(4) A tinsmith cuts out a circular piece of 14 cm radius from a rectangular sheet of metal measuring 42 cm by 34 cm. Find the area of the metal.

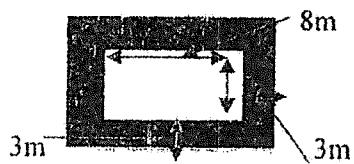
(5) A woodlot has a firebreak of 2.5m all round. If the woodlot is 55m wide and is covering an area of  $561 \text{ m}^2$  excluding the firebreak. Calculate the total area of the firebreak

(6) Calculate the area of the shaded part in the figure below;

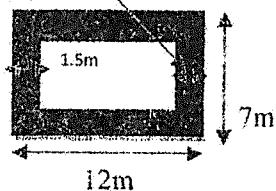


(7) Find area of the border in these figures;

(i)



(ii)



44

**TASK SIMPLE ACCOUNTS****AREA OF FOCUS**

Entering and balancing cash account.

Entering and balancing a bank account.

Entering and balancing a cash book.

**A. CASH ACCOUNT**

cash account is the keeping of a record of income and expenditure of cash in running a business

**WHAT TO REMEMBER IN CASH ACCOUNT**

cash account to have a little well labeled columns e.g. Date Receipts or income . Amount expenditure as (payments), amount.

Entire of various transactions to be written in the right columns.

Need for balancing the cash account at the end of each month.

Need for bringing the balance b/d to the

following month.

NB to come up with the balance at the end of each month subtracts the total expenditure from the total income of that month.

Entries and figures to be neatly and correctly written.

Use pencil for drawing columns and a pen for writing the entries.

**EXAMPLE 1 CASH ACCOUNT.**

Tadyera started a business on 1<sup>st</sup> January 2010 with cash in hand k20, 000.00 during the month tadyera's transaction were as follows

2<sup>nd</sup> January banked k10, 000.00

5<sup>th</sup> January sold goods k8575.00 cash

10<sup>th</sup> January cashed a cheque for goods sold k9000.00

15<sup>th</sup> January paid loan k5000.00

Prepare tadyera's cash account and bring down the balance ready for business on February Tadyera's cash account.

Date	Income	Amount K            T	Date	Expenditure	Amount K            T
1/1/2010	Cash in hand	2000.00	2/1/2010	banked	10,000.00
5/1/2010	Sold good	8575.00	15/1/2010	Paid loan	5000.00
10/1/2010	Cashed a cheque	9000.00	31/1/2010	Balance c/d	22575.00
		37575.00		Total	37575.00
1/2/2010	Balanced b/d	22575.00			

**THOUGHT PROVOKING QUESTION**

how is balance C/D found

it is calculated by subtracting total expenditure from total income of each month.

**EXAMPLE 2 : BANK ACCOUNT**

bank account is a record of transaction of income and expenditure by the client kept at the bank

for instance look at this example:

45 HEKELEHIKO PHOTO COPY AND STATIONERY: TILI PA EKWENDENI, EUTHINI, MZIMBA, CHAMPHIRA, LUNDAZI, KARONGA, KASUNGU, BORERO NA ZOMBA.

Mr. Dombola had cash K1,300 at the bank on June 2005 and on  
 2<sup>nd</sup> June banked K12000.00  
 3<sup>rd</sup> June paid transport by cheque K2000.00  
 5<sup>th</sup> June paid for repairs by cheque K8000

24<sup>th</sup> banked K4083.00  
 26<sup>th</sup> June paid transport by cheque K5,000 prepare bank account from. Mr. Dombola and balance it at the end of the month.

#### Mr. Dombola Bank Account

Date	Income	Amount K      T	Date	Expenditure	Amount K      T
1/06/2005	Cash at bank	1300.00	3/06/05	Paid transport	2000.00
2/06/2005	banked	1200.00	5/06/05	Paid for repairs	8000.00
24/06/2005	banked	4083.00		Paid for transport	5000.00
				Balance c/f	2383.00
		17383.00			17383.00
1/07/2005	Balance c/f	2383.00			

#### EXAMPLE 3: CASH BOOK

Cash book is a financial record keeping which is a combination of a cash account and a bank account  
 look at this example and observe how it is prepared:  
 Mr. Tembo a fisherman had K20, 000 cash in hand on  
 1<sup>st</sup> December 2007 and on.  
 2<sup>nd</sup> December banked K12, 000  
 3<sup>rd</sup> December sold fish (cash) K6000.00  
 5<sup>th</sup> December paid wage K1000  
 7<sup>th</sup> paid transport by cheque K2500.  
 11<sup>th</sup> December withdraw K3000  
 17<sup>th</sup> December paid wages K1200

NB 1 take note that transaction which denotes /show that the money was banked should be written both under cash in the expenditure column and under bank in the income column why? Because the cash account has lost and the bank has received similarly when money has been withdraw from the bank it has to be captured twice show that the bank has paid out the money where area cash account has received the money study how the entries have been made below to classify the above points deeper

#### Mrs. Tembo's Cash Book

Date	Income	Cash K      T	Bank K      T	Date	Expenditure	Cash K      T	Bank K      T
1/12/07	Balance in hand	2000.00		1/12/07	banked	12000.00	
2/12/07	banked		12000.00	5/12/07	Paid wages	1000.00	
3/12/07	Sold fish	6000.00	7/12/07		Paid transport by cheque		2500.1
11/12/07	withdrawal	3000.00					
				11/12/07	withdrawal		3000.00
				17/12/07	Paid wages	1200.00	
				31/12/07	Balance c/d	14800.00	6500
		2900.00	12000.00			29000.00	12000
1/1/08	Balance b/d	14800.00	8500.00				

Can you try to work out the following problems

1. Mr. Dupusi started business with K5000

cash in hand on 1<sup>st</sup> January 2011. The following transactions were made during the month of January:

46 HEKELEHIKO PHOTO COPY AND STATIONERY: TILI PA EKWENDENI, EUTHINI, MZIMBA, CHAMPHIRA, LUNDAZI, KARONGA, KASUNGU, BORERO NA ZOMBA.

January 2 sold fish for K2000  
 January 5 paid K1500 cash for water  
 January 10 bought clothes for K1250  
 January 17 sold fish for K1980  
 January 22 banked K2000  
 January 30 paid K2500 to workers  
 prepare Mr. Dupusi cash account and bring down the balance to be used on 1<sup>st</sup>  
**February.**  
 2. Prepare a cash book for Mr. Banda and balance it on 31<sup>st</sup> March. The following were his transactions:  
 1<sup>st</sup> March in cash K2500  
 1<sup>st</sup> March cash purchases (sold goods) K1200  
 5<sup>th</sup> March banked K30,000 10<sup>th</sup> march withdrawal k1500  
 29<sup>th</sup> march purchased by cheque k5,000  
 25<sup>th</sup> march cash sales k18000  
 29<sup>th</sup> march paid rent by cash k2000  
 30<sup>th</sup> march sold goods by cheque k20000  
 3. Mr mkandawire opened a bank account with a cash deposit of k5000 on 2<sup>nd</sup>  
 November 2007 during the month he made the following transactions:  
 November 2 paid transport by cheque k1,800  
 November 4 sold chickens by cheque k6000  
 November 8 paid rent by cheque k3,500  
 November 17 banked k9000.  
 November 20 bought stationery by cheque k6500.  
**TASK ANGLES**  
 area of focus  
 drawing angles by turning using cardinal points.  
 Identifying types of angles they have

formed.

Trying to calculate number of:

1. Right angles they have formed by such turnings

2. Degrees such angles have.

Drawing angles either anticlockwise or anticlock wise or calculating

Example a1. Draw an angle you can make by turning from south to west anticlockwise

2. How many right angles are there?

3. How many degrees has the angle you have made

working 

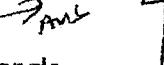
A(1). 3 right angles

(3) 3 right angles =  $3 \times 90^\circ$

the angle has  $= 270^\circ$  

examples: (b)1. Draw an angle you can make by turning from south to west clockwise

2. How many (i). right angles? (ii). Degrees working

(b). (1) 

(2). 1 right angle

(3). 1 right angle =  $1 \times 90^\circ$

one right angle =  $90^\circ$

→ can you try to work out the following problems

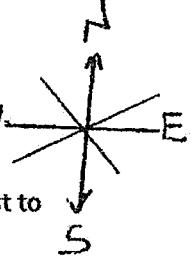
1. (i). draw an angle by turning from west to east clockwise

ii. How many right angles are there?

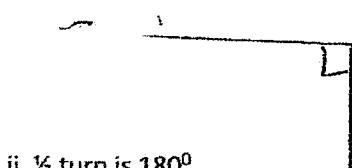
(iii). How many degrees has the angle you have formed?

2. (i). Draw an angle from south to north east antic lock

ii. How many right angles are there?



- iii. How many degrees have the angle you have made
- 3. i. How many degrees have the straight line?
- ii. Draw an angle on a straight line which is equal to  $180^\circ$
- 4. A. draws
  - (i). a quarter turn angle
  - ii. a half turn angle
  - iii. a three quarters turn angle
  - iv. a complete turn angle
  - b. from period turn of angles above
  - i.  $\frac{1}{4}$  turn is  $90^\circ$



- ii.  $\frac{1}{2}$  turn is  $180^\circ$
- iii.  $\frac{3}{4}$  turn is  $270^\circ$
- iv.  $4/4$  or complete turn is  $360^\circ$

- identifying and describing types of angles
- 1. A right angles

Definition an angle which is  $90^\circ$



- 2. An acute angle

definition an acute angle is any angle which is less than  $90^\circ$

examples of drawing of angles which are acute



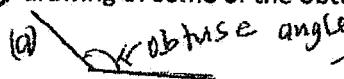
- iii. Choose angles which are acute from the sizes of angle

- a.  $120^\circ$ , b.  $60^\circ$ , c.  $78^\circ$ , d.  $89^\circ$ , e.  $360^\circ$ , f.  $15^\circ$ , g.  $1^\circ$

- 3. Obtuse angle

definition an obtuse angle is any angle which is greater than  $90^\circ$  but less than  $180^\circ$

→ drawing of some of the obtuse angles



- 4. An angle on a straight line

→ definition: a straight line angle is  $180^\circ$  it has two right angles.



- 5. A reflex angle

definition it is any angle which is greater than  $180^\circ$  but less than  $360^\circ$

→ drawings of some of the reflex angles:

