

P.6 LESSON NOTES FOR MATHEMATICS

TOPICAL BREAKDOWN FOR TERM I

Theme	Topic	Sub topic		
Sets	Sets concepts	 Types of sets Disjoint sets Equivalent sets Non equivalent sets Equal sets Union sets Un equal sets Matching sets Intersection sets Joint sets Complement of sets Difference of sets Sub sets Listing proper sub sets and improper subsets 		

		 Finding the number of sub sets Application of subsets (finding number of members in a set whose subsets are given Representing elements on a Venn diagram Venn diagram Describing and shading regions of a Venn diagram Representing members on Venn diagram Venn diagrams showing number of members in the sets Application of the set concept Probability 		
Numeracy	Whole numbers	Place values up to millionsValues of digits up to millionsExpanding numbers		

Numeracy	Operation on whole numbers	 Place value form value form powers of ten (exponents) Writing numbers in words Writing numbers in figures Decimal fractions Place values Value Expanding decimal fractions Writing in words Writing in figures Rounding off decimals Roman numbers up to M Roman numbers up to M Addition of Roman numbers. Addition of whole numbers with or without regrouping Addition of whole numbers with or without regrouping Multiplication of whole numbers with or without regrouping Multiplication of whole numbers involving word problems. Division of whole numbers by 2 digit numbers with or without remainders. Division involving word problems Division involving word problems Mixed operation on whole numbers Mixed operation involving word problems Mixed operation involving word problems Mixed operation involving word problems Properties of numbers Divisibility tests of 		
	sequences	2,3,4,5,6,8,9,10 • Types of numbers		

	 Even and odd numbers 	ı	
	 Whole and natural numbers 		
	 Counting numbers 		
	 Triangular numbers 		
	 Square numbers 		
	- Prime numbers		
	- Composite numbers		
	Number patterns		
	Consecutive numbers		
	- Counting	ı	
	- Even		
	- Odd		
	 Factors of a number 		
	- Common factors		
	- Greatest / highest common		
	factor		
	Prime factorization		
	- Finding unknown prime number		
	- Finding GCF and LCM using		
	prime factors on venn diagrams		
	Application of GCF		
	Multiples of numbers		
	Common multiples and LCM		
	Application of LCM		
	 Finding square of numbers 		
	 Finding square of numbers 	ı	
	Application of square and	ı	
		ı	
	square roots of numbers	ı	
	 Forming number patterns 		

TOPIC / UNIT ONE

SET CONCEPTS

LESSON 1
Sub topic:

Types of sets

Content:

- . Types of sets: (a) Equal sets e.g
 - (b) Equivalent sets
 - (c) Unequal

Examples

1. Equal sets





2. Equivalent sets / matching sets





3. Non equivalent sets

P

a,e,i

Z

1,2,3,4

ACTIVITY

The pupils will attempt exercise 1 : 1 page 2 from A new MK primary MTC pupils' BK 6. / Mk new edition pg 1-2 / understanding mtc pg 1-3/ fountain pf 1-8 **REMARKS**

LESSON 2

Sub topic: Types of sets

Content

- (a) Intersecting sets () / joint sets
 A set of common members from two or more sets.
- (b) Union sets (∪)A set of all elements in the two or more sets.
- (c) Universal set (ε)
 The biggest set from which other smaller sets are got.
- (d) Joint and disjoint sets

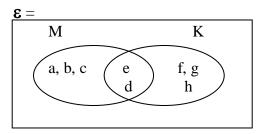
Examples

Sets $M = \{a, b, c, d, e, \}$

$$K = \{d, e, f, g, h, \}$$

- (i) $M \cap K = \{e, d\}$
 - (ii) $K \cup M = \{a, b, c, d, e, f, g, h\}$
 - (iii) Universal set (ϵ)

The biggest set from sets M and K i.e

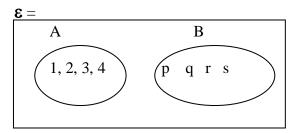


 $\varepsilon = \{a, b, c, e, d, f, g, h\}$

Disjoint set

$$A = \{1,23,4\}$$

$$B = \{p, q, r, s\}$$



Activity

Mk new edition pg 3-4 Understanding mtc pg 4-7 Fountain pg 7-8

Remarks

LESSON 3

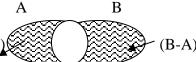
Sub topic : Types of sets

Content:

- (a) Difference of sets
 - i) shading of regions
 - ii) describing regions
- (b) Complement of sets
 - i) find complement of sets
 - ii) shading regions with complement of sets

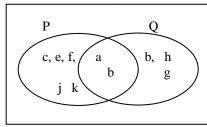
Examples:

a)



b) Complements

Given that ϵ



Find:

- (i) $P^1 = \{b, h,g, j, k\}$
- (ii) $Q^1 = \{c, e, f, j, k\}$
- (iii) $(P n Q)^1$
- (iv) $(P u Q)^{-1}$

- (a) Difference sets:
 - (i) $P Q = \{c, e, f\}$
 - (ii) $Q P = \{b, g, h\}$
- (b) Empty sets e.g

A = {all goats with wings}

Activity

Mk new edition pg 10

LESSON 4

Sub topics sub sets (\subset)

Content:

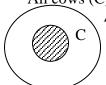
- (a) Listing / forming subsets
- (b) Numbers of sub sets
- (c) Number of proper subsets

Examples:

(i) Representing subsets on diagrams

i.e All cows (C) are animals (A)

cows C animals



(ii) Listing/ forming sub sets

$$A = \{x, y\}$$

Sub sets are $\{\ \}, \{x\}, \{y\}, \{x, y\}$

(iii) Find number of subsets;

Formula: 2ⁿ (n stands for number of members)

Eg set
$$R = \{1, 2, 3\}$$

No of subsets =
$$2n$$

= 2^3
= $2 \times 2 \times 2$
= 8

iv) find number of proper subsets

$$(2^{n}-1)$$

Set
$$P = \{a,b,c,d\}$$

No of proper subsets

$$(2^{n}-1)$$

$$2^{4}$$
-1

$$(2x2x2x2)-1$$

16-1

15 proper sub sets

Activity

Mk new edition pg 6-7

Fountain mtc pg 8-10

Understanding mtc pg 4-6

Remarks

LESSON 5

Subtopic: Finding number of elements in sets.

Content: (a) listing members of sets

(b) Number of elements in sets.

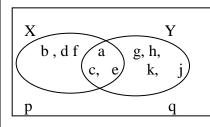
Examples: (i) Find members in set N

 $N = \{ \text{prime numbers between O and } 10 \}$

$$N = \{2, 3, 5, 7\}$$

- (ii) n(N) = 4
 - (i) Use the venn diagram to answer questions

3



Find

- (a) n(x)But $x = \{a, b, c, d, e, f, \}$ $\therefore n(x) = 6$
- (b) n (y)
- (c) n(X n Y)
- (d) n(Y-X)
- (e) $n(X)^1$

Activity

Mk old edition pg 20-22

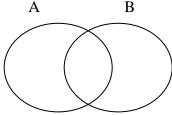
Remarks

LESSON 6

Subtopic: Application of set concepts.

Content: (a) Representing information on a venn diagram

Given that set $A = \{a,b,c,d,e,f,g\}$ $B = \{a,e,I,o,u\}$



$$n(A) = 7$$

$$n(B) = 5$$

$$n(A \cap B) = 2$$

$$n(A-B) = 5$$

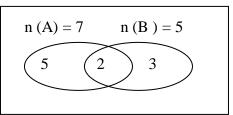
$$n(B-A) = 3$$

$$n(A \cup B) = 10$$

Interpreting information given on a venn diagram

Examples:

- Given that n(A) = 7, n(B) = 5 and $n(A \cap B) = 2$ (i)
- Draw a venn diagram to represent the above information (ii)



Activity

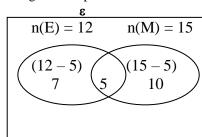
Mk old edition pg 22-25

Remarks

LESSON 7

SUBTOPIC Application of sets: Content: Interpreting word problems using the venn diagram (real life situations)

In a class, 12 pupils like English (E), 15 pupils like Maths **Examples:** (a) (M) and 5 pupils like both Eng and Maths. Draw a venn diagram to represent the information above.



- (i) The class has 7 + 5 + 10 = 22 $\therefore \varepsilon = 22 \text{ pupils}$
- (ii) How many like one subject only? 7 + 10 = 17 pupils
- In a class of 30 pupils, 20 take Mirinda (M), 15 take Fanta (F) (b) and some take both drinks while 2 take neither of the drinks.
 - Show this information on a venn diagram

$$\epsilon = 30$$

$$N(M) = 20 \qquad n(F) = 15$$

$$y \qquad 20 - y \qquad y \qquad 15 - y$$

$$2$$

(ii) How many pupils take both drinks? $20 - y + y + 15 - y + 2 = 30 \ 20 - y$ 20 + 15 + 2 + y - y - y = 3037 - y= 3037 - 37 - v= 30 - 37<u>-y</u> = -7 -1 -1 Let y represent those who take both. = 7

Activity

- Understanding mtc pg 13-15 (i)
- Fountain p g 10-13 (ii)
- (iii) Mk new edition pg 8-9

Remarks

LESSON 8

Sub topic

: Probability

Content:

(i) The idea of probability / chance

(ii) Formular

Prob. = $\frac{\text{n (Expected outcome)}}{\text{n(possible outcomes)}} \frac{\text{or n (EE)}}{\text{n (SS)}}$

(iii) Application

Example:

If $B = \{counting numbers less than 10\}$

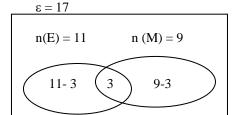
$$\therefore$$
 B = {1, 2, 3, 4, 5, 6, 7, 8, 9}

(a) Find the probability of picking an even number

Even numbers = $\{2, 4, 6, 8\}$ n (Expected outcomes) = 4n (possible outcomes) = 9

$$\therefore \text{ Prob} = \frac{4}{9}$$

(b) In a class of 17 pupils, 11 like Eng (E) and 9 like Maths (M) if a pupil is picked at random from the class, what is the probability of picking a pupil who likes Maths only?



Pupils who like both:

$$(11 + 9) - 17$$

 $20 - 17$
 3

Pupils who like Eng only Maths only (11-3) (9-3)

$$Prob = \frac{8}{17}$$

<u>6</u> 17

Activity

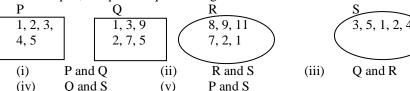
Fountain pg 14-16 Mk new edition pg 10-12

Remarks

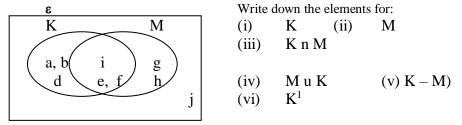
LESSON 9

Revision work on set concepts

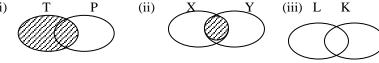
1. Write equal, unequal or equivalent against each



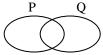
- 2. If $P = \{\text{even numbers less than ten}\}$
 - (a) Find n (P)
 - (b) How many subsets has set P?
- 3. Study the venn diagram and use it to answer the questions about it.



- 4. (a) List down all the subsets in A if $A = \{o, u, i, s\}$
 - (b) A set has five elements how many subsets has set A?
 - (c) Given that a set has 16 subsets. Find the numbers elements in this set.
- 5. (a) Draw and shade these sets.
 - $(i) \qquad \qquad Rn \ P \qquad (ii) \qquad \qquad M \ u \ N \qquad \qquad (iii) \qquad \qquad Z F$
 - (b) Describe / name the shaded regions below:



- 6. Set $P = \{2, 3, 5, 7\}, Q = \{1, 2, 3, 4, 6, 7, 8\}$
 - (a) Complete the venn diagram



7

- (b) Find n(P n Q) (ii) n(P u Q) (iii) n(Q-P)
- (iv) n(P) only (v) n(Q) (vi) $n(P)^1$
- 7. In a market 24 traders sell cloth (C), and 30 traders sell food (F). If 16 traders sell both items, draw a venn diagram and find out how many traders sell only one type of commodity.
- 8. In a class of 30 pupils, 18 eat meat, 10 eat beans and 5 do not eat any of the two types of food.
 - (i) Show this information on a venn diagram
 - (ii) How many pupils eat meat only?
 - (iii) Find those who eat beans only.
 - (iv) How many pupils eat only one type of food?
 - (v) Find the number of pupils who eat both types of food.
 - (vi) What is the probability of choosing a pupil at random who eats meat?

TOPIC/UNIT TWO

THEME: NUMERACY TOPIC: WHOLE NUMBERS

LESSON 1

Subtopic: Value values

Content: Value of digits in numerals

Examples: (i) Find the place value

(ii) Find the value of each digit

Number	Place value	value
9 4 3 8 7 2 5	Ones	$5 \times 1 = 5$
	Tens	$2 \times 10 = 20$
	Hundreds	$7 \times 100 = 700$
	Thousands	8 x 1000 = 8000
	Ten thousands	3 x 10000 = 30000
+	Hundred thousands	4 x 100000 = 40000
l	Million	9 x 1000000 = 9000000

ii) Using operations to find values of digits

Activity

Mk new edition pg 14-15 Fountain pg 20-23

Remarks

LESSON 2

Subtopic: Expanded form

Content (i) Expand using values / place values

(ii) Expand using powers of ten

Examples:

(a) Expand 6845 using values

$$6845 = (6 \times 1000) + (8 \times 100) + (4 \times 10) + (5 \times 1)$$
$$= 6000 + 800 + 40 + 5$$

b) Using power exponents

$$6^{3}8^{2}4^{1}5^{0} = (6 \times 10^{3}) + (8 \times 10^{2}) + (4 \times 10^{1}) + 5 \times 10^{0})$$

 $6845 = 6.845 \times 10^{3}$

Activity

MK new edition pg 16-17 Understanding mtc pg 25 Fountain pg 23-24

Remarks

LESSON 3

Scientific /standard form

Content: expanding number using scientific notation

Example: Express 6845 in scientific form

$$6845 = 6845 \div 10$$

$$684.5 \div 10$$

$$68.45 \div 10$$

$$6.845 \times 10^{3}$$

LESSON 4

SUBTOPIC: Expressing expanded numbers as single numeral.

Content: (i) Expanded form of values

(ii) Expanded form of place values

(iii) Expanded form of exponents.

Examples: (a) Write in short:

4000 + 60 + 2

(b)
$$(8 \times 10000) + (7 \times 1000) + (5 \times 100) + (9 \times 10) + (3 \times 1) \\ 80,000 + 7,000 + 500 + 90 + 3 \\ 80000 \\ 7000 \\ 500 \\ 90 \\ + 3 \\ \hline 87593$$

(c)
$$(6 \times 10^{3}) + (4 \times 10^{2}) + (2 \times 10^{1}) + (3 \times 10^{0})$$

$$(6x 10 \times 10 \times 10) + (4 10 \times 10) + (2 \times 10) + (3 \times 1)$$

$$6000 + 400 + 20 + 3$$

$$6000$$

$$400$$

$$20$$

$$+ 3$$

$$6425$$
(d)
$$6.42 \times 10^{2} = 6.42 \times 100 = 642$$

- Fountain pg 23-24
- Mk new edition pg 16-17

Remarks

LESSON 5

Reading and writing numbers in words Subtopic: Expressing numerals in words upto millions. Content:

Examples A

9452

9000 – nine thousand

400 - four hundred

52 - fifty two

Therefore; 9452 = nine thousand four hundred fifty two

Examples:

write 1486019 in words 1000000 – One million

486000 - Four hundred eighty six

19 - Nineteen

:. 1486019 = One million, four hundred eight six thousand nineteen

Activity:

MK new edition pg 18-19

Fountain pg 25.

Remarks

LESSON 6

Subtopic: writing words in figures.

(b)

Writing number words in figures to millions **Content:**

Write in figures. Examples A

Four hundred thousand, seven hundred sixteen

Solution:

Four hundred thousand 400000 Seven hundred sixteen 716 400716

One million one hundred one thousand eleven ii)

Activity

MK new edition pg 18-19

Fountain pg 25.

Remarks

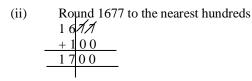
LESSON 7

Subtopic: Rounding off whole numbers

Content: Round off to the nearest

- Tens
- (ii) Hundreds
- (iii) Thousands
- Round 677 to the nearest tens **Examples:**

680



iii) Round off 34567 to the nearest thousands

Activity

Mk old edition pg 47-48

Remarks

LESSON 8

Subtopic: Decimal numbers

Content: Place values of decimal in words and figures.

Examples:

(a)
$$\underline{1}$$
 One tenth $-0.\underline{1}$

Place value of 1 in 0.1 is Tenths.

(b)
$$\underline{8}$$
 Eight hundredths – 0.8 100

4.6
Tenths
$$-6 \times \frac{1}{10} (6 \times 0.1) = 0.6$$

Ones $-4 \times 1 = 4$

Number	Place values	Values
6.73	6 – ones	6x1 = 6
	7 – tenths	7x1/10 = 0.7
	3 = hundredths	$3 \times 1/100 = 0.03$

Activity

Mk old edition pg 42-44

Remarks

LESSON 9

Subtopic: Reading and writing decimals in words and the vice verse

Content:

- (i) Writing decimals in words
- (ii) Expressing decimals in figures from words

Examples:

(a) Write 0.125 in words

0.125 = One hundred twenty five thousandths

(b) 18.4

18 _____ Eighteen

0.14 Fourteen hundredths

18.14 Eighteen and fourteen hundredths

(c) Twenty six and four tenths

Twenty six → 26

Four tenths \longrightarrow + 0.4

Activity

Mk old edition pg 45-46

Remarks

LESSON 10

Subtopic: Expanding decimal numerals

Content: (i) Expand using place values

- ii) Expand using values
- (iii) Expand using exponents

Examples:

(i) Expand 3. 5 4 Hundredths
$$-4 \times \frac{1}{100} = 0.04$$
Tenths $-5 \times \frac{10}{10} = 0.5$
Ones = $3 \times 1 = 3$

$$\therefore 3.54 = 3 + 0.5 + 0.04$$

(ii) Expand 4.62 using exponents/

0 -1 -2

4.6 2

 $4.62 = (4 \times 10^{0}) + (6 \times 10^{-1}) + (2 \times 10^{-2})$

(iii) Write as a single numeral

(a)
$$3 + 0.5 + 0.04$$

3

0.5

+ 0.04

(b) Express in the shortest form
$$(4x10^{0}) + (6x10^{-1}) + (2x10^{-2})$$

 $4 \times 100 = 4 \times 1 = 4$
 $6 \times -10 = 6 \times \frac{1}{10} = 0.6$
 $2 \times 10^{-2} = 2 \times \frac{1}{100} = \frac{0.02}{4.62}$

The pupils will do exercises 8:8 and 8:9 A New MK 2000 BK 6 pg 59 (old Edn)

Remarks

LESSON 11

Subtopic: Expressing decimal in scientific notation.

Content: Expend decimals of different place values in standard/ Scientific

notation.

- (a) Tenths
- (b) Hundredths
- (c) Thousandths

Examples: (i) 0.4 in standar

(i) 0.4 in standard form

 $0.4 = 4.0 \times 10^{-1}$

- (ii) $2.52 = 2.52 \times 10^{0}$
- (iii) $23.63 = 2.363 \times 10^{1}$
- (iv) $464.241 = 4.64244 \times 10^2$

Activity

Express the following to standard form:

- (a) 4.8 (d) 207.4
- (b) 3.25
- (c) 38.06 (f) 23.63

- (g) 49
- (e) 4819.2 (h) 29.7
- (i) 0.006
- (h) 29.7 (i) 120.0

Remarks

LESSON 12

Content: Finding expanded decimals

Example

- a) What number has been expanded
- i) 3+0.5+0.04
- ii) (4x10) + (6x1) + (7x0.01)
- iii) $(6x10^3) + (4x10^1) + (9x10^{-2})$

Remarks

Ref: MK old edition pg 47-48

LESSON 13

Subtopic: Ordinary decimals

Content: (a) Arrange in ascending and descending order

Example: (i) Arrange the following in ascending and descending order

$$\frac{1}{10}$$
 , $\frac{2}{1}$, $\frac{4}{100}$ (LCM = 100)

$$\Rightarrow \frac{1}{10} \times 100 = \frac{1 \times 10}{1} = 10 \qquad (2^{\text{nd}})$$

$$\frac{2}{1} \times 100 = \frac{200}{1} = 200 \qquad (3^{\text{rd}})$$

$$\frac{4}{100} \times 100 = \frac{4 \times 1}{1} = 4 \qquad (1^{\text{st}})$$

Ascending order = 0.04, 0.1, 2.0

(ii) Arrange the following in descending order

3.5, 4.05, 0.45, 0.02

35, 405, 45, 2 (LCM = 100)
10 100 100 100

$$\frac{35}{10} \times 100 = 350$$
 $\frac{45}{100} \times 100 = 45$
 $\frac{45}{100} \times 100 = 2$

 $\frac{405}{100}$ x 100 = 405 $\frac{2}{100}$ x 100 = 2

<u>Descending order</u> = 4.05, 3.5, 0.45, 0.02

Activity

The pupils will do exercises below:

- (1) 1.5, 0.015, 0.015, 15.0 (Ascending order)
- (2) 0.5, 5.5, 1.5, 5.1 (descending order)
- (3) 0.33, 0.3, 3.3 (Ascending order)
- (4) 0.2, 0.75, 0.5 (Descending order)

(5) 0.25, 0.5, 0.4, 0.6 (Ascending order)

Remarks

Ref: Trs' collection

LESSON 14

Subtopic: Rounding off decimals Content: Round off to the nearest:

- (a) Tenths / one place of decimal
- (b) Hundredths / two places of decimals
- (c) Thousandths / three places of decimal
- (d) Ones / whole number

Example:

(i) Round off 4.25 to the nearest whole no.

(ii) 29.67 to nearest tenths

- ∴ 29.67 \(\textit{\Omega}\) 29.7
- (iii) 39.95 to nearest tenths 39.9% + .10 40.00 = 40.0

Note: consider the answer upto the required place value

Ref

MK old edition pg 48 Understanding mtc pg 33-35

LESSON 15

Subtopic: Roman and Hindu Arabic Numerals

Content: (i) Reading writing Roman numerals to 10,000

(ii) Expressing Hindu Arabic numerals in Roman system.

Example:	(i)	Basic dig	gits / nun	nerals			
Hindu Arabic	1	5	10	50	100	500	1000
Roman	1	V	X	L	C	D	M

(ii) 75 =
$$70 + 5$$

 $LXX + V$
= $LXXV$

(iii)
$$555 = 500 + 50 + 5$$

 $D + L + V$
 DLV

Activity

- Mk old edition pg 49-51
- Understanding pg 36-39
- Fountain pg 26-30

LESSON 15

Subtopic: Expressing Roman Numerals to Hindu Arabic numerals
Content: Convert from Roman numerals to Hindu Arabic numerals

Examples:

(i) Write LXXV in Hindu Arabic system LXXV

L = 50

XX = 20

$$\begin{array}{rcl}
XX & = & 20 \\
V & = & 5 \\
\hline
& & 75 \\
\hline
CCCXCIX
\end{array}$$

(iii) CMLXIX
$$\begin{array}{ccc} CM & = & 900 \\ LX & = & 60 \end{array}$$

IX	=	9
		969

- Mk old edition pg 49-51
- Understanding mtc pg 36-39
- Fountain pg 26-30

LESSON 16

Subtopic:

Operations on Roman Numerals

Content:

- a) Addition
- (b) Subtraction

Examples:

(i) Work out and answer in Hindu Arabic

$$XL + XV$$

$$XL = 40$$

$$XV = +15$$

$$55$$

(ii) Simplify in Roman system

LXXX - XX	subtract ∴60
LXXX = 80	80
XX = 20	- 20
_	60

(iii) Peter had LIX goats and sold XIV goats

How many goats remained (answer in Hindu Arabic)

=LX

Activity

The pupils will do exercises below.

(1) XI + IX

(6) XXV - XV

(2) VII + L

(7) XL-VII

(3) CD + XIV

- (8) XIX IX
- (4) XVI + XIV
- $(9) \qquad CM CL$

(6) XX + III

(10) Word problems

Remarks

Ref: Mk old edition pg 50-51

LESSON 17

Subtopic: conversing from base ten to base five

Content: (a)

Change from base ten to base five

Examples: (i) Change 23 to base five

Change 25 to base nive				
5	23			
	14	3		

 $\therefore 23 = 43_{\text{five}}$

b) Converting from base ten to binary base

19 _{ten}			
BW	BT	R	
2	19	1	. 🕈
2	9	1	
2	4	0	
2	2	0	_ /
	1-		

 $19_{\text{ten}} = 10011_{\text{two}}$

Remarks

LESSON 18

Subtopic: Changing to decimal / base ten

Content:

Examples: (a) express 412_{five} to base ten

Examples: (ii) change 1011two to base ten

$$1011two = (1x2^3) + (1x2^1) + (1x2^0) \\ (1x2x2x2) + (1x2) + (1x1) \\ 8 + 2 + 1 \\ 11_{ten}$$

Trs' collection

Remarks

LESSON 19

Subtopic: Operations on bases

Content: Addition of same non decimal base numerals

Examples: (i) $2 3_{\text{five}} + 21_{\text{five}}$

$$\begin{array}{ccc} & 2\ 3\ \mathrm{five} \\ + & \underline{2\ 1\ \mathrm{five}} \\ & \underline{4\ 4\ \mathrm{five}} \end{array}$$

(ii) Add: 1101 + 11two

Activity

Trs' collection

Remarks

LESSON 20

Subtopic: Subtraction of bases

Content: Subtraction in non decimal bases in the same base.

Examples: (i) Subtract $34_{\text{five}} - 13_{\text{five}}$

(ii) Subtract 1011 two - 111two 0100two

Activity

Trs' collection

Remarks

LESSON 21

Subtopic: Content:

Multiplication in Binary system Multiply (i) 2 by 2

Multiply (i) 2 by 2 (ii) 3 by 2

(iii) to 4 b 3 digit numerals

Examples:

(i) $10_{two} \times 11_{two}$

(ii) 11two x 11two

$$\begin{array}{c} 111_{\text{two}} \\ \underline{x\ 11_{\text{two}}} \\ 111 \\ \underline{+\ 111} \\ 10101_{\text{two}} \end{array}$$

Activity

Trs' collection

Remarks

LESSON 22

Subtopic:

Operations on finites

Content:

Addition in finite/modular system

Examples:

Add: 3 + 4 = -(finite 5)





(b) 3 + 4 = - (finite 5) 3 + 4 = 7 $7 \div 5 = 1 \text{ r}(2)$ 3 + 4 = 2 (finite 5) = 2 (finite 5)

(ii) 6 + 8 = y (finite 12)

Activity Remarks

LESSON 23

SUBTOPIC:

Multiplication in finite systems

Examples:

Work out $3 \times 4 = x$ (finite 5)



3 x 4 means 3 groups of 4 \therefore 3 x 4 = 2 (finite 5) So x = 2 (finite 5)

 $3 \times 4 = x$ (finite 5) (ii) $3 \times 4 = 12$ $3 \times 4 = 2$ (finite 5) \therefore x = 2 (finite 5)

Activity

Ref: MK old edition pg 245-253

Remarks

LESSON 24

Subtopic:

Subtraction in finite system.

Content:

Using the dial (a) (b)

Example:

By calculation method

Subtract 3 - 4 = - (finite 5) (i)



 $\therefore 3 - 4 = 4$ (finite 5)

(ii)
$$3-4 = - \text{ (finite 5)}$$

 $(3+5)-4$
 $8-4$
 $= 4$
 $\therefore 3-4 = 4 \text{ (finite 5)}$

Activity

Mk old edition pg 245-253

Remarks

LESSON 25

Algebra in finite system Subtopic:

Content: Examples: Solve equations in finite system

Solve: p-4=3 (finite 6) P - 4 + 4 = 3 + 4 (finite 6)

P + 0 = 7 (finite 6)

 $P = 7 \div 6 = 1 \text{ r } 1$

P = 1 (finite 6)

Find x if 2x - 3 = 3 (finite 4) (ii)

2x - 3 = 3 (finite 4)

2x - 3 + 3 = 3 + 3 (finite 4)

2x + 0 = 6 (finite 4)

= 6 2

X = 3 (finite 4)

2x-3=4(finite 5) ii)

> 2x-3+3 = 4+3 (finite 5) 2x = 7 (finite 5)

2x = 7 + 5) (finite 5)

2x = 12 (finite 5)

X = 6 (finite 5)

Trs' collection

Remarks

LESSON 26

Subtopic: Application of finites.

Use ideas on finites to solve everyday life problems: (weeks, Contents:

months)

If today is a Friday, what day of the week will it be after 23 Examples: (a) days.

Day
$$+ 23 = -$$
 (finite 7)
5 $+ 23 = 28$

$$28 \div 7 = 4 \ r \ 0$$

0 (finite 7)

∴ The day will be Sunday.

If today is Friday, what day of the week was 45 days ago? (b)

5-3 (finite 7)

2 finite 7

: It was Tuesday

(c) It is April now, which month will it be after 18 months

Month - 18 (finite 12)

$$4 - 18 1 r 6$$

4 - 6

$$(4 + 12) - 6$$

16 - 6 = 10 (finite 120)

It will be October.

Activity

MK old edition 252-253

Remarks

REVISION WORK ON WHOLE NUMBERS

- Given digits 8, 4, 2 1.
 - (a) Write down all the numerals you can form using the digits.
 - (b) Find the difference between the highest and the lowest numeral formed.
- 2. Find the place value and value of the underlined digits.
 - 4 6657
- (b) 16785
- (c) 16345

- Expand 8739 using 3.
 - values
- (b) place values
- (c) Powers
- Write 7432 in standard/scientific form 4.
- 5. Express the following in single form
 - 5000 + 70 + 3(a)
 - $(7 \times 10000) + (8 \times 1000) + (3 \times 100) + (7 \times 10) + (2 \times 1)$ (b)
 - $(7 \times 10^3) + (4 \times 10^2) + (3 \times 10^1) + 5 \times 10^0)$ (c)
 - 8.56×10^2 (d)
- 6. Write 2592028 in words
- 7. Write: six million, eight hundred thousand, nine hundred sixteen
- 8. Round off 4867 to the nearest tens
 - Round off 79581 to the nearest hundreds. (b)
 - Round off 79581 to the nearest thousands.
- 9. Write the place value and value of the underlined digits (b)
 - 0.784 (a)
- 3.782

5.948

- Write 0.328 in words 10.
- 11. Write Twenty seven and six tenths in figures.
- 12. Expand 5.78 using
 - place values
- (b) values
- (c) exponents

(c)

- 13. Express 0.432 in standard form
- Arrange 0.44, 0.4, 4.4 in ascending order. 14.
- Arrange 0.35, 0.5, 0.7, 0.33 in descending order. 15.
- 16. Round off 39.96 to the nearest tenth.
- Write 99 in Roman Numerals. 17.
- 18. Write XLV in Hindu Arabic system.
- 19. Work out: XI = IX
- 20. Change 26_{ten} to base six.
- 21. Write 346_{seven} in words.

- 22. Give the place value of each digit in 243_{five}.
- 23. Expand 462 seven using powers.
- 24. Change 341_{six} to base ten
- 25. Change 124_{five} to base six.
- 26. If $17_X = 16_{ten}$ find value of x
- 27. Add $55_{\text{seven}} + 33_{\text{seven}} = ____ \text{seven}$.
- 28. Subtract: $44_{\text{five}} 12_{\text{five}}$
- 29. Multiply 10_{two} x 11_{two}
- 30. Change 13 to finite 7.
- 31. Add: 4 + 4 =____ finite 5
- 32. Multiply: $2 \times 4 =$ ____ finite 5
- 33. Subtract: 2 4 =_____ finite 6
- 34. Divide $5 \div 3 =$ finite 7
- 35. Solve: x 4 = 3 finite 6
- 36. If today is Friday, what day of the week will it be after 22 days?
- 37. If today is Thursday, what day of the week was it 44 days ago?
- 38. It is 2.00 pm what time of the day will it be after 400 hours?

TOPIC / UNIT OPERATIONS ON WHOLE NUMBERS. LESSON 1

Subtopic: Addition of whole numbers up to millions.

Content: Adding large whole numbers up to millions with and without

carrying.

Examples:

(a)
$$\begin{array}{c} 7 & 8 & 6 & 4 & 7 & 6 & 2 \\ +1 & 9 & 7 & 9 & 8 & 6 & 8 \\ \hline 9 & 8 & 4 & 4 & 6 & 3 & 0 \end{array}$$

Example:

(b) There were 246 240 books in a library and 167 645 more books were donated to the same library. How many books

Activity

Understanding mtc pg 40-42

Fountain pg 32-35

MK new edition pg 24-25

Remarks

LESSON 2.

Subtraction of whole numbers of millions.
Content: Subtract large numbers up to millions.

Examples:

. Examples: (b) A dairy processed 6500 650 litres of milk and sold 5650945 litres. How many litres were left?

Activity

MK new edition pg 27 Fountain pg 33-34

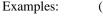
Understanding mtc pg 43-45.

LESSON 3

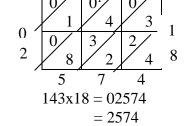
Subtopic: Multiplication

Content: Multiplication of large numbers

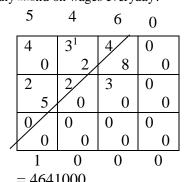
By 2 digit numberBy 3 digit number



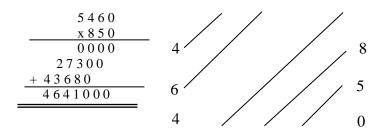




Example: (b) A company has 850 workers who earn sh 5460 each a day. How much does the company spend on wages everyday?



For more lesson notes, visit www.freshteacheruganda.com



Fountain pg 34-36 / understanding mtc pg 46-49/ MK new edition pg 28 **Remarks**

LESSON 4

Subtopic: Division

Content: Divide large numbers.

Examples:

Activity

Mk new edition pg 37-38 Fountain pg 37-38 Understanding MTCpg 49-53

Remarks

LESSON 5

Subtopic: Division

Content: Word problems involving division of large numbers.

Example: A petrol station manger bought 2200 litres of motor oil. If she put equal amount of oil in 440 drums. How many litres of oil were in

each drum?

$$\begin{array}{c|cccc}
 & 50 & 440 \\
 & 220000 & 880 \\
 & 0 & 1320 \\
 & & 0 & 1760
\end{array}$$

Activity

Mk new edition pg 37-38

Fountain pg 37-38

Understanding MTCpg 49-53

LESSON 6

Subtopic: Combined operations on numbers

Content: Use of BO MAS

Examples: (i) Work out: 9 - 15 + 6

$$(9+6)-15$$

 $15-15$
0

(ii)
$$8 \div 4 \times 3$$
 (iii) $18 - (4 \times 3) \div 6$

iv) Kawoya got 32 mangoes in the morning and ate 28 of them .

½ of 32 was got in the evening. How many mangoes did he have at the end of the day?

Activity

Fountain pg 38-39

MK new edition pg31-32

Understanding mtc pg 54-59

Remarks

LESSON 7

Subtopic:

Properties of numbers.

Content:

- (i) Commutative properties
- (ii) Distributive property
- (iii) Associative property

Example:

(i) <u>Commutative</u>

Order of addition or multiplication does not change the results

(a)
$$3+4=4+3$$

 $7=7$

(b)
$$4 \times 5 = 5 \times 4$$

 $20 = 20$

(ii) Associative property

Order of grouping two numbers in <u>addition</u> or

Multiplication does not change results

e.g
$$3 + (8+9)$$
 = $(3+8)+9$
 $3+17$ = $11+9$
 20 = 20

(iii) <u>Distribution property</u>

e.g Work out using distributive property

$$(2 \times 3) + (2 \times 4)$$

 $2 (3 + 4)$
 $2 (7)$
 $2 \times 7 = 14$

Activity

Trs' collection

Remarks

REVISION WEEK ON OPERATIONS ON NUMBERS

1. Add: 8975631 +2867542

- 2. Add: 231 048 + 524 628
- 3. There were 351 272 books in a library and 189 242 more books were donated to the same library. How many books are there altogether?
- 4. Subtract: 6432278

 -2321101
- 5. Subtract 452 367 from 872 291
- 6. A dairy processed 5300 450 litres of milk and sold 3450833 litres. How many litres were left?
- 7. Multiply 145 by 19?
- 8. Multiply 1238 by 134
- 9. A bus carries 84 passengers each trip. How many people will it carry if it makes 18 trips?
- 10. Divide $5984 \div 68$
- 11. A farmer has sh 688640 to pay to 32 workers. How much money does each worker get?
- 12. Work out $18 (3 \times 2) \div 6$

TOPIC / UNIT 4: PATTERNS AND SEQUENCES:

LESSON 1

Subtopic: Divisibility tests

Content: - Divisibility tests of 2, 5, 10

- Divisibility by 3, 6, 9

- Divisibility by 4 and 8

Example: (a) By 3

A Number is divisible by 3 when the sum of its digits 15 a

multiple of 3. E. g 612

$$6+1+2$$
$$9 \div 3 = 3$$

∴ 612 is divisible by 3

(b) Divisibility by 8:

A number is divisible by 8 when the last three digits form a

multiple of eight.
Results and a second seco

e.g 6<u>248</u> las ∴ 6248 is divisible by 8

Activity

MK new edition pg 34-36

Fountain pg 41-42

Understanding pg 60-61

Remarks

LESSON 2

Subtopic: Developing number patterns

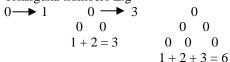
Content: - Odd and even numbers

Triangular numbersRectangular numbers

- square numbers

Examples:

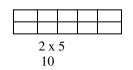
- (i) Lists down the following:
 - (a) Counting / natural numbers less than 15.
 - (b) Whole numbers up to ten
 - (c) Even numbers between ten and 20.
 - (d) Odd numbers less than twenty
- (ii) Triangular numbers E.g



N.B Find triangular numbers by adding the consecutive natural numbers i. e (1, 3, 6, 10, 15, -----)

(iii) Rectangular numbers





(iv) Square numbers

e.g
$$0 0$$

 $0 0$
 $1 \times 1 = 1$ $2 \times 2 = 4$

$$\begin{array}{cccc}
000 & 000 & 0\\
000 & 000 & 0\\
3x3=9 & 4x4=16
\end{array}$$

Activity

Fountain pg 43-48

MK new edition pg 37

Understanding pg 62-65

Remarks

LESSON 3

Subtopic:

Prime and composite numbers.

Content:

List prime numbers Composite numbers

Examples:

(i) What is the sum of the 3rd and the 7th prime numbers

Prime numbers are:

$$Sum = 5 + 17$$
$$= 22$$

(ii) Work out the sum of the first five composite numbers Composite numbers are; 4, 6, 8, 9, 10, 12, 14, 15, Sum is 4+6+8+9+10=

Activity

The Pupils will do exercise 4:13 and 4:14 from pgs 79 and 80. A New MK BK 6.

Remarks

LESSON4

Subtopic: Consecutive numbers / natural numbers / integers

Content: Find the consecutive counting numbers

Example: The sum of 3 consecutive whole numbers is 36. What are these

numbers

Let the 1st number be n.

$$2^{nd}$$
 number = $n + 1$
 3^{rd} number = $n + 2$

But:
$$n+n+1+n+2 = 36$$

 $n+n+n+n+1+2 = 36$
 $3n+3 = 36$
 $3n+3-3 = 36-3$
 $\frac{3n}{3} = \frac{33}{3}$
 $\therefore n = 11$

1^{st} number = n	2^{nd} number $(n + 1)$	3 rd number is
and $n = 11$	11 + 1 = 12	(n + 2)
		11 + 2
		13

Activity

Mk old edition pg 76-78

Remarks

LESSON5

Subtopic: Consecutive numbers

Content: Find the consecutive EVEN and ODD numbers

Example: $\underline{N.B}$ Even and \underline{Odd} numbers increase in intervals of 2

(i) The sum of three consecutive <u>Even</u> numbers is 24. list

down the 3 numbers Let the 1^{st} number by (x)

 2^{nd} number be (x + 2)

 3^{rd} number be (x + 4)

These EVEN Numbers are:

$$1^{st}$$
 is 6, 2^{nd} is , 3^{rd} $X+2$ $x+4$ $6+2$ $6+4$ 8 10

Activity

MK old edition pg 77-78 Mk New Edition 43

Remarks

LESSON 6

Subtopic: Factors

Content: - Listing factors

- The common factors (CF)

- The HCF / GCF

The LCF

- (i) How many factors does 18 have? $F_{18} = \{1, 2, 3, 6, 9, 18\}$ \therefore 18 has 6 factors
- (ii) Work out the sum of all the F20 $F20 = \{1, 2, 4, 5, 10, 20\}$ Sum = 1 + 2 + 4 + 5 + 10 + 20 = 42
- (iii) Work out the GCF of 12 and 18 $F12 = \{1, 2, 3, 4, 6, 12\}$ $F18 = \{1, 2, 3, 6, 9, 18\}$ $CF = \{1, 2, 3, 6, 9, 18\}$ GCF = 6
- N.B (iv) The LCF is always 1

Mk old edition pg 81

Remarks

LESSON 7

Subtopic:

Prime factorization

Content:

- Using (a) Multiplication
 - (b) Subscript method(c) Powers/ exponents

(b)

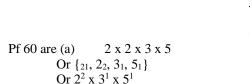
- Find number prime factorised.

Examples:

- (i) Find the prime factors of 60.
- (a) By ladder

 2 | 60
 2 | 30
 3 | 15
 5 | 5
 1

by factors tree 2^{60} 2^{30} 2^{15}



Activity

MK old edition pg 82

Remarks

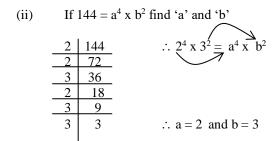
Lesson 8 Content:

- i) Finding prime factorized number
- ii) Finding the missing prime factors Examples
- i) What number has been prime factorised
- ii) Prime factories and find missing factors
 The prime factorization f 30 is 2 x y x 5, find y

$$a = \{2_1.2_2.5_1\}$$

 $b = 2^2 \times 3^1 \times 5^1$

(i) If
$$2 \times 3 \times y = 30$$
 find y
 $2 \times 3 \times y = 30$
 $\frac{6y}{6} = \frac{30}{6}$
 $y = 5$

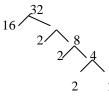


1

(iii) Given that $2^{2x} \times 2 = 32$ find the value of x. (1st prime factorise 32) 32

i.e
$$2^{2x} \times 2^1 = 2^5$$

 $2x + 1 = 5$
 $2x + 1 - 1 = 5 - 1$
 $\frac{2x}{2} = \frac{4}{2}$
 $X = 2_2$



Activity

Mk old edition pg 83

Remarks

LESSON 9

Subtopic:

Multiples of numbers

Content:

Listing multiples.

- The common multiples

- The LCM

Examples:

Activity

Remarks

Mk old edition pg 86.

(i) List the multiples of 4 between ten and 30.

$$M_4 = \{4, 8/12, 16, 20, 24, 28/\dots\}$$

 M_4 between 10 and 30 are

{12, 16, 20, 24, 28}

- (ii) Work out the LCM of 24 and 36
 - (a) Using multiples
 - (b) By prime factorization method.

				1
i.e	(2)	24	36	
	$\overline{(2)}$	12	18	$LCM = 2 \times 2 \times 2 \times 3 \times 3$
	$\overline{(2)}$	6	9	
	3	3	9	= 72
	3	1	1	_
		1	1	_

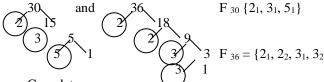
LESSON 10

Subtopic: Finding LCM and GCF by prime factorization using a venn diagram

Content: - Representing prime factors on the venn diagrams.

- Find the GCF/HCF and LCM from the venn diagram

Examples: (i) Work out the prime factors of 30 and 36



(ii) Complete

(iii) Use the venn diagram to find the:

(a) GCF of 30 and 36 GCF = $F_{30} \cap F_{36} = \{2_1, 3_1\}$ = 2 x 3 = 6

(b) LCM of 30 and 36 LCM = $F_{30} \cup F_{36} = (2_1, 2_2, 3_1, 3_2, 5_1)$

$$36 - (21, 22, 31, 32, 31)$$

= $2 \times 2 \times 3 \times 3 \times 5 = 180$

Activity

Mk old edition pg 86-87

Remarks

LESSON 11

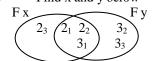
Subtopic: Unknown values/ factors

Content: (i) Find the missing number

(ii) Find the unknown factors

(iii) Work out HCF and LCM

Example: (i) Find x and y below



factors of y are {21, 22, 31, 32, 33} y = 2 x 2 x 3 x 3 x 3

$$y = 108$$

Factors of
$$x = (21, 22, 31, 23)$$

$$2 \times 2 \times 3 \times 2$$

 $X = 24$

$$GCF = Fx \cap F y = \{2_1, 2_2, 3_1\}$$

$$= 2 \times 2 \times 3$$

$$GCF = 12$$

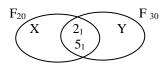
$$LCM = Fx \cup F y$$

$$= 2_1, 2_2, 2_3, 3_1, 3_2, 3_3,$$

$$2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$LCM = 216$$

(ii) Find the unknowns



$$F20 = \{x, 21, 51\}$$

$$20 = x + 2 \times 5$$

$$20 = 10 \times 10$$

$$10$$

$$\begin{array}{ll}
 0 = x + 2 x 5 \\
 \underline{20} &= \underline{10} x \\
 10 & 10 \\
 2 &= x
 \end{array}$$

$$\begin{array}{c}
10 & 1 \\
3 = y \\
\therefore y = 3_1
\end{array}$$

F30 =
$$\{21, 51, y\}$$
 GCF of 20 and 30
30 = $2 \times 5 \times y$ GCF = $F20 \cap F30$

$$0 = 2 \times 5 \times y$$
 $GCF = F20 \cap F30$
 $30 = 10 y$ $GCF = \{21, 51\}$
 $= 2 \times 5$

$$\therefore$$
 GCF = 10

LCM =
$$F 20 \cup F 30$$

= $\{21, 22, 31, 51\}$
= $2 \times 2 \times 3 \times 5$
 \therefore LCM = 60

 $\therefore x = 2_2$

Activity

Mk old edition pg 88-89

Remarks

LESSON 12

Application of GCF / LCM Subtopic:

Content: Relationship between GCF and LCM

Other problem related to HCF/GCF

Examples: (i) The LCM of two numbers is 144 their GCF is 12 and one of these numbers is 48. Find the other number

> Let 2nd No be y Solution:

 $1^{st} \text{ No x } 2^{nd} \text{ No} =$ LCM x GCF

$$\frac{48 \times y}{48} = \frac{144 \times 42}{48}$$
 $y = 36$

(ii) What is the largest possible divisor of 24 and 36. Largest possible divisor is GCF

\bigcirc	24	36	$2 \times 2 \times 3 = 12$
2	12	18	largest divisor = 12
3	6	9	
	2	3	

Activity

Oxford primary MTC BK 6 pgs 34 – 41

Remarks

LESSON 13

Subtopic: Application of LCM

Content: Find the smallest number which when divided by 9 and 12

- (a) No remainder?
- (b) Remainder of 1?
- (c) Remainder of 5? Get LCM of 9 and 12 i.e

Kelvin has a stride of 40cm and his father has a stride of (ii) 60cm. What is the width of the narrowest path that they can both cross in a whole number of strides?

LCM of 40cm and 60 cm $M_{40} = \{40, 80, (120), 160, \dots\}$

$$M_{60} = \{60, 120, 180, \dots\}$$

$$LCM = 120$$

∴ The width is 120 cm

Activity

- Oxford primary MTC pupils BK 6 pgs 34 - 36.

Remarks

LESSON 14

Subtopic:

Working with powers of whole numbers.

Content:

Find a number from powers

- Express number as product of powers of a given numbers

Operation on powers.

Example:

(i) What is 7^3 .

$$73 = 7 \times 7 \times 7 = 343$$

(ii) Express 64 using powers of fours

(iii) Work out: 23 + 32 + 50

$$(2 \times 2 \times 2) + (3 \times 3) + 1$$

= 18

Activity

A New MK pupils' BK 6 pgs 84 and 85.

Remarks

LESSON 15

Subtopic:

Squares of numbers

Content: - Squares of

- (a) whole numbers
- (b) fractions
- (c) mixed fractions

Example:

(d) decimal

What is the square of 12?

$$12^2 = 12 \times 12 = 144$$

(ii) Work out the square of 3/4

$$\begin{vmatrix} 3 \\ 4 \end{vmatrix}$$
 $^2 = \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$

(iii) Calculate the square of 1 1 ½

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

(iv) Find (0.15)2

$$(0.15)^2 = 15 = \underline{15} \times \underline{15} = \underline{225} = 0.0225$$

100 100 100 1000 (v) In general M x
$$M = M^2$$

Activity

- The Pupils will do exercise 9 on pg 42 from Oxford primary MTC BK 6.

- Exercise 4: 37 pg 95, 4: 39 pg 98 and 4: 42 pg 101 of MK BK 6.

- Mk new edition pg 37

(i)

Remarks

LESSON 16

Subtopic: Square roots.

Content: Square roots of whole numbers.

Example: Find the square roots of $\sqrt{36}$ 2 | 36 $\therefore \sqrt{36} =$

25

$$\frac{3 \ 27}{3 \ 9} \qquad \therefore \sqrt{324} = 18$$

A New MK pupils' MTC BK 6 pg 38.

Remarks

LESSON 17

Subtopic: Sq

Square roots of fractions

Content:

Find square roots of fractions

- (a) Proper fractions
- (b) Mixed numbers
- (c) Decimals

Examples:

(i) Work out the
$$\sqrt{\frac{4}{9}}$$

$$\sqrt{\frac{4}{9}} = \sqrt{\frac{2 \times 2}{3 \times 3}} = \frac{2}{3}$$

(ii) What is the square root $\sqrt{6} \frac{1}{4}$

$$\sqrt{6 \times 4 + 1} = \sqrt{25} = \sqrt{5 \times 5} = \frac{5}{2}$$

(iii) Find the square root of 1.44

$$1.44 = \frac{144}{100} = \frac{\sqrt{144}}{\sqrt{100}} = \sqrt{\frac{12 \times 12}{10 \times 10}} = \frac{12}{10} = 1.2$$

Activity

New MK pupils BK 6 pages 39-40

Remarks

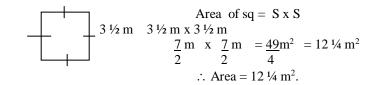
LESSON 18

Subtopic: Application of squares and square roots.

Content: - Solve problems using square

- Solve problems involving use of square roots.

Examples: 1. A square garden has a length of $3\frac{1}{2}$ m. What out its area.



(ii) If a square has an area of 576.

(a) Calculate its side

Area = side x side

$$576 = S \times S$$
 $\sqrt{576} = \sqrt{S^2}$
 $\therefore \text{ side} = 24$

$$\begin{array}{r}
2 | 576 | \\
\hline
2 | 288 | \\
\hline
2 | 144 | \\
\hline
2 | 72 | \\
\hline
2 | 36 | \\
\hline
2 | 18 | \\
\hline
2 | 9 | \\
\hline
3 | 3 | \\
\hline
1 | = \sqrt{S2}$$

(b) Find the perimeter of the square.

$$P = 4 \text{ x side}$$

$$4 \text{ x } 24$$

$$\therefore P = 96$$

Activity

The Pupils will do exercise 4:41 and 4:43 pages 100 and 102.

A old MK pupils' BK 6 pages 100 to 102.

New mk pg 39

Remarks

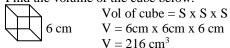
LESSON 19.

Subtopic: Cubes and cube roots
Content: - Find the cubes
- Find the cube roots

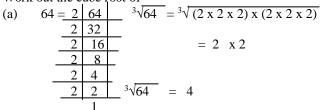
Examples:

- (i) What is the cube of: 5? $5^3 = 5 \times 5 \times 5 = 125$
- (ii)

Find the volume of the cube below:



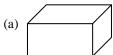
(iii) Work out the cube root of



Activity

The Pupils will do exercise below

- Work out 2³ 1.
- Find the number of cubes in the figure:





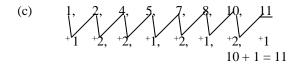
- Work out the volume of a cube of side. 3.
 - (i) side = 4cm
- (ii) side = 10 cm
- (iii) side = 5
- 4. Work out the cube root of each of these numbers (b) 27
- (a) 8
- (c) 64
- (d) 216

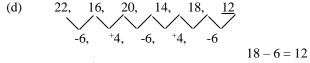
LESSON 20

Subtopic: Number patterns and sequences Content: Complete series and sequences Examples: Find the missing number:

- 2, 3, 5, 7, ____ (a) 11 is the next number (prime numbers)
- (b) 9, 16, 25,

2 x 2 3 x 3 4 x 4 5 x 5 6 x 6 (square numbers)





(e)
$$\frac{1}{2}$$
, $\frac{1}{4}$, $\frac{1}{8}$, _____

Activity

A New Mk primary MTC BK 6 pages 90 – 91.

Fountain pg 49

Remarks

LESSON 21

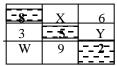
Puzzles/ magic square Subtopic:

(ii)

Content: Dealing with puzzles

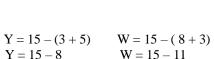
The magic squares:

Find the missing numbers Examples: (i)



x = 15 - (9 + 5)

X = 15 - 14



(a)

Magic numbers is

W = 4

8 + 5 + 2 = 15

$$X = 1$$
 $Y = 7$ N.B Vary the squares to 16 squares.

Activity

Work on magic squares from Understanding MTC BKs 5 and 6 Understanding mtc pg 74

UNIT 5: TOPIC: FRACTIONS

LESSON 1

Sub topic: Operations on fractions

Basic operations

- Addition (+) (i)
- (ii) Subtraction (-) (iii) Multiplication (X)
- Division (÷) (iv)
- Mixed operations (BODMAS) (v)

Addition of simple fractions with different denomination Content: (i)

> (ii) Addition of mixed numbers

Examples:

(i) Add:
$$\frac{2}{3} + \frac{1}{4}$$
 LCM 12

$$\begin{array}{r}
2 \times 4 + 1 \times 3 \\
3 \times 4 + 4 \times 3 \\
\underline{8} + 3 \\
12 & 12
\end{array}$$

$$\begin{array}{r}
\underline{11} \\
12
\end{array}$$

Find the sum of $2^{2}/_{3}$ and $2^{1}/_{4}$ (ii)

$$\frac{2^{2} + 2^{1}}{2^{3}} = (2 + 2) + \frac{2}{3} + \frac{1}{4} \quad \text{LCM } 12$$

$$4 + \left(\frac{2 \times 4}{3 \times 4}\right) + \left(\frac{1 \times 3}{4 \times 3}\right)$$

$$4 + \frac{8}{12} + \frac{3}{12}$$

$$4 + \frac{11}{12}$$

$$\frac{411}{12}$$

Activity

Fountain pg 56-57

Understanding pg 85

LESSON 2

Sub-topic: Operation on fractions

Content: Subtraction of simple fractions with different

denominations

(ii) Subtraction of mixed numbers

Examples: Subtract: $\underline{3} - \underline{3} LCM = 20$ (a)

$$\frac{15}{20}$$
 - $\frac{12}{20}$ = $\frac{3}{20}$

(b) Subtraction:
$$4\frac{1}{3}$$
 $1\frac{7}{8}$ $\frac{13-15}{3} = \frac{104-45}{24}$ $= \frac{59}{24}$

$$2\frac{11}{24}$$

$$4 \frac{1}{3} - \frac{7}{8} = (4-1) + (\frac{1}{3} - \frac{7}{3}) \\ 8$$

$$= 3\frac{1}{3} - 1\frac{7}{8}$$

$$= 80 - 21$$

$$=\frac{59}{24}=\frac{211}{24}$$

Activity

Understanding mtc pg 87

Fountain pg 58-60

Remarks

LESSON 3

Sub-topic:

Addition and subtraction of fractions involving word problems

Content:

Addition of fractions involving word problems

Examples

subtraction of fractions involving word problems

(a) A man used three quarters of his shamba to grow groundnuts, a half to grow potatoes and two thirds to grow water melons. Fin total fraction of the whole land used. Solutions

$$\frac{3}{4} + \frac{1}{2} + \frac{2}{3}$$
 LCM 12

$$\frac{3 \times 3}{4 \times 3} + \frac{1 \times 6}{2 \times 6} + \frac{2 \times 4}{3 \times 4}$$

$$\frac{9}{12} + \frac{6}{12} + \frac{8}{12}$$

$$\frac{23}{12} = \frac{12}{12} + \frac{11}{12}$$

$$= 2\frac{11}{12}$$

One third of the children in a school are girls. One day a (b) quarter of the girls in the class were absent. What fraction of the girls in the school were absent on that day?

Fraction girls =
$$\frac{1}{3}$$

Fraction of girls absent =
$$\frac{1}{4}$$
 of $\frac{1}{3}$ = $\frac{1}{4}$ x $\frac{1}{3}$ = $\frac{1}{12}$ Ans

Activity

Trs' collection

Remarks

LESSON 4

Sub-topic:

Addition and subtraction

Content:

Addition and subtraction by use of BODMAS

Example:

$$\frac{1}{2} - \frac{2}{3} + \frac{1}{5}$$

Solution

$$\frac{1}{2} - \frac{2}{3} + \frac{1}{5}$$
 (BODMAS)

Rearrange
 $\underline{1} + \underline{1} - \underline{2}$ LCM 30

$$\frac{21-20}{30}$$

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

(b) Simplify:
$$1 \frac{1}{3} + \frac{3}{4} - \frac{5}{6}$$

Solution

$$1\frac{1}{3} + \frac{3}{4} - \frac{5}{6}$$
 (Use BODMAS)

$$\frac{4}{3} + \frac{3}{4} - \frac{5}{6}$$
 $\frac{16 + 9 - 10}{12}$

$$\frac{25 - 10}{12} = \frac{15}{12}$$

$$1^{\frac{1}{}}$$

= 4

Activity

Fountain bk 6 pg 59.

Remarks

LESSON 5

Sub-topic: Multiplication of fractions

Content: - Multiplication of fractions

- Multiplication of simple fractions

Examples: Fraction with whole number.

(i)
$$\frac{1}{3} \times 12 = \frac{1}{3} \times \frac{12}{3}$$
 | calculate $\frac{3}{4}$ of 12

$$= \frac{12}{3} \cdot \frac{4^{1}}{3}$$

$$= 9$$

$$\frac{3}{4} \cdot \frac{6}{4} \cdot \frac{9}{4}$$

$$= \frac{36}{7} \cdot \frac{9}{1}$$

(b) Fraction by fractions
Multiply:
$$\frac{2}{5} \times \frac{3}{4}$$

$$\frac{2 \times 3}{5 \times 4} = \frac{6}{20} \cdot 3$$

$$= \frac{3}{10}$$

(c) Multiply:
$$\frac{1}{2} \times \frac{1}{3}$$

= $\frac{1}{2} \times \frac{1}{3} = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$
= $\frac{1}{6}$

Activity

Fountain pg 60-61

Understanding mtc pg 79-81

New Mk pg 46-47

Remarks

LESSON 5

Sub-topic: Content: Operation on fractions Division of fractions

(i) Use of LCM

(ii) Use of reciprocal

Reciprocals

Product of a number by its reciprocal is 1.

What is the reciprocal of ³/₄? Let the reciprocal of ³/₄ be t.

$$\frac{3}{4} \times t = 1$$
= ${}^{1}4 \times \frac{3t}{4} = 1 \times 4$
= ${}^{1}\frac{3t}{13} = \frac{4}{3}$

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

∴ Reciprocal of ³/₄ is ⁴/₃

What is the reciprocal of 2 1/4? Let the reciprocal of 2 1/4 be y.

$$2 \frac{1}{4} x y = 1$$

 $9 x y = 1$

$$\begin{array}{ccc}
4 & & & \\
& 9y & & = & 1 \times 4
\end{array}$$

$$\frac{9y}{9} = \frac{4}{9}$$

$$Y = \frac{4}{9}$$

:. Reciprocal of 2 ¼ is 4

$$1 \div \frac{1}{4} = 1 \div \frac{4}{9}$$
$$= 1 \times \frac{4}{9}$$

$$=\frac{4}{9}$$

Old edition MK pg 48

Remarks

LESSON 6

Sub-topic: division of fractions

Content: - Divide fractions using reciprocals

Divide fractions using LCM

Examples:

(i) Divide
$$\frac{2}{3} \div 2$$

(b) Divide:
$$\frac{2}{3} \div 2$$

$$\begin{array}{ccc}
2 \div & 6. \\
\underline{2}^{1} & = & \underline{1} \\
\underline{6}_{3} & & \underline{3}
\end{array}$$

Activity

New MK BK 6.

Remarks

Examples (ii) (a) Divide:
$$\frac{3}{4} \div \frac{1}{2}$$

LCM

$$3 \div 1$$
 LCM 4
 $4 \quad 2$
 ${}^{1}4 \times 3 \div 1 \times 4^{2}$
 $3 \div 2$
 $3 = 1 \frac{1}{2}$

Reciprocal
$$\frac{3}{4} \div \frac{1}{2}$$
 reciprocal $\frac{2}{4}$ $\frac{3}{4} \times \frac{2}{4}$ $\frac{3}{4} \times \frac{2}{4} \times \frac{6}{4} \times \frac{$

(b) Divide
$$2\frac{1}{2} \div 1^{-\frac{1}{4}}$$

LCM
$$2\frac{1}{2} \div 1^{-\frac{1}{4}}$$

$$\frac{5}{2} \div \frac{5}{4} \text{ LCM 4}$$

$$^{2} \cancel{A} \times \frac{5}{2} \div \frac{5}{4} \times \cancel{A}^{-1}$$

$$(2 \times 5) \div 5$$

$$10 \div 5 = \underline{2}$$

Activity

New MK pg 50

Fountain pg 62-64.

Remarks

LESSON 7

Sub-topic: Operation on fractions

Mixed energtions with

Content: Mixed operations with fractions

(i) Use of BODMAS

Examples: 1. Simplify:
$$\frac{5}{6} - \frac{3}{4} \div \frac{1}{2}$$

Rename 1 ½ to
$$\frac{3}{2}$$

$$\frac{5}{6} - \left(\frac{3}{4} \div \frac{3}{2}\right) = \frac{5}{6}$$
BODMAS
$$\frac{5}{6} - \left(\frac{3^{1}}{4^{2}} \times \frac{2^{1}}{3_{1}}\right)$$

$$\frac{5}{6} - \frac{1}{2} \quad LCM = 12$$

$$\frac{10 - 6}{12} = \frac{4}{12}$$

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

Fountain pg 64-66 New mk pg 51 Old mk pg 113

Remarks:

Emphasis should be on the order of BODMAS

LESSON 8

Sub-topic: Decimals

Content: 1. Addition of decimal up to ten thousandths with carrying

2. Addition of decimals up to ten thousandths with carrying.

(ii) Add
$$2.4 + 0.254$$

(b)

Content:

-Subtraction of decimals up to ten thousandths without carrying.

- Subtraction of decimals up to ten thousandths with carrying.

Examples

1.3

Example (b)

Activity

Understanding mtc pg 91-93

MK old Mk pg 114

LESSON 9

Subtopic: Decimals

Content: Addition and subtraction of decimals (consolidated)

Examples

(a)
$$8-5.16+2.13$$

 $(8+2.13)-5.16$
 8.00
 $+\frac{2.13}{10.13}$
 9.10
 $+\frac{10.413}{4.97}$

(1.306 - 1.1) + 1.067

(b)
$$7 \cdot (0.45 + 1.71)$$

$$\begin{array}{rcl}
 & 6 & 9 \\
 & 1.71 & 7.10 & 10 \\
 & + 0.45 & -2.16 & -2.16 \\
\hline
 & 2.16 & 4.84 & -2.16
\end{array}$$

$$\begin{array}{ccc}
1.306 & 0.206 \\
\underline{-1.1} & +1.067 & = 1.273 \\
\hline
0.206 & 1.273
\end{array}$$

(c)
$$3.64 + 5 - 2.42$$

 3.64 8.64
 $+ 5.00$ $- 2.42$ $= 6.22$

Word problems involving addition and subtraction of decimals.

Example:

(d) Mariko bought 4 . 5 litres of milk. If 0.35 litres got spilled. How many litres were left?

(c)

4. 15 litres were left.

(e) In a Ludo game. Okello scored 7. 5 points in the first round and 3. 8 points in the second round. How many points did he score altogether?

He scored 11.3 points altogether.

Activity

Old edition Mk pg 115-116

Fountain pg 71

Remarks

LESSON 10

Subtopic:

Decimals

Content: - Multiplication of a decimal by decimal

Multiplication of a decimal by a whole number and vice versa.

Example

Method I
0. 9 ← 1 dp

$$x$$
 0. 5 ← 1 dp
 4 5
 $+00$
0. 45 ← 2 dp

Method 2
 9 x 5
 10 10

 $= \sqrt{45}$.

(a) (ii) Multiply 1.
$$32 \times 2.4$$

Method 1

1. $32 \leftarrow 2 \text{ dp}$
 $x = 2.4 \leftarrow 1 \text{ dp}$
 $x = 2.4 \leftarrow 1 \text{ dp}$
 $x = 2.4 \leftarrow 3 \text{ dp}$
 $x = 3168$
 $x = 3168$
 $x = 3168$

(b) Multiply: 1.4 x 25

Old edition MK pg 116-118

Fountain pg 72 New mk pg 58-60

LESSON 11

Subtopic: division of decimals Content: division by decimals

(a)

Division by whole numbers

Example:

Divide $8 \div 0.02$

(b) Divide:
$$0.02 \div 8$$

Method 1

 0.02×100
 8×100

= $2 \cdot 1 = 1$
 800
 400

| $2 \cdot 8$
 $100 \cdot 1$

Example: (c) Divide: $2.4 \div 0.03$

Method 1 | Method 2

Activity

New MK pg 61-65 Fountain pg 73-74 Understanding pg 97-98

Remarks

LESSON 12

Subtopic: Decimals

Content: Consolidation of all operation on decimals

Example: 1. Work out: $0.7 \times 0.6 = 0.3$

2. Work out: 35 x 0.5

Method 1 Method 2

Old MK pg 121 Fountain pg 64-65 Understanding pg 73

Remarks

LESSON 13

Subtopic: Decimals

Content: Word problems involving multiplication and division of decimals.

Example:

(a) The length of one side of a square is 8.75 cm. What is the perimeter of the square.

Method 1	Method 2
$\overline{\text{Perimeter of square}} = 4S$	P = 4S
$= 4 \times 8.75$	$= 4 \times 875$
	100
8.75	= 3500
X 4	100
35.00	
The perimeter is 35 cm	= 35 cm
	I

(b) A parcel weighing 5.5 kg contains packets of salt. How many packets of salt are in the parcel if each packet weighs 0.25 kg.

Activity
New Mk pg 65
Old MK pg 118
Understanding mtc pg 98

Remarks

TERM II MTC NOTES

TOPICAL BREAKDOWN FOR TERM II

Theme	Topic	Sub topic		

Numeracy	Fractions	 Multiplication of fractions by fractions Division of fractions Mixed operation on fraction Operation on decimals (x, +, -, ÷) Mixed operation on decimals Application of fractions Ratios and proportion Changing the fractions to ratios and ratios to fractions Increasing in ratios Finding the ratio of increase Decrease quantity in ratios Finding the ratio of increase Sharing in ratios Proportions Consistent Direct/simple proportionality Indirect/inverse proportionality Percentages Changing fraction in percentages Changing ratios to percentages Increasing and decreasing in percentages Finding the percentages increase and decrease Loss and profit Percentage loss and profit Simple interest Solving word problems involving simple interest

	T = .	
Interpretation	Data	Collection of data from
of groups and	handling	different sources
data		Presentation of data;
		- Tables
		- Line graphs
		- Bar graphs
		- Pie charts
		Simple statistics
		- Finding mode
		- Finding mean
		- Finding median
		- Finding range
		- Finding modal frequency
		Probability
		Application of probability
Measurements	Money	Naming currency for different
		countries
		Finding number of notes in
		bundles
		Exchange rates
		Conversion of currency
		Shopping
		Shopping bills
		Finding discounts
	Distance,	Time
	time and	Duration
	speed	
	Specu	Conversion of time (hours, minutes and accords)
		minutes and seconds)
		Changing from 12 hrs to 24
		hrs
		Finding time when given
		speed and distance.
		Distance
		Finding distance when speed
		and time are given
		Speed

 Finding speed when given distance and time Changing km/hr to m/s and vice versa Distance time graphs Interpretation of distance time
graphs
Time tables.

TOPIC: RATIOS AND PROPORTIONS

Ratios

LESSON 14

Subtopic:

Content:

(i) Form rations

Examples: Rations are away of comparing similar quantities.

4kg and 5 kg

 $\frac{\text{Mass first quantity}}{\text{Mass second quantity}} = \frac{4}{5}$

Ration = 4:5

(b) Express 40cm to 2m as a ratio. Compare quantities

(c) Write 1 to 1 as a ratio 3 4

e quantities
40 cm to 2m

LCM = 12 of fractions

Must be in same units

 $\frac{1}{3}$ x $\frac{12}{4}$: $\frac{1}{4}$ x $\frac{12}{4}$

1m = 100 cm $2 m = 2 \times 10 \text{ cm}$

4:3

= 200 cm 40 cm to 200 cm

<u>ratio 4 : 3</u>

Ration $\frac{40}{10}$:

 $\frac{\Theta}{\Theta}$: $\frac{200}{100}$

 $\frac{4}{4}$: $\frac{20}{4}$

1:5

Activity

New MK pg 66

Remarks

LESSON 15

Subtopic:

Rations

Content:

- (i) Expressing rations as fractions
- (ii) Expressing fractions as ratios
- (iii) Expressing quantities as ratios

Examples:

(a) Express 1 : 2 as a fraction

Solution

$$1:2 = \frac{1}{2 \text{ Ans}}$$

(b) Express 1 as a ratio

$$1 = \underbrace{1:3 \text{ Ans}}_{3}$$

- (c) Henry has 12 books and John has 20 books.
 - What is the ratio of Henry's books to John's books?

Solution

Henry's to John's 12 to 20
$$\frac{12}{4_1}$$
 : $\frac{20}{4_1}$

NOTE: Ratios must be simplified to its lowest terms

Activity

New MK pg 67

Fountain 77-78

Remarks

LESSON 16

Subtopic: Content:

Ratios

Examples:

- Sharing in ratios
- (i) John and Mary share 27 sweets in the ratio 4 : 5. How

many sweets does each get? Ratios: John : Mary

4 : 5

John's share: $\frac{4}{x}$ x $\frac{27}{3}$ sweets

9 1

4 x 3 sweets

12 sweets

- (ii) A Man and his wife had 200 kg of coffee. They decided to share it in a ratio of 7 : 3 respectively.
 - (i) How many kg did the man get?

Total ratio =
$$7 + 3 = 10$$

Man's share $7 \times 200 \text{ kg}$

$$\begin{array}{rcl}
10 \\
&= 140 \text{ kg}
\end{array}$$

(ii) How many kg did the wife get?

Example: (iii)

iii) A sum of shs 30000 was shared by three brothers Amos, Andrew and Allan in a ratio of 1:2:3 respectively. How much did each get?

Total ratio =
$$1 + 2 + 3$$

Ratios by names: Amos : Andrew : Allan Ratio 1 : 2 : 3

Amos =
$$\frac{1}{6}$$
 x $\frac{5000}{30,000}$

Andrew =
$$\frac{2}{6} \times x = \frac{5000}{30,000}$$

= Shs 10000

Allan =
$$\frac{3}{6}$$
 x $\frac{5000}{30,000}$

Remarks

LESSON 17

Subtopic: Ratios

Content: Finding numbers when ratios are given

The ratio of boys to girls in a class is 1 : 2. If there are 14 boys, how Example:

many pupils are in the class?

Solution

Expressing ratios in terms of t.

В	G	Total
t	2t	3t
14		

$$t = 14$$

 $Total = 3t$
 $= 3 \times t$
 $= 3 \times 14$
 $= 42$

: There are 42 pupils in the class

Activity

Old MK pg 135

LESSON 18

Subtopic: Ratios

Content: Increasing in a given ratio

Decreasing in a given ratio

The prize of an article is increased from shs 1200 in a ratio Examples: (a)

3:2. Find the new prize.

Solution.

3 x 1200 600

2 1

= 1800/=

The prize of an article costing shs 2500 was reduced in the (b)

ratio 5: 8. Find the new prize.

Solution

3145

5 x 25 000

8 1

Shs 15625

Activity

Old MK pg 129-131 Fountain pg 79-80

LESSON 19

Subtopic: Rations

Content: Finding the ratio of increase Finding the ratio of decrease

Examples: A man's salary was shs 10000. it has been increased to shs (a)

> 12000 in what ratio has it increased? New salary shs 12000

> Old salary shs 10000

12 000 Increased ratio = 10 000 5

Ratio increased = 6:5

A bag had 40 sweets, 12 more sweets were added. (b)

How many sweets are in the bag now?

40 + 12 = 52 sweets

In what ratio have the sweets increased (ii)

Increase in ratio = New No Old No 52 ¹³ 40 10

Ratio increase = 13:10

Content: Finding the ratio of decrease

The number of pupils in a class has decreased from 40 to 35. Example:

In what ratio has the number decreased?

New No 35 Old No 40

Decrease in ratio = New No Old No 35 ⁷

40₈

Ratio of decrease 7:8

```
A school had 1200 pupils. This year the number has decreased to
                 1000 pupils. In what ratio has the number decreased?
                         New No = 1000
                         Old No = 1200
                 Increase =
                                 New No
                                  Old No
                                  5
                                  <del>10</del> Ø0
                 Ratio of decrease 5:6
Old MK pg 132
LESSON 19
                 Ratios
                 Application of ratios in solving daily life situations
                Mary and John have oranges in the ratio of 2: 3 respectively. If
                 Mary has 10 oranges, how many oranges does John have?
                 Solution
                 Mary to John
                  2 : 3
        Mary's oranges 10
        2 parts represents 10 oranges
        1 part represents 10 oranges
        3 part represents 10 5 x 3 oranges
                                  5 oranges
Old MK pg 135
```

Activity

Remarks

Subtopic:

Content:

Activity

Remarks

LESSON 20

Examples:

```
Subtopic:
                  Proportions
Content:
                            Direct proportions
                  (i)
                            Constant proportionality
                  (ii)
                            One pen costs 200/=. What is the cost of 5 pens?
Example
                  (i)
                  Method 1
                                                        New ratio: 0ld ratio
                  1 pen costs 200/=
                                                        5:1
                                                        ?:200
                   \therefore 5 pens cost (200 x 5)/=
                                  = 1000/=
                                                        1 part = 200
                                                        5 \text{ parts} = (200 \text{ x } 5)/= 1000/=
                            4 pens cost 2000/=. What is the cost of 7 pens?
Example
                  (b)
                            4 pens cost 2000/=
                                                        New: old
                                                                       1 part = 2000
                  1 pen costs \frac{2000}{1} = 500
                                                        7 : 4
                                                                        7 \text{ parts} = 500 \text{ x } 7
                   7 pens cost 500 \times 7 = 3500/=
                                                        ? : 2000
                                                        4 \text{ parts} = 2000
                                                                           = 3500/=
Example
                            1800/= can buy 2 kg of sugar. How many kg of sugar can
                  (c)
                            one get with 3600/=?
                            1800/= can buy 2 kg
                            1/= can buv
                                          1800
                   \therefore 3600/= can buy 2 x 3600 <sup>2</sup> = 4kg of sugar
                                       1800
 Example
                  (d)
                            In constant proportionality, one quantity increases in the
                            same proportion as the other. E.g With a moving body, or
                            car in a given distance, it takes 2 hours to carry 30 people,
                            and takes the same time to carry 10 people through the
                            same distance:
```

Activity

Fountain pg 82-83 Old MK pg 136-137

Remarks

40

LESSON 21

Subtopic:

Proportions

Content

Indirect/ Inverse proportion

Example

3 men can do a piece of work in 6 days. How long will 9 men take to do the same piece of work at the same rate?

MEN	DAYS
3 men take	6 days
1 man takes	(6 x 3) days
9 men take	$\frac{6^2 \times 3^1}{10^2} = 2 \text{ days}$
	931

2 children can dig a garden in 8 days. How many children (b) will dig the same garden in 4 days?

-	\mathcal{E}	_	
	DAYS		CHILDREN
	In 8 days it requires		2 children
	In 1 day it requires		(2 x 8) children
	In 4 days it requires		$\left(\frac{2 \times 8}{2}\right)^2 = 4$ children
			L _4 1 J

(c) A car moving at a speed of 80km/hr takes 3 hours to cover a certain journey. How long will the car take if it moves at a speed of 120km/hr for the same journey?

SPEED TIME At 80km/hr the car takes 3 hours At 1/km/hr the car takes (3×80) hrs

At 120km/hr the car take 3^{1} x $80^{2} = 2$ hrs 120 40 1

Activity

Fountain pg 82-83 New MK pg 71

Remarks

LESSON 22

Subtopic:

Percentages Content:

- Meaning of percentage percentage as fractions
- Fractions as percentages

Examples:

(i)

Express as fractions

(a)
$$5\% = \frac{5}{100} = \frac{1}{20}$$

(b) $15\% = \frac{15}{100} = \frac{3}{20}$

(c)
$$33^{1}/_{3}\% = \left(\frac{100}{3}\right)\% = \left(\frac{100}{3} \div \frac{100}{1}\right)$$

= $\left(\frac{100}{3} \times \frac{1}{100}\right) = \frac{100}{300} = \frac{1}{3}$

(ii) Fractions as percentages

(a)
$$\frac{4}{5} = \left(\frac{4}{5} \times 100\right) \% = \frac{400}{5} \% = 80 \%$$

 $\frac{2}{3} = \left(\frac{2}{3} \times 100\right) \% = \frac{200}{3} \% = 66^{2}/_{3} \%$

Activity

New MK pg 72-74

Understanding mtc pg 113

Remarks

LESSON23

Decimals as percentages. Subtopic:

Express decimals as percentages Content: -Change percentages to decimal

Examples:

(i) Convert 0.6 to percentage

$$0.6 = \frac{6}{10}$$

 $\frac{6}{5} \times 100\% = \frac{6}{5} \times 100\% = \frac{600}{5}\%$

(ii) What is 2.8 as a percentage?

$$2.8 = \frac{28}{10}$$

$$\left(\frac{28}{10} \times 100\right)\% = \left(\frac{28}{10} \times \frac{100}{1}\right)\% = 28\%$$

10

$$\begin{pmatrix}
0.014 & = \underline{14} \\
1000 & 100 \\
1000 & 1000
\end{pmatrix} \% = \underline{1400} \% = 1.4 \%$$

(iv) Change 2.5% to decimal
$$2.5 = \left[\frac{25}{100}\right]$$
% $= \left(\frac{25}{100} \div \frac{100}{1}\right) = \frac{25}{100} \times \frac{1}{100}$ $\frac{25}{1000} = 0.0025$

LESSON 24

Subtopic: Ratios as percentages.

Content: - Express ratios as fraction - Change ratios to percentages

- Percentages as ratios

Examples: (i) Express the following as percentages

(a)
$$1:2$$
 $1:2 = \frac{1}{2} \times 100\% = \left[\frac{100}{2}\right]\% = 50\%$

(b)
$$3:8 = \frac{3}{8}$$

 $\therefore \frac{3}{8} \times 100 \% = \frac{300}{8} \% = 37^{4}/_{8}\% = 37 \frac{1}{2} \%$

(ii) Percentage as ratios e.g Express 60% as a ratio $60\% = \underline{60} = \underline{6} = \underline{3}$ 3.5 $\underline{::} 60\% = 3:5$

Activity

Understanding mtc pg 115-116 Old MK pg 145 New MK pg 75

The

Remarks

LESSON 25

Subtopic: Find parts of percentages

Content: Find part represented by a given percentage

Example: (a) If 80% of a class are boys What percentage are girls Class = 100%

Class = 100% Boys = 80%

Girls = (100 - 80) %

Girls = 20%

(b) If a man covers 30% of the journey by car and 50% by bus.

What percentage of the journey is left?

Total journey = 100%

Covered = (30 + 50) % = 80%

Journey left = 100% - 80%

= 20%

Activity

Understanding mtc pg 117

Remarks

LESSON26

Subtopic: Quantities as percentages

Content: expressing quantities as percentages.

Examples: A (i) There are 40 goats on a farm and 15 are sold. Find the %age number of goats.

(a) sold = 15 out
$$40 = \frac{15}{40}$$

$$\left(\frac{15}{40} \times 100\right) \% = \frac{1500}{40} = 37 \frac{1}{2} \%$$

(b) not sold: = 40 1-15 = 25

$$(25 \times 100)$$
 % = (2500) = 62 \(\frac{1}{2}\) 9

$$\begin{array}{rcl}
20 \% \text{ of } 2500 & = & \underline{20} \times 2500 \\
100 & & 20 \times 25 \\
 & = & \text{sh } 500
\end{array}$$

Activity

New MK pg 77 Old MK pg 150

Understanding mtc pg 117

Remarks

LESSON 27

Subtopic: Expressing a quantity as percentage of the other

Content: Find one quantity as percentage of another given quantity Examples: (i) In a school of 400 pupils. Boys are 30 of the total

(a) Express the boys as a percentage of the school boys = $300 \times 100\%$ = 300% = 75%

 $\frac{\text{boys}}{\text{school}} = \frac{300}{400} \times 100\% = 300$

(b) Express 500g as a percentage of 1 kg

 $\frac{1}{500} \text{ g} = 1000\text{g}$ $\frac{1}{500} \text{ g} = 500\text{g}$ $\frac{1}{500} \text{ kg} = 1000\text{g}$

In percentage

 $500 \times 100\% = 50\%$

1000

Activity

Understanding mtc pg 117

Remarks

LESSON 28

Subtopic: Sharing quantities using percentage Content: Share quantities using given percentages.

Examples: (a) If a school has 400 pupils, 30% are boys. How many boys are there in the school?

School = 400 pupils Boys = 30% of total

Number of boys = 30% of 400

30 x 400

100 = 120 boys

(b) How many are girls? No of girls = (400 - 120)= 280

Activity

Old MK pg 151

Remarks

LESSON 29

Subtopic: Algebra in percentages

Content: Forming and solving equations involving percentages Examples: (i) If 10% of a number is 40. find its number

Examples: (i) If 10% of a number is a Let this number be x.

But 10% of x = 40 $10 \times X = 40$

100 10X x 100

100 =

10x x 100 10 10

X = 400

(ii) If 20% of the school are girls, there are 35 girls in the school. How many pupils are there in the school.

F F	· - ·		
Method 1	method II		
Let the total $=$ y	If 20% of the number = 35		
20 x y = 35	1 % of the number = 35		
100	20		
2y = 35	100% of the number = 15		
10			
$2y \times 10 = 35 \times 10$	$35 \times 100 = 35 \times 5$		
2	20		
2 y = 350	$35 \times 100 = 35 \times 5$		
2 2	20		
Y = 175 pupils	The number $= 175$		

Activity

Olf MK pg 152-153

Remarks

LESSON 28

Subtopic:

Increase in percentages

(i)

Content:

- Increase in and decrease in percentage (i)
- Word problems involving increase in percentages (ii) Increase 800 by 5%

Examples.

(100% + given %) of old value (100% + 5%) of 800 105% of 800 105 x 800

100

840

The number of children in a school of last year was 400. (ii) this year the number increased by 15%. What is the number of pupils in the school this year?

New number = (100% + 15%) of original number

$$= 115 \times 400 \\ 100 \\ = 115 \times 4$$

New number = 460 pupils.

Activity

Fountain pg 85

Understanding mtc pg 121

Remarks

LESSON 29

Decrease in percentage Subtopic: Content: Decrease in percentage

Examples:

Decrease 900 litres of water by 10% (i) (100 - 10)% of original value 90% of $900 = 90 \times 90 = 810$ litres

100

- Byansi had 180 cows. He sold 15% of them. How many (ii) cows remained (100 = 15)% = 85%85% of 180 cows = 85 x 180 = 153 cow100
 - ∴ 153 cows remained
- A man's salary is \$800. How much will his salary be if it (iii) is cut by 12 ½ % (100 - 15) % = 85%Method $87 \frac{1}{2} \% \text{ of } 800 = \left[\frac{175}{1} \times \frac{1}{100} \right]$

$$\frac{175}{200} \times 800 = \frac{1400}{2} = 700$$

$$\frac{175}{200} \times 800 = \frac{1400}{2} = \$700$$

Activity

Ne Mk pg 80

Old MK pg 133-136

Fountain pg 85

LESSON 30

Subtopic: Percentage profit / loss

Find the percentage profit. Content:

- Find the percentage loss.

Example:

- (i) A trader bought 1600/= and sold it at 2000/=
 - (a) Find the profit he made

Profit = Sp - Cp

$$(2000 - 1600) =$$

 \therefore profit = $400/=$

(b) Work out the percentage profit % age profit =
$$\frac{\text{profit}}{\text{C. price}}$$
 x 100% C. price = $\frac{400}{\text{c}}$ x 100% %

 \therefore profit = 25%

- (ii) Mulema bought a goat at 35,000= and sold it at sh 32,000=
 - (a) Find the loss.

(b) Calculate the percentage loss
$$\%$$
 loss = $\begin{pmatrix} loss \ x \ 100\% \end{pmatrix} = \frac{700}{350} \ x \ 100\% = 20 \ \%$
 \therefore Loss = 20%

Activity

Fountain pg 86-87 Understanding pg 123-124

Remarks

LESSON 31

Subtopic: Content: Simple interest and amount

- Calculate the simple interest with emphasis on time in
 - (i) years
 - (ii) months
 - S.I = principal x time x rate i.e P x T x \underline{R} = $1500 \times 3 \times \underline{8}$

$$S.I = 3,600/=$$

(ii) Work out the simple interest offered to Tom who deposited 48000/= in a bank at an interest rate of 15% for 6 months.

S.I =
$$P \times T \times R$$
 i.e $P = 48000/=$
 $T = 6 \text{ months} = \frac{6}{12}$
 $R = 15 \% = \frac{15}{100}$
 $R = 15 \% = \frac{15}{100}$
 $R = 15 \% = \frac{15}{100}$
 $R = 15 \% = \frac{15}{100}$

(iii) Find the simple interest on 12000/ at a rate of 10% per year for $2\frac{1}{2}$ years.

(a) S.I = P x T x
$$\underline{R}$$
 = 12000 x 2 ½ x $\underline{10}$
100 = 600
1200 x $\underline{5}$ x 1
2 = SI 600 x $\underline{5}$ = 3000/=

(b) How much money will it be after 2 ½ years

Amount =
$$SI + P = 12000$$

 $+ 3000$
 $15,000$

Activity

Fountain pg 88 New Mk pg 83

Understanding pg 126-127

Remarks

Exercise 01 Revision questions on fractions

- 1. Change $\frac{5}{2}$ to a mixed number.
- 2. What is $1\frac{1}{2}$ as an improper fraction.
- 3. (a) Reduce $\frac{6}{9}$ to its lowest terms.
 - (b) Reduce 48 to its lowest terms

108

- Change (a) ³/₄ to a decimal fraction (b) 2 ¹/₄ to a decimal fraction. 4.
- Convert (a) 0.25 to a common fraction 5.
 - 1.25 to a common fraction.
- Change $\frac{2}{3}$ to a decimal fractions
- What is 0.333—as a common fractions
- Change (a) 0.3636 (b) 0.2727 to common fractions.
- 9. Write (a) 0.122 -----(b) 0.24555--- to common fractions
- Arrange the following fractions in ascending order. 10.
 - <u>1</u>, <u>1</u>, <u>1</u>, <u>1</u> $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{2}$, $\frac{1}{3}$ (b)
- $\frac{3}{5}$, $\frac{5}{6}$, $\frac{1}{5}$, $\frac{2}{3}$
- Arrange the following fractions in descending order. 11.
- 12.
- 13. (a) What is the sum of a quarter and a third? Moses bought a half litre of milk and later bought three quarter litres of milk because the milk was not enough. How much milk did he buy altogether?

Exercise 02 **Revision Exercises on Fractions**

- 1. Subtract:
- (b) $2\frac{1}{2} 1\frac{3}{4}$

- What is the difference between three quarters and a half 2. (a)
 - Subtract a quarter from ½
- A farmer uses a half of his shamba for tomatoes, ²/₃ to grow onions 3.
 - How much land does he use for farming?
 - How much land remained unused? (b)
- A quarter of the pupils in my class are girls, one day ½ of the girls number 4. didn't attend lessons. What fraction of the girls was absent.
- 5. Simplify:
- $\frac{1}{4} \frac{1}{2} + \frac{2}{3} \qquad (b) \qquad \frac{2}{5} + \frac{1}{3} \frac{2}{3} \\
 1 + 1 + 4$
- $\frac{1}{3} + \frac{1}{6} + \frac{4}{4}$

- Find the value of $2\frac{1}{4} \frac{2}{3} \frac{5}{6}$
- Work out (a) $4 \div \frac{1}{3}$ 7.
- (b) $^{3}/_{8} \div 6$

- Simplify:
- (a) $\frac{3}{4} \div \frac{3}{5}$ (b) $3^{-1}/_{8} \div 3^{-3}/_{4}$
- Work out $4^{1}/_{5} \div (1^{1}/_{6} + 2^{1}/_{3})$ 9.
- 10. Simplify: $(2\frac{1}{2} + \frac{5}{6}) \div 1^{2}/_{3}$
- 11. Find the value of $1\frac{1}{2} - 2\frac{1}{3} + 1\frac{1}{4}$
- 12. Work out

- (b) $\frac{2}{3} \frac{1}{2} \text{ of } \frac{1}{3}$ (d)
 - $\frac{3}{4} \text{ of } \frac{4}{5} \frac{1}{6} \div \frac{1}{2}$
- $\underline{1} \div \underline{1}$ of $\underline{2}$ (e)
- 13. A club spent a quarter of its earnings and saved the rest. What fraction was saved?

Exercise 03 **Revision Exercise on Fractions**

- 1. What is the reciprocal of (a) (e) 0.5? (c) y? 3? (b) (d) 1 ½?
- 2. Use the reciprocal method and work out:
 - <u>3</u> ÷ <u>1</u> 4
- (b) $1^{-1}/_{3} \div 2^{-1}/_{3}$
- Use the LCM method and simplify:
 - $2\frac{1}{2} \div 1\frac{1}{4}$
- How many quarter litre bottles can be got from 5 litres?
- 5. A sixth of my salary is 50,000/=. How much is my salary?
- I spent 20.000/= out of my salary amounting to 40.000/=. What fraction of my salary did I spend?

7. Add: (a) 1.5 + 0.6 (b) 8.03 + 2.1 (c) 0.05 + 22.5

3. Subtract: (a) 12.5 - 1.2 (b) 0.86 - 0.07 (c) 4 - 0.9

9. Add: 2.05 to 30.6

10. Subtract: 1.4 from 34

11. Work out (a) 7 - 4.27 + 3.14 (c) (3.021 - 2.2) + 0.04 (b) 6 - (0.43 + 1.62) (d) 5.23 + 4 - 6.02

12. Maurice bought 6.4 litres of paraffin for some of his wall paint. He later bought 2.6 litres to mix all the remaining paint. How many litres of paraffin did he buy altogether?

13. Morgan was given 3.5 grammes of juice powder but 2.6 grammes got spoilt. How many grammes remained?

14. Multiply:(a) 0.9 by 0.2 (b)1.23 by 3.2 (c) 2 x 0.75

15. Divide: (a) 6 by 0.04 (b) 0.02 by 2

Exercise 04 Revision Exercise on Fractions

1. Divide: (a) 1.2 by 0.03 (b) $0.064 \div 0.06$ 2. Work out: (a) $0.8 \times 0.4 = 0.2$ (b) $0.04 \times 2 = 0.8$

3. The length of one side of a square is 4.5 metres.

(a) What is the perimeter of the square?

(b) What is its area

7.

4. A rectangular garden measures 2.8 cm by 1.2 cm. Find its

(a) perimeter (b) Area

A parcel weighting 8.5 kg contains packets of salt each weighting 0.25 kg. how many packets of salt are in the parcel?

6. There are 20 boys and 30 girls in a class. What is the ratio of

(a) Boys to girls (b) girls to boys Express the following rates as fractions

(a) 1:6 (b) 2:4 (c) $\frac{1}{2} \div \frac{1}{4}$ (b) 0.2:0.4

8. Change the following fractions to ratios

(a) $\frac{3}{4}$ (b) $1\frac{1}{4}$ (c) $\frac{8}{4}$

9. Peter and Sseku shared 32 sweets in the ratio 3 : 5. How many sweets did each get?

10. A man and his wife shared an amount of money in the ratio 2:3 respectively if his wife got 9,000/=

(a) How much money did they share?

(b) How much money did the man get?

11. 120 oranges were shared by Amos, John and Mary in the ratio 1:2:3 respectively. How many oranges did each get?

12. The ratio of sharing 24 goats by A, B and C is 2:3:7. If B got 6 goats how many goats did each of the rest get?

Exercise 05 Revision Exercise on Fractions

1. The ratio of boys to girls in a class is 2 : 5 If there are 14 boys, how many pupils are in the class?

2. Increase 320 in the ratio (a) 4 : 2 (b) 3 : 2

3. Decrease 480 in the ratio (a) 2 : 4 (b) 1 : 2

4. The price of an article was reduced from 18,000/= in the ratio 2 : 3. Find the new price.

5. The cost of an item was increased to 4000/= in the ratio 4 : 3. What was its original cost?

6. The price of a plastic basin was reduced to 12,000/= in the ratio 2: 3 Calculate its original price.

7. The number of pupils in Kasanke Primary School rose from 400 to 480 pupils. What is the ratio of increase?

8. In what ratio did the enrolment of school C fall from 60 pupils to 25 pupils in the previous year?

9. If one exercise book costs shs 300/=, what is the cost of 4 similar exercise books?

10. Three pencils cost 2400/=, what is the cost of 2 pencils of a similar kind?

11. Shs 3600/= can buy 2 pairs of socks.

12. 2 men can do a piece of work in 4 days. How many days will 6 men take to do the same piece of work at the same rate?

13. 5 women can did a garden in 15 days. How many woman can dig the same garden in 5 days at the same working rates?

14. A bus moving at a speed of 60 km/hr takes 2 hours to cover a certain distance. How long will the car take to cover the same journey at 120 km/hr?

Exercise 06 Revision Exercise on Fractions

1. Express (a) 4% as a fraction. (b) $12\frac{1}{4}\%$ as a fraction

2. Change the following fractions to percentages.

(a) $\frac{2}{5}$ (b) $\frac{3}{4}$ (c) $1\frac{1}{2}$

3. Change the following as decimal fractions

(a) 0.5 (b) 1.25 (c) 0.075 (d) 0.014

4. Express the following as decimal fractions.

(a) 0.2 % (b) 0.25% (c) 2.45%

5. Change the ratios below to percentages.

(a) 1:4 (b) 3:8 (c) 2:3

6. Convert the following percentages to ratios

(a) 25 % (b) 75%

(c) 125%

7. If 25% of a choir are female, what percentage are the male?

8. There are 50 children in our poultry house. We sold 15 of them yesterday.

(a) What percentage of chicken was sold?

(b) Calculate the percentage of chicken that remained

9. What is 20% of 1800/=?

10. Find 15% of an hour.

11. Find $12 \frac{1}{2}$ of 800/=

12. A school enrolled 600 pupils of which 250 are boys.

(a) How many are the girls?

(b) What percentage are the (i) boys (ii)

i) girls

13. (a) Express 500g as a percentage of 1 kg

(b) Express 30 minutes as a percentage of 2 hours

(c) Express 15 goats as a percentage of 90 goats

(d) What percentage are 125 g of a kg?

Exercise 07 Revision Exercise on Fractions

1. 15% of a number is 60. find the number

2. 10% of my cattle are bulls. The bulls are 45. How many cattle are in my kraal?

3. Increase 400 by 20%

4. The number of children in a school last year was 360. This year the number increased by 25%. What is the number of the pupils in the school this year?

5. Decrease 280 by 14%.

6. An officer's salary is shs 80,000/=. How much will his salary be

(a) If its decreased by 20% (b) If its increased by 25%

7. (a) Maizi bought a book at 450/= and sold it at 480/=. What was his profit?

(b) Find his percentage profit.

8. Mugerwa bought a radio at shs 9450/- and sold it at 9000/=. What was his loss?

9. What is the percentage loss of buying an item at 800/= and selling it at 600/=.

10. The marked price of an article is 4000/=. If a trader allows a discount of 2%

find: (a) The discount allowed

(b) The actual price after the discount

11. Mukasa bought a book at 400/=, a pen at 500/= and a set mathematical instruments at 600/= and was offered a discount of 5%. How much did he pay altogether?

Exercise 08 Revision Exercise on Fractions

1. Calculate the simple interest on 20,000/= at a rate of 5 % per annum for 2 years.

2. Find the simple interest on 12,000/= at a rate of 4% per year for $2\frac{1}{2}$ years.

3. Find the amount of money a trader will withdraw at a principle of 50,000/= at a rate of 2 % per annum for 5 years.

4. Calculate the time taken for 15,500/= to yield 15000/= at a rate of 5 % per year.

5. Find time taken on

3. I ma mic ta	item on		
Principal	Rate	S.I	Time
15,000/=	2%	6000/=	
120,000/=	10%	24,000/=	
400,000/=	5 %	1000/=	
700,000/=	20%	28,000/=	

6. Find the rate at which 40,000/= will yield 3,600/= after 2 years.

7. What principal will give an interest of 2,800/= at 10% interest for 2 years?

UNIT: DATA HANDLING

LESSON 1

Subtopic: Collection and Organization of data.

Content: (i) Collection and recording information

(ii) Grouping information in a frequency table.

(iii) Organizing and recording information in a table.

Examples

- (a) Collect and record the age of 20 pupils in P.6 i.e 10, 11, 12, 11, 12, 12, 11, 10, 12, 11 12, 11, 12, 13, 12, 13, 12, 11, 14, 11
- (b) Make columns of (i) Different age groups
 - (ii) tallies with corresponding ages
 - (iii) frequency / no of occurrence of tallies / ages of individuals.

Age group	Tally	Frequency
10		2
11		7
12	+++-	8
13		2
14		1

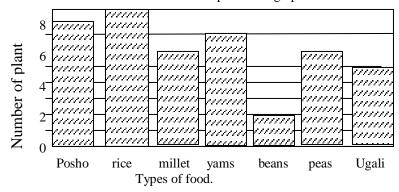
(c) Organise the information in a table form

Age in years	10	11	12	13	14
Number of pupils (Frequency)	2	7	8	2	1

Example: Given the table below its information can be found on a graph (bar graph)

Type of food	Posho	Rice	Millet	Yams	Beans	Peas	Ugali
No of pupils	8	9	6	7	2	6	5

The information in the table above can be put on the graph as shown below.



Questions

- 1. Which type of food is liked by most pupils? *Rice is liked by most pupils*
- 2. Which food is least liked? "Beans" is least liked
- 3. Which two types of food are liked by the same number of pupils? *etc. millet and peas are liked by the same number of pupils.*

Activity

New Mk pg 85 – 86 Understanding mtc pg 132-133 Fountain pg 92

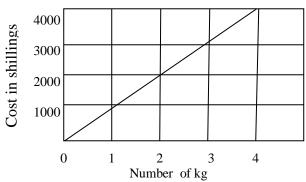
Remarks

LESSON 2

Sub-topic: Line graphs

Content: Interpretation of a ready reckoner

Examples: (a) Study the graph and answer questions that follow



(a) What is the cost of 1kg of sugar?

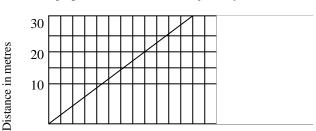
100/=

- (b) What is the cost of 4 kg of sugar? 4000/=
- (c) How many kg of sugar can one buy with 2000/=? 2 kg
- (d) What is the cost of 2 $\frac{1}{2}$ kg of sugar? $\frac{2500}{=}$

Content: Example:

Interpreting travel graphs (distance time graphs)

The graph below shows Tom's journey.



0

8am 9am 10am 11 am Time

Questions

- (a) What is the scale on the vertical axis? (1 square represents 5 km)
- (b) What is the scale on the horizontal axis? (1 square represents 15 minutes)
- (c) How far was Tom at 9.30 a.m? (15 km)
- (d) At what time was Tom 25 km away? (At 10: 30 am)

Activity

Fountain pg 102

Mk old eition pg 167-168

Remarks

LESSON 3

Subtopic: Interpretation of information

Content: Finding the mode, median, mean and range

Examples: (a) Find the mode and the modal frequency of the following

numbers. 8, 2, 6, 4, 5, 6, 9, 6, 2

 No
 Tally
 Frequency

 2
 //
 2

 4
 /
 1

 5
 /
 1

 6
 ///
 3

 8
 /
 1

The mode is 6

The modal frequency is 3.

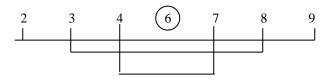
Example

(b) Find the median of the following numbers

1

4, 2, 6, 7, 3, 9, 8

9



Example:

Find the mean (average) of the following numbers. (c) 2, 4, 5, 6, 3, 8, 7

> Average = sum of all items Number of items

$$= \frac{2+4+5+6+3+8+7}{7} = \frac{35}{7}$$
= 5

LESSON 4

Subtopic: Interpretation grouped data Content: mode, median, range and mean

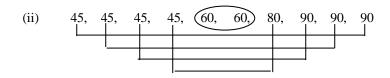
Example: The table below show the scores of marks got by pupils in a

Mathematics test

Mar	ks	60	80	90	45
No o	of pupils	2	1	3	4

Find the (i) mode (ii) median (iii) range (iv) mean

(i) From the table the mode is 45.



Median =
$$\frac{60+60}{2}$$
 = $\frac{120}{2}$ = 60

(iii) Range =
$$H - L$$

= $90 - 45$

(iv) Mean =
$$\frac{(60 \times 2) + 80 + (90 \times 3) + (45 \times 4)}{10}$$

$$= \frac{120 + 80 + 270 + 180}{10}$$

$$= \frac{650}{10}$$

$$= 65$$

Activity

Trs' collection

Remarks

LESSON 5

Subtopic: Interpretation of information Content: Inverse problems on average Example

The mean of 2, 4, 5, 6, and q is 5.

Find q

$$\frac{q+2+4+5+6=5}{5}$$

$$5 \times \frac{q+17}{5} = 5 \times 5$$

$$q+17 = 25$$

$$q+17-17 = 25-17$$

q = 8

Activity

Trs' collection

Pupils work out the following exercise

The mean of the following numbers are given, find the unknown.

- (a) 8, 4, 7, 2, 6, x, x + 1. the mean is 10
- (b) 7, 9, a + 3, 68, 5, 3, the mean is 6.
- 2. The average of 3, 0, 7 and x is 4. What is the value of x?
- 3. The average of 7, x, 9, 8 and 10 is 8. Find the value of x.
- 4. If the average of x, 3x, 7x, 4x, and 0 is 6. find x.

LESSON 6

Subtopic: Interpreting information

Content: Inverse problems on average (cont)

Example: (a) The average of 3 numbers is 12. What is the sum of the 3

numbers?

Average = <u>sum of all items</u> Number of items

$$12 \qquad = \qquad \underline{\text{sum}}{3}$$

$$12 \times 3 = \underbrace{\operatorname{sum} \times 3}_{3}$$

Sum = 36

Example

(b) The average mark of 4 pupils is 6, and the average mark of 4 other pupils is 8. what is the average mark of all the 8 pupils.

The total mark of 4 pupils
$$= 4 \times 6 = 24$$
The total mark of 4 other pupils
$$= 4 \times 8 = 32$$
The total mark of 8 pupils
$$= 24 \times 8 = 32$$
The average mark of 8 pupils
$$= \frac{56}{8} = 7$$

Activity

MK old edition pg 172-173

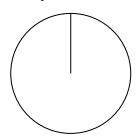
Remarks

LESSON 7

Subtopic: Pie chart

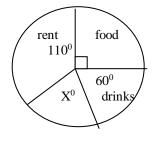
Content: Interpreting pie chart involving fractions

Example The pie chart shows how a man spends sh 300,000



- Rent $\frac{4}{10}$ X $\frac{2}{10}$ $\frac{1}{10}$ Saving others
- (i) What fraction of his money did he spend on food?
- (ii) How much does he spend on rent?
- (iii) How much more does he spend on food than others

Example (b) The pie chart shows how a man spends sh 360,000



- (i) Find the value of x
- (ii) How much does he spend on Food?
- (iii) How much more does he spend on rent than on food?

Other

(i)
$$x + 60^{0} + 110^{0} + 90^{0} = 360^{0}$$

 $X + 260 = 360$
 $X + 260 - 260 = 360 - 260$
 $X = 100^{0}$

Either:

(iii)
$$1100 = 600 = 500$$

 1000
 $\frac{50}{360}$ x $\frac{360,000}{360}$ = 50,000

1000 (ii) <u>90 x 360000</u> = 90,000/= 360 1

OR (iii) $\frac{1000}{360}$ x $\frac{360,000}{360}$ = 110000

$$110,000 - 60,000 = 50,000$$

Activity

New MK pg 94-97 Fountain pg 93-97

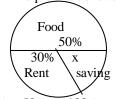
Remarks

LESSON 8

Subtopic: Pie charts

Content: Interpreting pie chart involving percentages

Example: The pie chart shows how a man spends 180,000/=



(i) x + 30% + 50% = 100% X + 80% = 100% X + 80% = 100% X + 80% - 80% = 100% - 80%X = 20%

Either

(i) Find the value of x

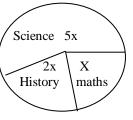
- (ii) How much does he spend of rent?
- (iii) How much more does he Spend on food than on rent?
- (ii) 30% of 180000?= $\frac{30}{100}$ x 180000 = 54,000

OR 50% of 180000 = 20% of 180000
=
$$\left(\frac{50}{100} \times 180000\right) \cdot \left(\frac{20}{100} \times 180000\right)$$

= 90,000 - 36,000 = 54,000/=

100

Example: (b) The pie-chart represents the number of pupils taking Maths, history and Science. If there are 320 pupils in the school.



- (i) Find the value of x
- (ii) How many pupils do History
- (iii) How many pupils do Science than history?

(i)
$$x + 2x + 5x = 320$$
 (ii) No who take History $8 x = 320$ $= 2x$ $8x = 320$ 40 $= 2 \times 40$ $= 80$ pupils $X = 40$

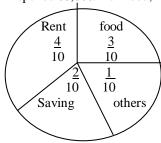
(iii)
$$5x - 2x = 3x$$
 OR $5x - 2x$
 $3x = 3 \times 40$ $(5 \times 40) - (2 \times 40)$
 $= 120^{0}$ 200 - 80
120 pupils.

LESSON 9

Subtopic: Pie chart Content: Interpreti

Content: Interpreting pie chart involving fractions
Example The pie chart below shows how a man spe

The pie chart below shows how a man spends his salary. If he spends 60,000/= on food, how much does he earn?



3 pts rep 60,000

Let his salary be y/= $\frac{3}{2}$ of y = 60,000/= 10 $10 \times \frac{10}{10} \times 3y = 60,000 \times 10$ $\frac{3y}{3} = \frac{60,000 \times 10}{3}$

Y = 200,000/=

1 pt reps
$$\frac{60,000}{3}$$

10 pts rep 20,000 x 10
= 200,000/=

Examples: (c) The pie chart below shows how a man spends his salary. If he spends 60,000/= on food,



OR

(i) let his salary be
$$x/=$$
 $90 \text{ of } x = 60,000/=$ $360 \text{ } 90 \text{ } 1 \text{ } x = 60,000 \text{ } 360 \text{ } 4$

(i) 90° represent 60,000/= 1° represents 60,000 90 360° represent $60,000 \times 360 \times 4$

4 x
$$\underline{X} = 60,000/= x$$
 4 = 240,000/=
= $X = 240,000/=$

Ref: trs' collection

LESSON 10

Subtopic: Pie chart.

Content: Constructing pie chart

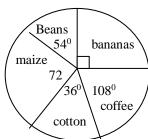
Example: In a village 25% of the farmers grow bananas, 20% grow maize

15%, grow beans 10% grow cotton and 30% grow coffee.

Use the above information and draw a pie chart.

Sector for bananas =
$$\frac{5}{25} \times \frac{18}{360} = 5 \times 18 = 90^{0}$$

$$\frac{2}{100} \times \frac{1}{3} = 18$$
Sector for beans =
$$\frac{15}{100} \times \frac{360}{100} = 3 \times 18 = 54^{0}$$
Sector for maize =
$$\frac{20}{100} \times \frac{360}{100} = 2 \times 36 = 72^{0}$$
Sector for cotton =
$$\frac{10}{100} \times \frac{360}{100} = 1 \times 36 = 36^{0}$$
Sector for coffee =
$$\frac{30}{100} \times \frac{360}{100} = 3 \times 36 = 108^{0}$$



Activity

New MK pg 99-Old MK pg 184-188 Fountain pg 98-99

Remarks

LESSON11

Subtopic: Pie charts

Content: Constructing pie charts.

Example: In a pupil's school bag there are 4 English books, 3 SST books, 5

Maths books and 6 Science books. Use the information and draw an

accurate pie chart.

Solution The total number of books = 6 + 5 + 3 + 4 = 18 books

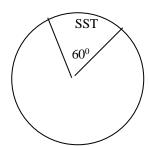
20

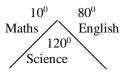
Sector for English books = $\frac{4}{18}$ x $\frac{260}{360}$ = 4 x 20 = 80°

Sector for SST books $= \frac{20}{18} \times \frac{360}{18} = 3 \times 20 = 60^{0}$

Sector for English books = $\frac{20}{5} \times \frac{360}{18} = 5 \times 20 = 100^{0}$

Sector for English books = $\frac{20}{4 \times 360} = 6 \times 20 = 120^{\circ}$





Activity:

- 1. New MK pg 99
- 2. Old MK pg 184-188
- 3. A woman spends her income as follows 1000/= on transport, 2000/= on drinks, 3500/= on food and 2500/= on other things. Draw a pie chart to show the information.

Remarks

LESSON 12

Subtopic: Co-ordinate graphs
Content (i) Naming axes

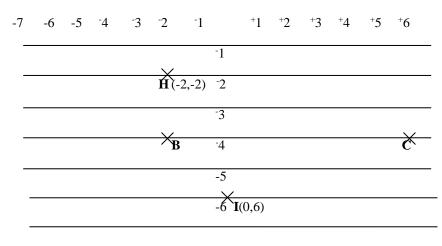
- (ii) Reading plotted co-ordinate points from the graph
 - (iii) Plotting points on the graph.

Example (a) Horizontal Axis is the X – axis

(b) Vertical axis is the Y – axis.(c) Points co-ordinate

Points	co-ordinate
	(x, y)
A	(-6, +5)
В	(-2, -4)
C	$(^{+}6, -4)$
D	(+3, +5)
E	(0.0)

- (d) Plot the points F(0, 6) G(5, 0) H(-2, -2) and I(0, -6) on the coordinate graph given.
- <u>N.B.</u> 1^{st} digit is found along the x axis to form the coordinates of a 2^{nd} digit is found along the y axis a point.



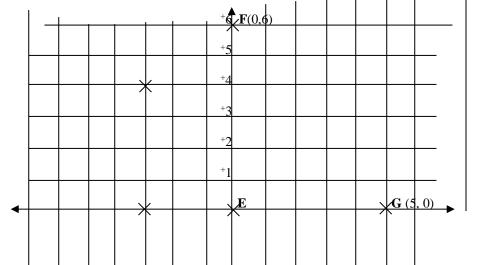
Y - axis

Activity

Trs' collection 1.

Remarks





LESSON 13

Subtopic: Area and perimeter of shapes on the grid. Content: Finding area of shapes on the grid. (i)

(ii) Finding perimeter of shapes on the grid.

Example:

Plot the following points on the co-ordinate graph below: (a) A (2, 2) B (2, 8) C (-3, 8) D (-3, 2)

(b)

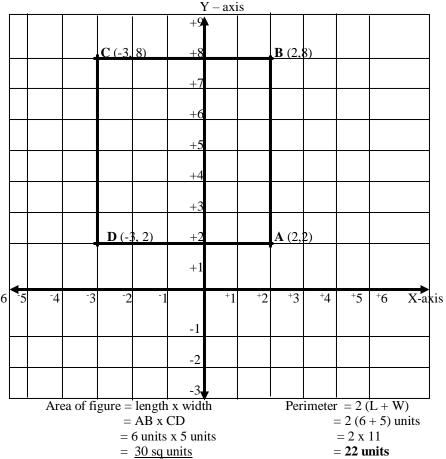
Join the points (done)

(c)

Name the shape formed. (Rectangle)

Calculate / find its area. (d)

(e) What is its perimeter?



Activity

Trs' collection

Revision questions on graphs and interpretation of information

Exercise one

- 1. What is the mode of 4, 5, 2, 3, 9, 4 and 4
- 2. Find the median of 13, 11, 12, 8, 0 and 9.
- 3. Find the mean of 8, 6, 10 and 5.

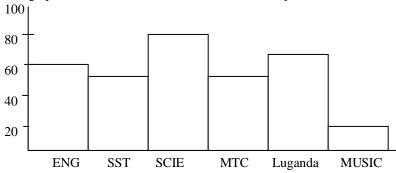
4. The table below shows the results of a mathematics examination done by some pupils. study it and answer the questions that follow:

Mark	70	55	10	45	90
No of pupils	3		4	2	1

- (a) How many pupils did the test
- (b) Find the modal mark
- (c) Find the modal frequency
- (d) What is the average mark
- 5. The average of 3 numbers is 20. find the sum of the numbers.
- 6. The mean age of 6 boys is 10 years and that of 4 boys is 15 years. Find the mean age of the ten boys.
- 7. The mean of 3y, 2y, 5 and 2 is 5. find the value of y.
- 8. The mean of p, (p+1), (p+2), (p+3), 5 and 7 is 5. Find the value of p.

Exercise Two

1. The graph below shows Roberts score in various subjects

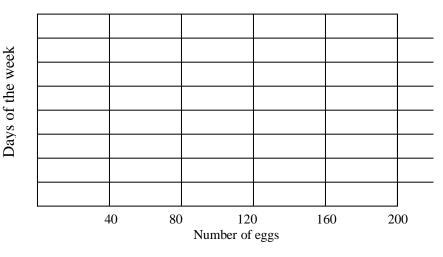


- (a) How many marks did he score in Maths?
- (b) In which subject did he perform best?
- (c) Calculate Roberts average mark

2. Below is a table showing the number of eggs produced from Kasozi's farm in a week.

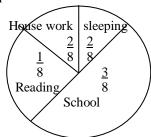
 								1
Day	Mon	Tue	Wed	Thur	Fri	Sat	Sun	
No of eggs	20	15	175	140	185	160	190	

Represent the above information on the graph



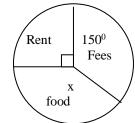
Exercise Three - PIE CHARTS

1. The pie chart below shows how Agudo spends her 24 hours in a day. Use it to answer questions which follow

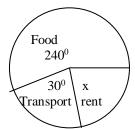


- (a) How many hours does Agudo spend sleeping?
- (b) How many more hours does she spend at school than doing house work?
- (c) If she reads 2 books in one hour, how many books does she read in a day?

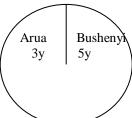
2. The pie chart below shows how Nakubuya spends his monthly salary of 126,000

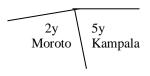


- (a) Find the value of X.
- (b) How much does he spend on rent?
- (c) What percentage of his income is used for food?
- 3. The pie chart below shows Awori's monthly expenditure use it to answer questions that follow



- (a) Find the value of X.
- (b) If h spends 90,000/= on rent, find this total expenditure?
- (c) How much more does he spend on food than transport?
- 4. The pie chart below shows the number of candidates who passed PLE in four districts. Use it to answer questions.



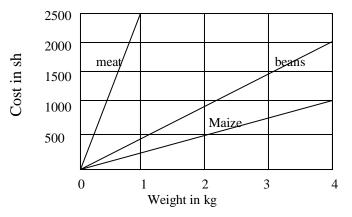


- (a) If 600 candidates passed in Moroto. How many candidates sat for the examination?
- (b) How many more candidates sat in Bushenyi than Arua
- 6. A man shored his salary as follows:

 Musobya 36,000/=, Akugizibwe y /=, Opari 40,000/=, Laker 10,000/=. If the man had 108,000/= draw an accurate pie chart to show the above information.
- 7. At kigulu Primary School, 45% of the books in the library are for English, 15% Science, 20% Mathematics, 10% SST and X% are other subjects. In a circle of radius 3 cm, draw an accurate pie chart to show the above information

EXERCISE FOUR - LINE GRAPH

1. Study the line graph below and answer questions that follow

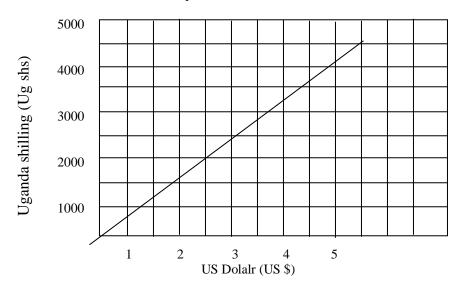


(a) What is the cost of maize per kg?

5.

- (b) What is the cost of meat per kg?
- (c) What is the cost of beans per kg.
- (d) How much will I pay if I buy 2 kg of meat, 3 kg of beans and 4 kg of maize.

2. The graph below shows the exchange rate of Uganda shilling against one US dollar, use it to answer questions that follow.



- (a) How many Uganda shillings are equivalent to US \$ 4.5 ?
- (b) Convert 2500 Uganda shillings to dollars.
- (c) Kasim bought a shirt at 3.5 dollar. Find the price in Uganda shillings.
- (d) How many Uganda shillings are equivalent to 1 US \$?

Write the coordinates of the points plotted in the graph.

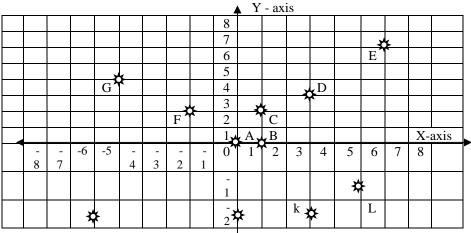
A() B() C() D() F() G() H() I() K() L() M()

D() E() I()

EXERCISE FIVE

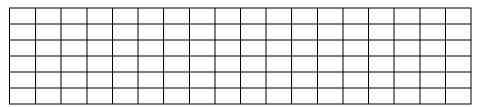
COORDINATE GRAPH

Below is a coordinate graph



Plot the following points on the graph

A (5, 2) b (-2, 2) C (-4, -1) D (3, -1)

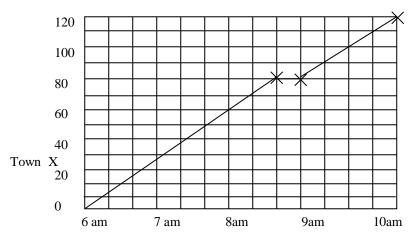


60

- (b) Join A to B, B to C, C to D, D to A
- (c) What name is given to the polygon formed?
- (d) Calculate the area of polygon formed in square units.

EXERCISE SIX (TRAVEL GRAPHS)

The graph shows Emojongs journey from Pakwach to Kumi. Use it to answer questions that follow.

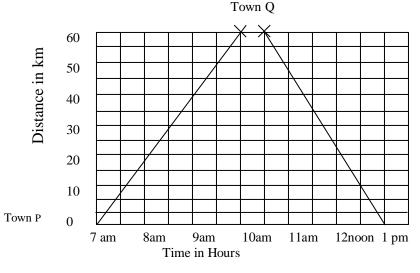


- (a) At what time did Emojong arrive at town X?
- (b) For how long did he rest at town Y?
- (c) What distance had he covered by 6.20am?
- (d) Calculate his average speed for the whole journey.
- 2. A gate way bus leaves Soroti at 800am and travels at 60km/hr for 2 hours. The driver rests for half an hour. He then continues for another 1 ½ hours at 40 km/hr until he reached his final destination.

- (a) Draw a travel graph for the above information
- (b) What was his average speed for the whole journey?

EXERCISE SEVEN – (TRAVEL GRAPHS)

1. Study the graph below and answer the questions which follow



- (a) How far is town Q from town P?
- (b) How long did the motorist take to travel from town P to Q?
- (c) What was the average speed of the motorist 35km from P to Q?
- (d) At what time was the motorist 35km from P?
- (e) Calculate his average speed for the whole journey.

UNIT 8 MEASURES

UNIT / TOPIC: MEASURES

LESSON 1

Subtopic: MONEY
Content: Currencies.

Finding the number of notes/ denominations amount and its

application in real life situation

Examples Bank notes are numbered from <u>A</u> 003782 to <u>A</u> 003881.

How many notes are there?

First note <u>A</u> 003782

P

Last Note <u>A</u> 003881

P

 N_{\odot} of notes = A 003881

P - A 003782 P

99 without last note

Total N_0 of Notes = 99 + 1 = 100 notes.

If denominations was worth shs 1000 per note then amount

1 note = 1000 100 notes = 1000 x 100 /= = 100,000/=

Activity

Pupils will do exercise 10: 3 page 218 in MK BK 6.

Remarks:

LESSON 2

Subtopic: MONEY

Content: Uganda and other currencies

Example: Country currency

COUNTRY	CURRENCY
Uganda	Uganda shillings (U.shs.
Kenya	Kenya shilling (K.shs)
Rwanda	RF
South Africa	ZAB
Zambia	Kwacha (Kch)
USA	US dollar
Britain	Pound sterling (£)
Japan	Japanese Yen (¥)
European Union	Euro (euro)
German	Deutsch Mark (DM)

Rate Needs updating the forex rates

Currencies	Buying	Selling
1 pound sterling (₤)	Ug shs 2500	Ug shs 2550
1 US dollar (US \$)	Ug shs 1700	Ug shs 1720
I Kenya shillings K shs	Ug shs 19	Ug shs 20
1 Rwanda Franc (R.F)	Ug shs 1.9	Ug shs 2.2
1 Euro (Euro)	Ug shs 1520	Ug shs 1560
1 Tanzania shillings (TZ shs)	Ug shs 1.6	Ug shs 2

Example:

A tourist arrived in Uganda with £ 7650. The exchange rate is £ 1 = Ug shs 2500, How much money in Uganda shillings did he have.

Solution

Bureau will buy from him.

£ 1 = Ug shs 2500

£ $7650 = \text{Ug shs } 2500 \times 7650$ Ug shs 19,125,000

Tamu has Euros equivalent to Ug shs 12480,000. Find the amount in Euros Tamu will get.

Solution

Bureau is selling Euros to Tamu

1 Euro = Ug shs 1560
Ug shs 1560 = 1 Euro
Ug shs 1 =
$$\frac{1}{1}$$
 Euro
1560
Ug shs 12480000 = $\frac{1}{1}$ x 12480000, Euro
1560
= 8000
 $\frac{12480000}{1560}$ Euros
 $\frac{1560}{1560}$
= 8000 Euros

Activity

Fountain pg 117

Understanding pg 180-181.

LESSON 1

9.00 am

8.00 am

Subtopic: **TIME**

Content: 24 hour clock

conversion 12 hour clock to 24 hour clock

Examples: Time table 12 hr 24 hr clock 12.00 mid night 0000 hrs / 24 hours 11.00 pm 2300hrs Example 10.00pm 2200 hrs write 12.45 pm in 24 hrs clock 9.00 pm 2100 hrs $pm \rightarrow + 1200 \text{ hrs}$ 8.00 am 1245 pm = 1245 hrs2000 hrs $7.00 \, pm$ 1900 hrs 6.00 p.m1800 hrs 5.00 p.m 1700 hrs 4.00 pm 1600 hrs 2. Express 11: 45 pm to 24 hrs

clock 3.00pm 1500hrs pm 1200 hrs 1400 hrs $2.00 \, \mathrm{pm}$ 1.00pm 1300 hrs 12 00 12.00 Noon + 11 45 1200 hrs 11.00 am 1100 hrs 23. 45 hours 10.00 a.m 1000 hrs

0900hrs

0800 hrs

7. 00 am	0700 hrs
6. 00 am	0600 hrs
5. 00 am	0500 hrs
4. 00 am	0400 hrs
3 .00 am	0300 hrs
2. 00 am	0200 hrs
1. 00 am	0100 hrs

Activity

Pupils will do exercise 9 a and 9b page 217 and 218 respectively MK BK 5.

Remarks:

Content: Conversion of 24 hour clock to 12 hour clock Example: 1. Express 04 00 hours as 12 hour clock

04 00 - 00 00 4. 00 am

2. Express 1330 hours as am or pm

13 30 hrs - 12 00 1. 30 pm

Activity

Pupils will do exercise 9c page 218 MK BK 5. Pupils will do exercise 24:4 page 23, MK BK 6 (old)

Tr's collection

Remarks:

LESSON 2

Subtopic: TIME

Content: Finding duration

Examples. (i) How many hours are there between 11 00 hours and 1830

hours 18 30 hrs - 11 00 hours

7. 30 = <u>7 hours 30 minutes</u>

(ii) An exam started at 1359 hours and ended at 1610 hours. How long was the exam?

16 10 hours
- 13 59 hours
2. 11 = 2 hours 11 minutes

Activity

Pupils will do exercises 24: 6 in MK BK 6 (Old) pg 224-225

Remarks:

LESSON 3

Subtopic: Distance, Speed, Time

Content: Distance

1. Find the distance travelled by a car in 3 hours at 60 km/hr

Speed = 60 km/hr Time = 3 hours Distance = speed x time = 60 km/hr x 3 hours = 60 x 3 $\frac{\text{km}}{\text{hr}}$ x $\frac{\text{hr}}{\text{hr}}$ 1

= 180 km.

2. A car takes $2\frac{1}{2}$ hrs to cover a journey at a speed of 40 km/hr.

Find the distance travelled.

Speed = 40 km/hrTime = $2 \frac{1}{2} \text{ hrs}$ Distance = speed x time = $40 \text{ km / hr x } 2 \frac{1}{2} \text{ hr}$ $40 \text{ x } 2 \frac{1}{2} \frac{\text{km}}{\text{hr}} \text{ x } \frac{\text{hr}}{\text{l}} 1$ 20= 40 x 5 km

40 x 5 km 2 1

 $\underline{\text{Distance}} = 100 \text{ km}$

Activity

NB: Finding distance with minutes and km/hr on duration

Old Mk 228-230 New Mk pg 112

Understanding Mtc 121-123

Remarks:

LESSON 4

Subtopic: Distance, speed, Time

Content: Speed

Example: A car travels for 3 hours to cover a distance of 210 km. At what

speed does the car travel.

Time = 3 hours Distance = 210 km

Speed = <u>distance travelled</u>

Time taken

 $= \frac{210 \text{ km}}{3 \text{ hrs}}$

Speed = 70 km/hr

Activity

Pupils will do exercise 10 : 16 page 235 MK BK 6

New MK 114

Old edition 231-233.

LESSON 5

Subtopic: Distance, Time Speed
Content: Expressing km/hr as m/sec
Example: Express 72 km/hr as m/sec

Means distance = 72 km Time = 1 hr

<u>Distance</u> <u>time</u>

 $I km = 1000m \qquad \qquad hr = 3600 sec$

70 km = 72 x 1000 m

 $Speed = \frac{72000m}{distance}$ Time $= \frac{20}{72000m}$ -3600 sec 1 = 20m/sec

Activity

Pupils will do exercise 10: 17 page 236 MK BK 6.

New MK 113

LESSON 6

Subtopic: Distance, Time, Speed
Content: Expressing m/sec as km/hr
Example: Express 100m/sec as km/hr

Example: Express 100m/sec as km/hr Meaning = 100 m in 1 sec

> Distance 1000m = 1 km $\frac{1}{1} \text{ km}$ 1 m = 100

m = 100 $\frac{1}{1} \times 100 \text{ km}$ 100m = 1000

 $\begin{array}{rcl}
1000 & 1000 \\
& \underline{1} \text{ km} \\
& = 10
\end{array}$

= 0.1 km

time

3600/sec = 1 hr

3600

 $1 \sec = 1 \text{ hr}$

 $\begin{array}{rcl} \text{Speed} & = & \underline{\text{distance}} \\ & & \text{Time} \end{array}$

 $= \frac{10}{\frac{1}{10}} \times \frac{360}{\frac{3600}{10}} \text{ km/hr}$

= = 360 km/hr

Activity

New Mk pg 116 Old Mk pg 236

Remarks:

LESSON 7

SUBTOPIC: Distance, Time, Speed Finding average speed.

Examples: A car takes 2 hours to cover a certain distance at 60 km/hr but it

returns in 3 hrs. Calculate the average speed of the car for the whole

journey.

To journey Fro iourney Time = 2 hrstime = 3 hrsSpeed = 60 km/hrspeed = 60 km/hrDistance = speed x time distance = speed x time $= 60 \text{ km/hr } \times 2 \text{ hrs}$ 60km/hr x 3 hrs 60 x 2 km x hr 1 $= 60 \times 3 \text{ km } \times \frac{\text{hr}}{1}$ hr 1 hr 1 Distance = 120 kmdistance = 180 km

Average speed =
$$\frac{\text{total distance travelled}}{\text{Total time taken}}$$
= $\frac{120 + 180 \text{ km}}{2 + 3 \text{ hrs}}$
= $\frac{60}{300} \text{ km}$
-5 1 hr
= $\frac{60 \text{ km/hr}}{1000 \text{ km/hr}}$

Activity New Mk 115 Old Mk 235 Remarks: LESSON 9

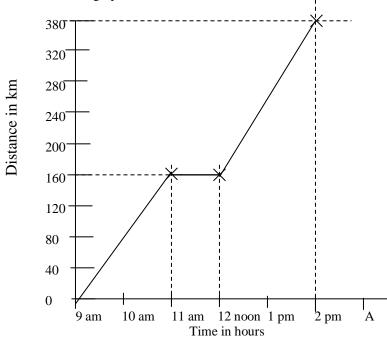
Subtopic: Distance, speed, Time

Content: Travel Graph

Example: In reference to graph on page 239 MK BK 6.

Teacher will guide the pupils through the questions that follow the

graph.



Sample question

- (a) What is the distance between A and B? = 160 km.
- (b) What happened at B?)resting)

Activity

Pupils will do exercise 10 : 24 page 240 MK BK 6.

New Mk 115-120

Understanding pg 192-193

Remarks:

LESSON 10

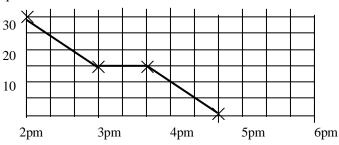
Subtopic: Travel graphs

Content: Interpreting return journeys on travel graphs

Examples: Oseke left his mother's house 30km away, use the graph to answer

questions that follow.

Distance in Km



- (a) What is the scale on the vertical axis? (1 square represents 5 km)
- (b) What is the scale on the horizontal axis? (1 square represents 20 minutes)
- (c) Calculate Oseke's average speed before he rested?

$$\left(\frac{15 \text{ km}}{1 \text{ hr}} = 15 \text{km/hr}\right)$$

- (d) How far from home was Oseke at 4 : 20 p.m? (5 km away)
- (e) At what time did he arrive at his home? (At 4:40 p.m)

Activity

Pupils will do exercise 108 on page 176 No 5, 6, and 8 of Revision Maths for upper primary.

Remarks

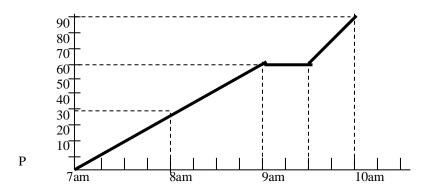
LESSON 11

Subtopic: Travel graphs

Content: Drawing travel graphs

Examples: Nduga started from town P at 7 a.m and covered 60km in 2 hours, then he rested for 30 minutes. Then covered the remaining 30 km to town R in 30 minutes.

- (a) Show Nduga's journey on a travel graph.
- (b) At what time did he start his rest?
- (c) Where was Nduga after the first hour?
- (d) Calculate Nduga's average speed for the whole journey.



Answers

(d) A.V speed =
$$\frac{90 \text{km}}{3 \text{hr}} = \frac{30 \text{km/hr}}{4}$$

Activity

Pupils will do exercise 2 Nos 1 – 5 on page 109 of Oxford Primary MTC pupils BK 6.

Remarks

TERM III MTC NOTES

TOPICAL BREAKDOWN FOR TERM III

Theme	Topic	Sub topic
Measurements	Length, mass and capacity	 Circumference Measuring the length of a straight spring Relationship between diameter and circumference () pie of circle. Finding circumference of a circle Finding the radius and diameter when given circumference. Area Finding area of; Triangles Rectangle Trapezium Parallelogram Circle Kite Volume Finding value of; Cube Cuboid Cylinder Triangular prism Capacity Litres, half litres and quarter litres Calculating capacity in litres and millilitres

Coomotry	Linos	a Darollol lines	٦
Geometry	Lines, angles, and geometrical figures	 Parallel lines Construction of parallel lines Using a set square Construction of parallel lines Using a compass Perpendicular lines Constructing perpendicular lines, perpendicular bisector Dropping a perpendicular line from point Skew lines Angles Naming common arms and adjacent angles, supplementary angles, vertically opposite angles, and complementary angles. Construction of angles of 90°, 60° and 120° 	
		from point - Skew lines • Angles - Naming common arms and adjacent angles, supplementary angles , vertically opposite angles, and complementary angles. - Construction of angles of 90°,	

	-	Construction of a pentagon when given sides Simple properties of prisms Nets of simple prisms		

	T	T
Numeracy	Integers	 Integers on a number line Addition of integers Subtraction of integers Writing mathematical statements Addition and subtraction of integers without using a number line Application of integers
Algebra	Algebra	 Algebra (forming algebraic equations) Collecting like terms Substitution Simple equations (solving equations) By addition By subtraction By multiplication By division Equations involving brackets Forming and solving equations formed from polygons.

TOPIC LENGTH, MASS AND CAPACITY

LESSON 1

Subtopic: Length Content: Measuring

Example: Learners will participate in measuring and recording length of

different objects
i.e Book (length)
book (width)
book (thickness)

Geometry set (length, width, thickness)

pencil (length)
door (length, width)
window (length, width)
table (length, width, thickness)

Activity

Teacher will organize different objects to be measured by the pupils. Old Mk 313-315

Remarks:

LESSON 2

Examples:

Subtopic: Length

Content: Changing from small to large units

metres to kilometres
 centimetres to metres
 Change 2500 metres to kilometres

1000m = 1 km $1 \text{ m} = \frac{1}{1} \text{ km}$ 1000

 $2500m = \frac{1}{2} \times 2500 \text{ km}$

 $= \frac{1000}{25} \text{ km}$

$$= 2.5 \text{ km}$$

(ii) Change 300 cm to m

$$100 \text{ cm} = 1 \text{ metre (m)}$$
 $1 \text{ cm} = \frac{1}{100} \text{ metre}$
 $300 \text{ cm} = \frac{1}{100} \times 300 \text{ m}$
 $100 \times 100 \times 100$
 $= 3 \text{ m}$

Activity

Pupils will do exercise 13. 5 and 13.6 page 315 - 316 MK BK 6.

Old Mk 315-316

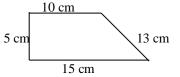
Remarks:

LESSON 3

Subtopic: Length

Content: Perimeter of geometrical figures

Example: 1. Find the perimeter of the figure below

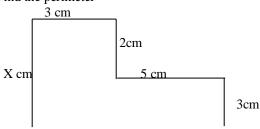


Perimeter is the total distance around the figure.

∴ Perimeter =
$$S_1 + S_2 + S_3 + S_4$$

= $15 \text{ cm} + 5 \text{ cm} + 10 \text{ cm} + 13 \text{ cm}$
= 43 cm

(2) Find the perimeter



$$8 \text{ cm}$$
Side $X = 2 + 3$

$$X = 5 \text{ cm}$$
Perimeter = $S_1 + S_2 + S_3 + S_4 + S_5 + S_6$

$$= 8 \text{cm} + 3 \text{cm} + 2 \text{ cm} + 5 \text{ cm} + 3 \text{cm} + 5 \text{ cm}$$

$$= 26 \text{ cm}$$

Activity

Pupils will do exercise 13: 12 and 13.13 page 320-321 MK BK 6.

Old Mk 320 New MK 125

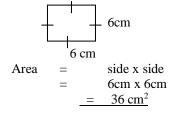
Remarks:

LESSON 5

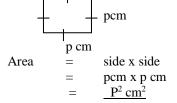
Subtopic: Area

Content: Area of shapes

Example: Find the area of a square whose side is 6cm



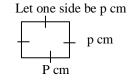
Find the area of a square whose side is pcm

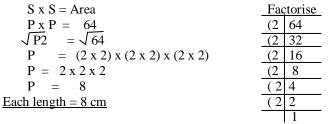


Content: Find one side of the square.

Example:

The area of a square is 64cm². Find the length of each side of the square.





Activity

Pupils will do exercise 13:18 page 328 MK BK 6. Pupils will do exercise 13:19 page 329 MK BK 6 New MK 122-123.

Remarks:

LESSON 6

Subtopic: Area

Content: Finding the side of a rectangle when area is given

Example: The area of a rectangle is 56cm². The length is 8cm. find the width

of the rectangle.

$$Area = 56cm^2 \qquad w$$

$$8cm$$

$$L \times W = Area$$

 $8cm \times W = 56cm^2$

$$\begin{array}{ccc} \underline{8em \times w} & = & \underline{56} \text{ cm}^2 \\ \underline{8em} & & 8 \text{ em} \\ 1 & & 1 \\ W & = 7 \text{ cm} \end{array}$$

Width = 7 cm

11. A rectangular piece of paper is 4800mm². Its width is 60 mm. Find its length

60 mm Area =
$$4800 \text{mm}^2$$

Length

Length x width = Area

L x W = Area

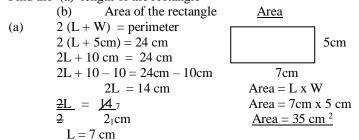
L x 60 mm = 4800mm^2
 $\frac{\text{L x } 600 \text{mm}}{60 \text{mm}_1}$ = $\frac{4800 \text{mm}^2}{60 \text{mm}_1}$

 $L = 80 \, \text{mm}$

Content: Finding area when perimeter is given

Example: 2 The perimeter of the rectangle is 24 cm and the width is 5cm

Find the (a) length of the rectangle



Activity

Pupils will do exercise 13:23 page 333 MK BK 6. New MK pg123-125

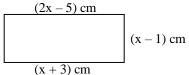
Remarks:

LESSON 7

Subtopic: Area

Content: Finding sides, Area and perimeter

Example: ABCD is a rectangle.



- (i) Find the value of x
- (ii) Find width and length
- (iii) Find the area of the figure
- (i) Find the unknown 2x - 5 = x + 5 2x - x = 3 + 5 X = 8
- (ii) Length . x + 3 8 + 3 = 11 cmWidth: x - 1 8 - 1 = 7 cm(iii) Area = L x W = 11 cm x 7 cm 77 cm²
- (iv) Perimeter = 2(L + W)= 2 (11 cm + 7 cm) $2 \times 18 \text{ cm}$

Perimeter = 36 cm

Activity

Pupils will do exercise 13:24 page 334 - 335 MK BK 6.

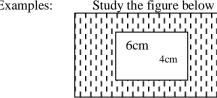
Tr's collection

Remarks:

LESSON 8

Subtopic: Area

Content: Finding area of shaded part. Study the figure below carefully. Examples:



9cm

Find the area of the shaded part.

10 cm

Area of outer rectangle L x W

10cm x 9 cm

90cm².

Area of inner rectangle L x W

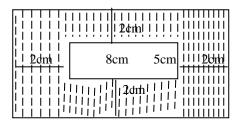
> 6 cm x 4 cm =

 24cm^2

Area of shaded part $90 \text{cm}^2 - 24 \text{cm}^2$

66cm²

2.



Find area of shaded part.

Length of outer rectangle = 8cm + 2 + 2cm

Width of outer rectangle = 12 cm

= 5 + 2 + 2 = 9cm

 $= L \times W$ Area outer rectangle

> = 12 cm x 9 cm $= 108 \text{ cm}^2$

Area of shaded part $= 108 \text{cm}^2 - 40 \text{cm}^2$

 $= 68 \text{cm}^2$

Activity

Pupils will do exercise 13:25 Nos 1 - 6 page 337 in MK BK 6.

Understanding pg 262-263

Remarks: Use a variety of units

LESSON 9

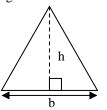
Subtopic: Area

Finding area of a triangle Content:

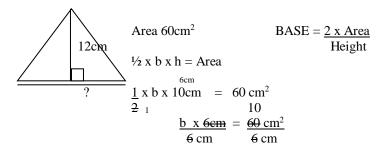
Examples:



Area is $\frac{1}{2}$ x b x h



Find the base of a triangle whose area is 60cm² and height is 12cm Examples: 2 Diagrammatic representation



 $\frac{b}{b} = 10 \text{ cm}$

Activity

Pupils will do exercise 13:27 page 339 to 340 MK BK 6.

New MK 127

Fountain 135-136

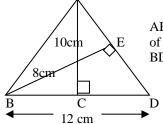
Remarks:

LESSON 10

Subtopic: Area

Content: Finding Base or Height by comparing area

Example:



ABC is a triangle AC and BE are heights of the same triangle.

$$BD = 12cm$$
, $AC = 10cm$ $BE = 8cm$
Find the length of AD

Area triangle ABD with height $AC = \frac{1}{2}$ bh Area Triangle ABD with height $BE = \frac{1}{2}$ bh

same triangle with different heights has the same area.

$$\frac{1}{2} bh = \frac{1}{2} bh$$
 $4cm$
 6
 $\frac{1}{2} AD \times \frac{8cm}{2} = \frac{1}{2} \times \frac{12cm}{2} \times 10cm$
 $AD \times 4 cm$
 $= 60 cm$
 1
 $AD \times \cancel{A} cm$
 $\cancel{A} cm$
 1
 $AD = 15 cm$

Activity

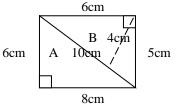
Pupils will do exercise 13:28 page 342 MK BK 6.

Remarks:

LESSON 11

Subtopic: Area

Content: Finding area of combined shapes Examples: Find the area of the whole figure.



Name the identified figures in above.

A and B

Area
$$A = \frac{1}{2}x b x h$$

Area $B = \frac{1}{2}x b x h$

$$\frac{1}{2}x 8cm x 6cm$$

$$\frac{1}{2}x 10 x 4cm$$

Area of whole figure
$$=$$
 AA + AB $=$ $24cm^2 + 20cm^2$ $=$ $44cm^2$

Activity

Pupils will do exercise 13:29 page 343 MK BK 6.

Understanding mtc pg 258

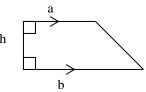
Remarks:

LESSON 12

Subtopic: Area

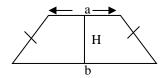
Content: Area of a trapezium

Examples: Trapezium are of two types.



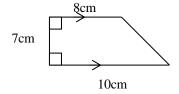
right angled trapezium Find the area of the trapezium below

Area = $\frac{1}{2}$ h (a + b)



isosceles trapezium

Find the area of the trapezium below

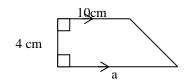


Area =
$$\frac{1}{2} h (a + b)$$

= $\frac{1}{2} x 7 cm (8 + 10 cm)$
= $\frac{1}{4} x 7 x \frac{18}{12} cm^2$
= $\frac{2}{1}$
= $\frac{1}{63 cm^2}$

Content: Finding one side of a trapezium

Examples: The area of a trapezium is 60cm², the height is 4cm and one of the parallel sides is 10cm. find the length of the second parallel side.



$$\frac{1}{2} h (a + b) = Area$$

$$\frac{1}{2} x 4 cm (a + 10) = 60 cm^{2}$$

$$2 cm (a + 10) = 60 cm^{2}$$

$$2 acm + 20 cm = 60 cm^{2}$$

$$2 acm + 20 - 20 = 60 - 20$$

$$2 a = 40$$

$$\frac{1}{2a} = \frac{20}{21}$$

$$\frac{a}{21} = \frac{40}{21}$$
Second parallel side is 20 cm

Activity

Pupils will do exercise 15 : 31 page 346 MK BK 6. New MK pg 128

Remarks

LESSON 13

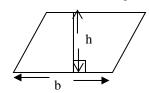
Subtopic: Area

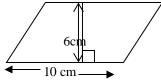
Content: Area of parallograms

Examples

AREA OF PARALLOGRAM = BASE X HEIGHT

Find the area of the figure below





area = BASE x HEIGHT = 10 cm x 6 cm Area = 60cm2

Activity

Pupils will do exercise 15 : 32 page 347 MK BK 6.

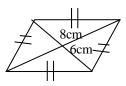
New Mk 129

LESSON 14

Content: Area of rhombus and kite

Example 1.

Find the area of the rhombus below



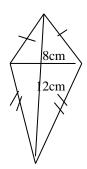
$$Area = \underbrace{\frac{1}{2}d_1 \ x \ d_2}_{2}$$

1 x 8cm x 6cm 2 4cm x 6cm

4cm x 6cm 24cm²

Example II

Find the area of the kite



Area =
$$\frac{1}{2}$$
d₁ x d₂

1 x 8cm x 12cm 2

 $4\text{cm} \times 12\text{cm}$ 48cm^2

Ref: New Mk pg 130

LESSON 15

Subtopic: length

Content: Circumference - Diameter

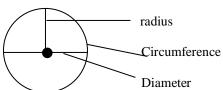
Radius

Examples: <u>Circumference</u>: is distance around a circular object.

<u>Diameter</u>: The longest distance through the centre of a circle object

to the covered line.

Radius: Half the diameter distance



(i) Find the radius of a circle whose diameter is 40 cm.

Radius =
$$\frac{\text{diameter}}{2}$$
=
$$\frac{40^{20}}{2_{1}}$$
=
$$\frac{\text{radius}}{2 \cdot 20 \cdot 20}$$

(ii) Find the diameter of circle whose radius is 3 ½ cm

Diameter =
$$2 \times r$$

= $2 \times 3 \frac{1}{2} \times \frac{7}{2}$
Diameter = $7 \times \frac{1}{2} \times \frac{7}{2}$

Content:

Calculating circumference of a circle

Examples:

(i) Find the circumference of a circle whose diameter is

10 cm. (Use $\pi = 3.14$) Diameter = 10 cm

Circumference = πD

 $= 314 \times 10 \text{ cm}$

 $= \frac{314}{100} \times 10 \text{ cm}$ = 31.4 cm

21m

Ref: understanding mtc pg 254-257 New MK pg 132

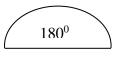
LESSON 16

Content:

perimeter of sectors of a circle

Example 1

Find the perimeter of these shapes ($\pi = \frac{22}{7}$ or 3.14)



7cm



Ref: Mk new Mk pg 133

LESSON 17

Content:

finding the area of a circle

Example 1

Find the area of the circle



7cm

A =
$$\pi r^2$$

= $\frac{22}{7} \times 7 \times 7$
= 22×7
= 154cm^2

Example 2

Calculate the area of the circle below (take π

20cm

A =
$$\pi r^2$$

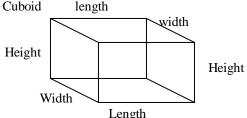
= 3.14 x 10 x 10
 $\frac{314}{100}$ x 100
= 314cm²

Ref: new MK 134

LESSON 18

Subtopic: Area

Content: Finding total surface Area Examples: Cuboid length

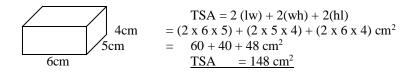


A rectangular box has 6 faces

- 2 faces of length and width
- 2 faces of width and height
- 2 faces and length and height
- $2 ext{ (length x width)} + 2 ext{ (width x height)} + 2 ext{ (length x height)}$

$$2(Lxw) + 2(wxh) + 2(1xh)$$

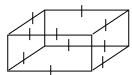
$$TSA = 2 (LW) + 2 (Wh) + 2 (Lh)$$



Content: Total Surface Area of a Cube

Examples: Cube

- Cube has all edges equal
- Cube has all its faces equal
- Each face is a square



It has 6 equal faces

Area of one face $= S \times S$

 $= S^2$ where S is side

∴ 6 faces will have area 6 x S²

 \therefore TSA of cube = 6S²

Find the total surface area of a cube whose side is 4cm

 $TSA = 6 \times S^2$ $TSA = 6 \times 4^2$

 $TSA = 6 x 4 x 4 cm^2$

 $TSA = 96cm^2$

Activity

Pupils will do exercise 13:34 and 13:35 page 350 and 351 respectively in MK BK 6. . Remarks

LESSON 19

Subtopic: Area

Content: Finding sides of a cube

Examples: The total surface area of a cube is 384cm². Find the length of each

side of a square.

 $TSA = 384cm^{2}$. $But 6S^{2} = TSA$

 $\frac{6S2}{6_1} = \frac{384}{6^1}$

 $S^2 = 64$

 $\begin{array}{rcl}
\sqrt{S^2} & = & \sqrt{64} \\
\underline{S} & = & 8cm
\end{array}$

Activity

Pupils will do exercise 13:36 page 351 MK BK 6.

Remarks

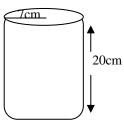
LESSON 22

Subtopic: volume

Content: volume of a cylinder

Examples

Find the volume of the cylinders below



A =
$$\pi r^2 h$$

= $\frac{22}{7} \times 7 \times 7 \times 20$
= $22 \times 7 \times 20$
= 154×20
= 3080cm^2

Ref: new Mk pg 137

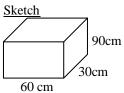
LESSON 20

Subtopic: Capacity

Content: Volume (3 dimensional figures.)

Example: A rectangular tank is 30cm by 60 cm by 90 cm. Find its capacity

litres.



Volume of the tank = $L \times w \times h$ = $(30 \times 60 \times 90) \text{ cm}^3$ 1 litre = 100cm^3 No of litres in the tank = $30 \times 60 \times 90$

 $= \frac{30 \times 60 \times 9}{1000}$ = 162 litres

Activity

Pupils will do exercise 35.8, Nos 1-10 on page 373 of a New MK pupils BK 6. (Old ed)

New Mk 139-141

Remarks

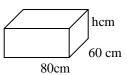
LESSON 21

Subtopic: Capacity

Content: application of volume and capacity

Example: The rectangular tank below holds 72 litres of water. Calculate the

volume of h.



Solution: I litre = 1000cm^3

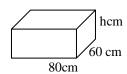
The volume of water in the tank is (72 x 1000) cm³.

Therefore 80 x 60 x h =
$$72 x 1000$$

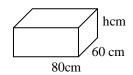
h = $\frac{-93}{80} \times \frac{5}{80}$
h = 121
h = 15 cm

Activity

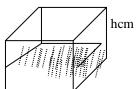
1. The tank below holds 72 litres of water.. find h.



2. The tank below holds 280 litres of water find h.



The tank below is $\frac{1}{3}$ full of water. How many litres of water are in the tank?





Ref: old Mk pg 359-360 Understanding pg 266-268 Remarks

LESSON 23

Subtopic: Capacity

Content: Conversion of cm³ to litres

Examples (a) Change $2000 \text{ cm}^2 \text{ to litres}$ Solution: $1000 \text{cm}^3 = 1 \text{ litres}$

 $1 \text{ cm}^3 = \left(\frac{1}{1000}\right) \text{ Litres}$

 $2000 \text{cm}^3 = 1 \times 2000 = 2 \text{ litres}$

(b) Change 3700cm^3 to litres $1000 \text{cm}^3 = 1 \text{ litres}$ $1 \text{ cm}^3 = \left(\frac{1}{1000}\right) \text{ litres}$

$$3700 \text{cm}^3 = \frac{1}{1000} \times 3700 = \frac{37}{10} = \frac{3.7 \text{ litres}}{10}$$

Activity

Pupils will do exercise 13.44, No 1 – 10 on page 364 of A New MK pupils BK 6 (New edn)

Remarks

LESSON 24

Subtopic: Capacity

Content: Conversion of ml to litres

Example: (a) Change 3500 ml to litres

<u>Solution</u>

 $\frac{1000 \text{ml}}{1 \text{ ml}} = \frac{1 \text{ litre}}{\left(\frac{1}{1}\right) \text{ litres}}$

$$3500 \text{ml} = \begin{pmatrix} 1000 \\ \frac{1}{1000} & \text{x} & 3500 \end{pmatrix} \text{ litres}$$

$$\frac{35}{10} = 3.5 \text{ litres}$$

(b) Express 900 ml as litres. 1000ml = 1 litre $1 \text{ ml} = \left(\frac{1}{1000}\right) \text{ litres}$ $900\text{ml} = \left(\frac{1}{1000} \times 900\right) \text{ litre}$

 $\frac{9}{10} = \frac{0.9 \text{ litres}}{10}$

Content: Conversion of litres of ml Example: (a) Change 5 litres to

(a) Change 5 litres to ml.

1 litre = 1000ml
5 litres = (1000 x 5) ml
= 5000 mls

(b) Change 0.25 litres to ml 1 litre = 1000ml 0.25 litres = $(0.25 \times 1000) \text{ ml}$ = $\frac{25}{100} \times 1000$ = 250 ml

(c) Change 3 ½ litres to ml 1 litre = 1000ml 3 ½ litres = 1000 x 3 ½ $\frac{7}{2}$ x $\frac{1000}{2}$ = 7 x 500 = 3500ml

Activity

Pupils do exercise 13.42 No 1 – 16 on page 362 of a New MK pupils Bk 6 (New ed)

Remarks

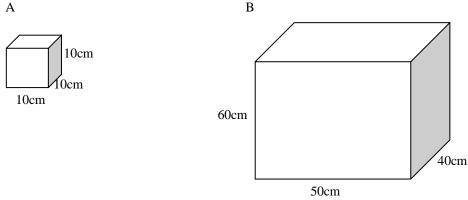
LESSON 25

SUBTOPIC: PACKING

Content: volume

Examples

Containers A are to be packed in a big container B



- a) Find the number of small containers that can be packed in B.
- b) How many containers A of water can fill container B?

MEASURES QUESTIONS

Set I

- 1. What is the cost of 250g of sugar at shs 2000 per kg?
- A man watched a television for 900 seconds. For how many hours did he watch the television?
- 3. How many hours are between 3.30am and 2.30pm?
- 4. A victory party started at 8.40 am and ended at 11.15pm. How long did it take?

- 5. If the exchange rate is US \$ 1 to Ushs 1750. How many dollars can I get from U hs 85.500?
- 6. A businessman bought a radio at shs 450,000 and sold at shs 500,000. calculate his profit.
- 7. If I sell an article at shs 120,000 making a profit of shs 5000. how much did I pay for the article?
- 8. Calculate the loss made by a trader buying an article at shs 10000 and selling it at shs 9050.
- 9. A man had shs 5000 and bought the following items:
 - 2kg of sugar at shs 1200 per kg
 - 500gm of salt at shs 400 per kg
 - 3 bars of soap at shs 2100.

Calculate his total expenditure and balance.

Set 2

- 1. Find how many notes are in a bundle of notes numbered from AP 627400 to AP 27499.
- 2. How many 100 shilling coins are equivalent to twenty thousand shillings note?
- 3. A bus covered a distance of 60 km in 45 minutes. What was its speed?
- 4. Jinja is 148 km from Mbale through Iganga. The distance from Jinja to Iganga is 39km. How far is Mbale from Iganga?
- 5. A car travels at 96km/hr for 20 minutes. Calculate the distance travelled?
- 6. Two towns A and B are 420km apart. A driver travels from A to B at 7 kph and returns at 105 kph. Calculate his average speed for the whole journey.
- 7. Mwanani covers a distance of 180km in 3 hours. Calculate the speed in m/sec.
- 8. Katoke traveled to Kenya with K shs 25000 and then to German with Euros 2000. Find the total amount of money in Uganda shillings that he travelled wih if K shs 1 = U shs 22 and Euro 1 = Ug shs 1520.
- 9. How much money is contained in a 5000 shilling note bundle numbered from VU 28504 and VU 285140?

Set 3

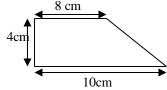
- 1. How many seconds are in 35 minutes?
- 2. Express 3.30 p.m to 24 hour clock.
- 3. Change 18000 seconds to hours.
- 4. Mugisha reached school at 8.15am and left the school at 5:30 pm how long did she stay at school?
- 5. What distance will be covered at a speed of 20 m/sec for 5 minutes?

- 6. How long will a car take to cover a distance of 180km at a speed of 60 km/hr?
- 7. Change 40m/sec to km/hr
- 8. Lira is 124km from Kitgum. A bus takes 1 ½ hrs from Kitgum to Lira and 2 ½ hrs going back. Find its average speed.
- 9. A parent bought the following articles for the children at beginning of the term
 - a dress at shs 5500
 - a shirt at shs 3000
 - 2 pairs of shorts at shs 3500 each.
 - Two pairs of shoes at shs 8000 each

If the parent had shs 50000. calculate his total expenditure and balance.

Set 4

- 1. Express 6km as metres.
- 2. One side of a regular hexagon is 8 cm. What is the total distance round it?
- 3. A triangular field has a base of 15m and its height 12m. what is the area of the field?
- 4. Calculate the circumference of a round table top whose diameter is 1.4m?
- 5. Calculate the area of the figure below.



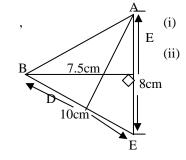
- 6. A barrel of oil has a radius of 0.5m. calculate its diameter in centimetres.
- 7. The diagram below is a rectangle ABCD.

(2x + 6) cm

 $\frac{X}{2}$ cm

- (i) Find the value of x.
- (ii) Find the area of the rectangle
- (iii) Find its perimeter

8.

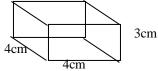


Find the length of AD

Find the perimeter of the Triangle ABC

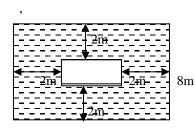
Set 5

- 1. Express 2 ½ litres as milllitres.
- 2. Write 15000 cm³ as litres.
- 3. Find the volume of the figure below.



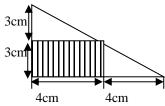
- 4. A field is 40m^2 , what is the area is cm^3
- 5. A road is 8 km long. What is this distance in metres?

6.



- (i) Find the width of the inner rectangle
- (ii) Find the area of the shaded part

Find the area of the shaded part in the diagram below 7.



- Change 6.045kg to grams. 8.
- 9. A square room is 3.6 m long. What is its area?
- Find the height of triangle whose area is 30cm² and its base is 12cm. 10.

THEME: Geometry

Topic: LINES, ANGLES AND GEOMETRIC FIGRUES

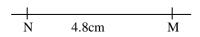
UNIT 9 LESSON 1

Subtopic:

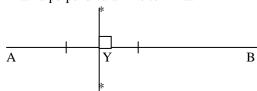
Shapes Content: (i)

- Types of lines line, line segment, ray, curves (a)
 - perpendicular lines (b)
 - parallel lines (c)
 - Drawing line (d)
 - Skew lines

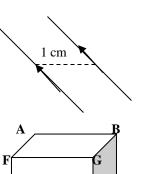
Examples: Draw a line segment of 4.8 cm (a)

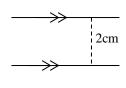


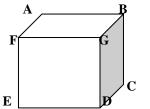
Draw a perpendicular line to AB at Y (b)



(c) Drawing paralle lines







line AB and GD are skew lines

Activity:

Draw the following:

- line segment of length
 - 3.2 cm
- (ii) 5 cm
- (iii) 6.7 cm (iv) 10cm

(iii)

Draw lines perpendicular to: (b)







- Draw a parallel lines which are apart by (c)
 - (i) 2cm (ii) 3cm (iii) (iv) 1.5cm and 2cm 4cm

Remarks

Fountain pg 152-153

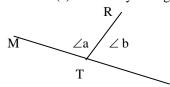
LESSON 2

Subtopic: Angles Content:

Formation and naming angles

measuring and drawing angles using a protractor

study the figure below Example: (a)



 \angle a is MTR or RTM

angles b is RTW or WTR

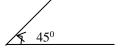
W

Measure each angle in degrees: (b)

angle "a" =
$$102^0$$

angle "b" = 78^0

Measure and draw an angle of 45° . (c)



Activity

Draw the following angles using a protector 20^{0}

$$30^{0}$$
 80^{0} 120^{0} 100^{0} 65^{0} 35^{0}

Remarks

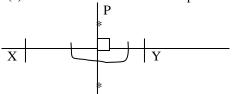
LESSON 3

SUBTOPIC: Bisecting line segments and angles Content:

Bisect lines at a point. Drop bisector from a point

Bisect given angles.

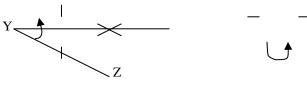
Example: Bisect the line XY from point P (a)



(c) Bisect the following angles



 72^{0}



 \checkmark

Content: Construct angles using a pair of compasses only.

Example:

(i) Construct angles using a pair of compasses only (To be taken constructed by the teacher)
(a) 60^{0} (b) 150^{0}

(ii) (a) 45° (b) 30°

(iii) Construct an angle of 120⁰ at point T

Activity

Pupils will do exercise 6 on page 144 from Oxford primary MTC pupils BK 6. Fountain pg 147 $\,$

Remarks

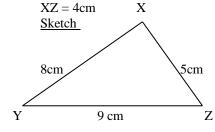
LESSON 5

Subtopic: Construction of polygons

Content: - Types of triangles

- Construction of triangles (SSB) using a pair of compasses
And a protractor

Examples: Construct triangle XYZ where the side XY = 8 cm. YZ = 9cm and



Accurate

N.B (Emphasize a sharp pencil and accuracy)

Activity:

A old MK BK 6 pages 288 – 291.

Remarks

LESSON 5

Subtopic: Construction of triangles

Content: Construct triangles involving an angle: (S A S, (SSA), (ASS)

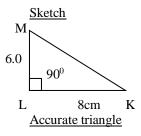
N.B Emphasize the use of sharp pencil)

Example: Use pair of compasses, ruler and pencil only construct triangle

KLM with angle KLM = 90° , side LM = 6.0cm and KL = 8 cm

(b) Measure (a) MK

(b) ∠ KML



KM = 10 cm $\angle KML = 52^{0}$

Activity

Understanding mtc pg 230-231

Remarks

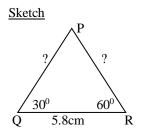
LESSON 6

Subtopic: Construction of triangles Content: Construct triangle (AAS)

Example: Construct triangle PQR where angle $PQR = 30^{\circ}$, angle $PRQ = 60^{\circ}$

and side QR = 5.8cm

(a) Measure PQ and PR (ii) Measure angle P



Accurate

Activity

Understanding mtc pg 230-231

Remarks

LESSON 7

SUBTOPIC: Construction of polygons

Content: - Construction of quadrilaterals

(a) square(b) Rectangle

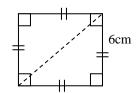
(c) Determine the diagonals

Their properties

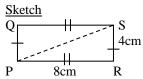
Example: (i) Construct a square of side 6cm'

(b) Give the length its diagonals

Sketch



(ii) Construct a rectangle PQRS such that PR = 8cm and RS = 4cm Measure its diagonal



iii) construct a square in a circle

Activity

The pupils will do exercise on construction of squares and rectangles:

Tr's collection

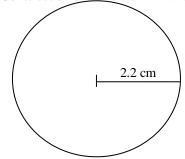
Remarks

LESSON 8

construction of polygons SUBTOPIC: A regular Hexagon in a circle Content:

Accuracy in measuring radii

Construction of a circle of r = 2.2 cm Example: (i)



Construct a regular hexagon of side 4cm (ii)



Find its perimeter $P = 6 \times \text{side}$ $= 6 \times 4 \text{ cm}$ P = 24 cm

Construction of regular hexagon from centre angles Content:

Construction of a regular octagon

Examples: A regular hexagon from centre angle.

Centre $\angle = 360 = 60^{\circ}$

(ii) regular octagon of side **Activity**

Fountain pg 155-156

New mk 165

Remarks

LESSON 9

Subtopic: properties of triangles and quadrilaterals.

Properties of: Content:

> Triangles (Equilaterals, scalene, isosceles and right angled triangle

square (b)

Rectangle (c)

properties of triangles Examples: (a) (ii) (i)

Equilateral

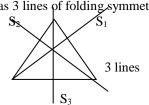


- 3 equal side

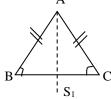
$$AB = AC = BC$$

Each int
$$\angle = 60^{\circ}$$

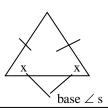
Has 3 lines of folding symmetry



Isosceles triangle



- 2 equal sides (AB = AC)
- one line of folding symmetry
- 2 base \angle s are equal



(iii) Right angled triangle

Height hypotenuse

Scalen triangle (iv)



87

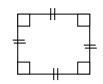
Base

- one Int $\angle = 90^{\circ}$ (right angle)
- longest side is Hypotenuse
- Int \angle sum = 180⁰

- Has all 3 sides not equal
- No line of symmetry
- Int \angle s add to 180°

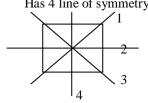
Properties of quadrilaterals (b)

Square

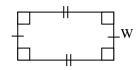


- All 4 sides equal
- Each Int $\angle = 90^{\circ}$
- Int \angle sum = 360⁰

Has 4 line of symmetry



Rectangle (ii)

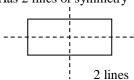


- 2 opposite sides are equal i.e $(L_1 = L_2)$

$$(\mathbf{W}_1 = \mathbf{W}_2)$$

Each Int $\angle = 90^{\circ}$

Has 2 lines of symmetry



Activity

Pupils make the sketch of the following showing properties (a) Equilateral triangle

- scalen triangle
- (b) Isosceles triangle
- (c)
- (d) Right angled triangle

square (e)

(f) rectangle

LESSON 10

Subtopic:

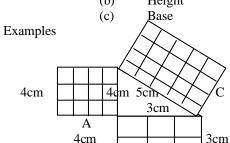
Pythagoras theorem

Content:

Use the Pythagoras theorem to find

B 3cm

- Hypotenuse
- Height (b)



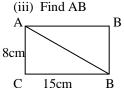
(ii) Find X



$$(6m)^2 + (8m)^2 = x^2$$

 $(6m x 6m) + (8m x 8m) = X^2$
 $36m^2 + 64m^2 = X^2$
 $\sqrt{100m^2} = \sqrt{X^2}$

$$= 10m = x$$



$$\begin{array}{c} 15\text{cm}^2 + 7\text{cm}^2 = AB^2 \\ \underline{\hspace{0.2cm} 225\text{cm}^2 + 649\text{cm}^2} \\ \sqrt{289\text{cm}^2} &= \sqrt{AB^2} \\ \underline{\hspace{0.2cm} 17\text{ cm} = AB} \end{array}$$

(iii) Find the height



12cm
$$\sqrt{h^2} = \sqrt{25cm^2}$$

 $h = 5cm$

Activity

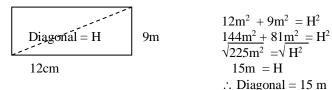
exercise 1 from Oxford primary MTC pupils Bk pages 150-151, and Exercise 12:30 MK BK 6 page 295 fountain pg 157

Remarks

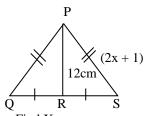
LESSON 11

Subtopic: Application of Pythagoras theorem

Content: Solve problems using Pythagoras theorem
Example: (i) The flower bed measures 12m by 9cm
Work out the length of its diagonal



(ii) The triangle below is Isosceles: PQ = 13cm



Find X PS = PQ (2x + 1) = 13cm 2x + 1 - 1 = 13cm - 1 2x = 12 cm $\frac{2x}{2} = \frac{12}{2} cm$ Find QS
P
12
13

$$RS^{2} + RP^{2} = PS^{2}$$

$$RS^{2} + 12^{2} = 13^{2}$$

$$RS^{2} + 144 = 169$$

$$RS^{2} + 144 - 144 = 169 - 144$$

$$\sqrt{RS^{2}} = \sqrt{25}$$

$$RS = 5$$

$$\therefore QS = 5 \times 2$$

$$X = 6 \text{ cm}$$

(c) Find area of PQS

A = $\frac{1}{2}$ x b x h ($\frac{1}{2}$ x 10 x 12) cm² $\frac{1}{2}$ x 5 x 12 cm² Area = 60 cm²

$= 10 \,\mathrm{cm}$

(d) Work out perimeter
P = QP + PS + QS
= 13cm + 13cm + 10cm
P = 36 cm

Activity

Pupils will do exercise 12:34 page 300 MK pupils BK 6 pages 299 – 300

Remarks

LESSON 12

Subtopic: Angle properties

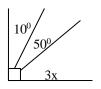
Content: - Acute, obtuse, reflex, straight, right and centre angles

- Complementary

Example: (i) Describe the angles below

Angle	Description	Reason
50^{0}	Acute angle	It is $< 90^{\circ} > 0$
124 ⁰	Obtuse angle	It is $> 90^{\circ} < 180^{\circ}$
180^{0}	Straight angle	It is a straight line
280^{0}	Reflex angle	$> 180^0 \text{ but} < 360^0$
360^{0}	Centre angle	Forms full circle

(a) Find the value of x



$$x+20^{0}$$
 $2x+10^{0}$

$$3x + 10^{0} + 50^{0} = 90^{0}$$

(complementary \angle s)
 $3x + 60^{0} = 90^{0}$
 $3x + 60 - 60 = 90 - 60$
 $3x = 30$

$$x + 20 + 2x + 10 = 90^{0}$$

 $x + 2x + 20 + 10 = 90^{0}$
 $3x + 30^{0} = 90^{0}$

$$3x + 60 - 60 = 90 - \frac{3x}{3} = \frac{30}{3}$$
$$X = 10^{0}$$

$$3x + 30-30 = 90 - 30$$

$$3x = 60$$

$$3 = 3$$

$$X = 20^{0}$$

If $\overline{2y}$, 40° , and 30° are complementary angles, find y. (b)



$$2y + 30^{0} + 40^{0} = 90^{0}$$

$$2y + 70^{0} = 90^{0}$$

$$2y + 70 - 70 = 90 - 70$$

$$2y = 20$$

$$2 = 10$$

Find complement of (y-30°) Ref: fountain 146

MK new edition pg 144

Remarks

LESSON 13

Subtopic:

Supplementary angles

Content: Angles on a straight line

Angles on a triangle

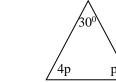
Examples:

$$\begin{array}{c} 4f \quad 60^{0} & \text{What is f} \\ \\ 4f + 60 = 180 \\ \text{(angles on a straight line add up to } 180^{0}) \\ 4f + 60 = 180 \\ 4f = 60 - 60 = 180 - 60 \\ 4f = 120 \\ \underline{4f} = \underline{120} \\ 4 & \underline{4} \\ \underline{f} = 30^{0} \\ \end{array}$$

(ii) If
$$2y + 20^0$$
, $y + 80^0$ and $2y$ are supplementary \angle s
Find y
 $2y + 200 + y + 800 + 2y = 180^0$
 $2y + y + 2y + 20 + 80 = 180^0$
 $5y + 100 = 180^0$
 $5y + 100 - 100 = 180 - 100$
 $\frac{5y}{5} = \frac{80}{5}$
 $y = 16^0$

(iii) Interior angles of a triangle add up to 180^o Find the unknown

(a)



(b)

$$2x + 50^{0} + 90^{0} = 180^{0}$$
(Int \angle s add up to 180^{0})
$$2x + 140^{0} = 180^{0}$$

$$2x + 140 - 140 = 180 - 140$$

$$2x = 40$$

$$2 \qquad 2$$

$$X = 20^{0}$$

If 4p, 300 and p are angles in a triangle.
Find the value of the unknown
$$p + 4p + 30 = 1800$$

 $5p + 300 = 1800$
 $5p + 30 - 30 = 180 - 30$
 $\frac{5p}{5} = \frac{150}{5}$
 $P = 30^{0}$

Activity

Exercise 13:12 from page 224 of MK BK 7. page 224. page 287 from MK BK

Exercise 28:18 New Mk 156

Fountain pg 147

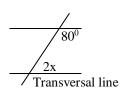
Remarks

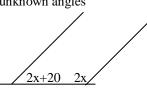
LESSON 14

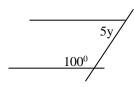
Subtopic: Angles formed by the transverse

The co-interior angles and co – exterior angles Content:

Examples Find the unknown angles







Activity

Exercise 29: 4 and 29: 5 of pages 308/9 MK BK 6 pages 308 and 309.

Remarks

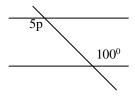
Ref: Mk old edition pg 267-273

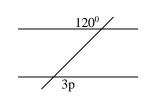
LESSON 15

Subtopic: Alternate interior angles Content: -Alternate interior angles

Alternate exterior ∠s (ARE EQUAL ANGLES) Examples:

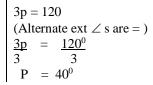
Work out the unknown





$$5p = 1000$$

(Alt. int \angle s are equal)
 $5p = 10^0$



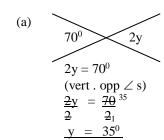
Subtopic: Corresponding angles

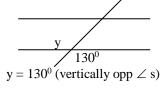
Content: Vertically opposite angles

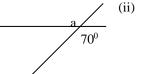
corresponding angles

Find the unknown if the given angles are vertically Examples (i) opposites

(b)







Find the missing \angle s below $a = 70^0$ (vert opp) $t = 70^0$ (corresponding \angle s)

$$\begin{array}{ccc} & m & y \\ \hline 140^0 & t \end{array}$$

$$a = m \text{ (corresponding } ∠ s)$$

$$∴ m = 70^{0}$$

$$Y = 140^{0} \text{ (ver opp } ∠ s)$$

Activity

Pupils will do exercise 24:4 and 29:5 pages pg 267-273

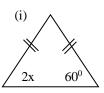
Remarks

LESSON 15

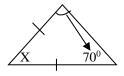
Subtopic: Equal angles

Base angles of Isosceles triangle Content: 2 interior angle = 1 exterior angle

Example:



(ii)

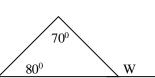


$$2x = 60$$

(2 base
$$\angle$$
 s of Isosceles \triangle are =)

$$2x = 60^{0}$$

$$X = 30^{0}$$



 $x + 70 + 70 = 180^{\circ}$

$$x + 140^0 = 180^0$$

$$x + 140 - 140 = 180-140$$

$$x = 40^{\circ}$$

$$80 + 70 = w$$

$$(2 int \angle = 1 ext + opp \angle)$$

$$150^0 = w$$

$$W = 150^{\circ}$$

Activity

Old Mk pg 167-273

Remarks

LESSON 16

Subtopic: Exterior and Interior angles

Content: Find the exterior angles of regular polygon

Interior angles of regular polygon

Example:

Find the exterior \angle is 150° (a)

Ext \angle + Int \angle = 180°

Let ext
$$\angle$$
 be y

$$Y + 150^0 = 180^0$$

$$Y + 150 - 150 = 180 - 150$$

$$Y = 30^{\circ}$$

Work out the exterior angle of a regular decagon (b)

$$Decagon = 10 sides$$

$$\text{Ext } \angle = 360 = 360 = 36^{\circ}$$

$$\therefore$$
 Ext $\angle = 36^{\circ}$

Activity

==+				
Exterior	Interior	Number of sides		
X	120 ⁰			
		5 sides		
72^{0}		5 sides		
	140^{0}	9 sides		

A regular polygon has 12 sides find its (b)

- (i) exterior angles
- (ii) interior angles

Remarks

Tr's collection

LESSON 17

Subtopic: Interior angle sum

Find interior angle sum of regular polygon Content:

problems involving interior angle sum

Find the interior angle sum of a regular hexagon Examples:

> Int angle sum = $(n-2) \times 180$ $= (6-2) \times 180^{0}$

4 x 180

 $=720^{0}$ Int angle sum

(ii) The interior angle of a regular polygon is five times the Exterior angle

(a) Find the ext
$$\angle$$
 (b)
Let ext $\angle = x$
Ext int
 $X = 5x$
 $6x = 180^{0}$
 $6 = 6$
 $X = 30^{0}$

(b) Find the int
$$\angle$$
 int \angle = $5x$
 $5x = 5x X$
 $x = 300$
 $5 \times 30 = 150^{\circ}$

(c) Find its interior angle sum
Int angle sum =
$$(n-2) 180$$

$$N = 360 = 360 = 12 \text{ sides}$$

$$1 \text{ ext } \angle 30$$

$$1 \text{ ext } \angle \text{ sum} = (12-2) 180^{0}$$

$$10 \text{ x } 180^{0}$$

$$= 1800^{0}$$

Activity

If the interior angle is thrice the exterior angle of a regular polygon.

- Find the exterior angle
- How many sides has it (b)
- Find its Int angle sum (c)

Remarks

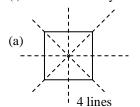
Ref: tr's collection

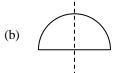
SYMMETRY

LESSON 1

Subtopic: Symmetry

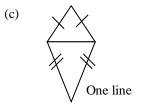
Lines of folding symmetry of plane shapes Content: How many lines of symmetry has Examples: (i)

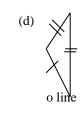


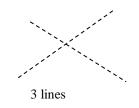


1 line

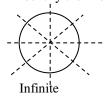




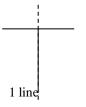


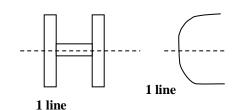


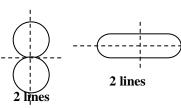
(ii) Identify the line of folding symmetry











Activity

Pupils will draw and count the lines of folding symmetry of shapes given by the teacher.

Remarks

LESSON 2

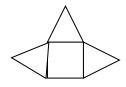
Drawing nets of solids Subtopic: Content: Nets of soild objects

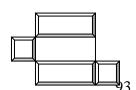
Modes of solids

Name the solid whose net is drawn Example:

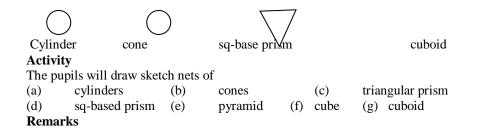








For more lesson notes, visit www.freshteacheruganda.com



LESSON 3

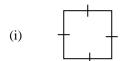
Subtopic: Properties of space objects and their nets

Content: - Naming solid figures

Drawing solid shapes.
The edges, vertices, faces
i.e edges + 2 = vertices + faces

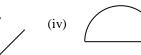
REVISION QUESTIONS ON GEOMETRY

1. Name the following shapes

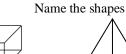








Examples:



cuboid has: 12 edges 8 vertices 6 faces



tetrahedron 6 edges 4 vertices 4 faces



square base prism 8 edges 5 vertices 5 faces

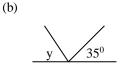
Activity

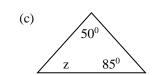
Pupils will do exercise from Mk Bk 6.

Remarks_

2. Find the unknown angles below





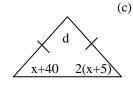


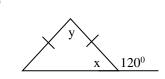
- 3. Find the (a) complement of 15^0 (b) Supplement of 70^0
 - (c) If 48^0 is the complement of P. Find P.

(b)

- (d) Given that x, 40° and 2(x + 5) are supplementary angles. Find the value of x.
- 4. What is the value of the unknown?

(a)





- 5. Use a pair of compasses, ruler and pencil to:
- (a) construct 45⁰
- (b) 120^{0}

(c)

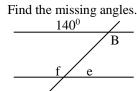
Bisect the angle

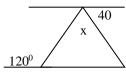


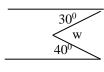
(d) Bisect line AB at point Y



6.





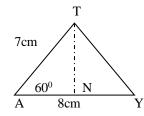


- 7. The exterior angle of a regular polygon is 40° .
 - (a) How many sides does it have?
 - (b) Work out its interior angle.
 - What is its interior angle sum?
- 8. How many lines of symmetry does each of these have.
 - N.B Draw and show them
 - (a) square (b) isosceles triangle (d)
 - (c) Equilateral triangle
- Copy and construct the figure accurately. Drop the perpendicular line to meet 9. AV at N from point T.

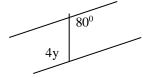


Accurate figure

kite



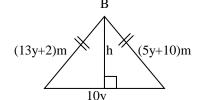
- (b) Measure TN (c) Work out the area of ATY
- The interior angle of a regular polygon is thrice its exterior angle. Find its 10. interior angle sum.
- Don faces NE and makes a clockwise turn to face SW, what is the 11. (i) measure of his turn?
 - (ii) Draw the shapes: cylinder (b) cube triangular prism
 - Draw a net for each solid in (ii) above.
- Construct triangle XYZ with a pair of compasses such that XY = 7 cm, \angle 12. $XYZ = 60^{\circ}$ and $ZXY = 45^{\circ}$
 - (b) Measure XZ (c) $\angle XZY$
- Without using a pair of compasses construct angle 50^o 13.



(iii)

Find the value of v.

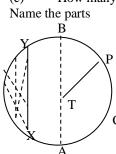
- 14. What acute angle is between the hour and minute arm of a clock at 6: 15 pm
- Use a pair of compasses to construct the following. 15.
 - Rectangle TOPE where TP = 8cm, PO = 6cm and measure its diagonal.
 - Regular hexagon of side 4.3 cm
- Calculate the length of a rectangle whose width is 7cm and a diagonal of 25 16. cm.
 - (b) Find its (i) (ii) perimeter Area
- 17. Use the triangle ABC to answer questions below



- (a) Find the value of y.
- What is the length of each side (b)
- (c) Find the value of h
- Calculate the area of ABC (d)
- Find her perimeter (e)
- 18. The interior angle of a regular polygon is 120 more the exterior angle.
 - (a) Calculate its exterior angle
 - (b) Find its interior sun

How many sides has the polygon and name it. (c)

19.



- Line TP (i)
- (ii) line AB
- (iii) Line XY
- curve C (iv)
- shaded part (v)

UNIT 7 INTEGERS UNIT / TOPIC

LESSON 1

Integers on a number line **Subtopic:** Content: Describe integers

(i) Positive

- (ii) Zero (neutral integer)
- (iii) Negative
- Opposites/inverses of integers
- Inverse property

Example:

- (i) Write down the inverse of:
 - (a) -4
 - Inverse is +4
 - (b) What is the additive inverse of +5 Let inverse be x

But
$$x + +5 = 0$$

$$X + 5 - 5 = 0 - 5$$

$$X = -5$$

Inverse = $^{-}5$

(c) Work out: (Use inverse property)

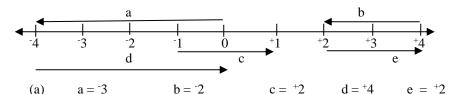
N.B An integer plus its opposite gives zero.

i.e
$$^{+}6 - 6 = 0$$

- (b) -3t + 3t
 - Answer is 0

Subtopic: Represent Integers using arrow.

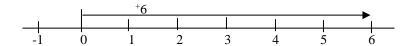
- Content: Name arrows on number lines
 - Draw arrows to represent integers
- Examples: (a) Which integers is represented by each arrow?

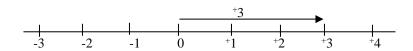


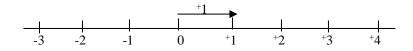
- (b) Draw a number line showing each of:
 - (i) +6
- (ii)
- +3

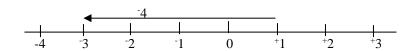
(iii)

- +2
- (iv) -4









Activity

The pupils will do exercise 9:4 on page 196 from A New MK BK 6 page 196.

Remarks

LESSON 2

Subtopic: Ordering integers

Content: - Compare integers

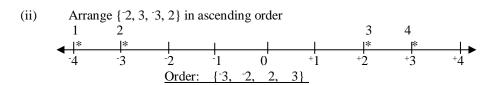
- Arrange in ascending order

- Arrange in descending order

Examples: (i) Use >, < or = to compare

(c)
$$0 - - - 4$$

 $0 > 4$



N.B Integers on the right are greater and all those on the left one less.

Activity

The pupils will do exercise 9:7 from page 197 from A New MK pupils' BK 6 page 197.

Remarks

LESSON 3

Subtopic: Operation on integers
Content: Addition of

(a)

(i) Positive integers

(ii) Positive and negative integers

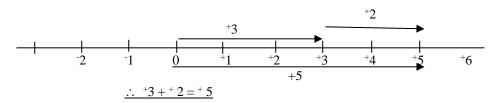
(iii) Negative and negative integers

On a number line

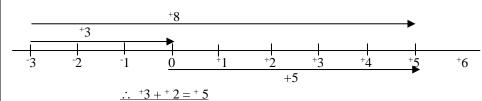
Write sentences of addition on number lines.

Examples:

Add +3 + + 2



(c)
$$-3 + 8 =$$



Operation on integers

Content: Addition of integers

Examples: (i) Add: ${}^{+}6 + {}^{-}6$ (inverse) (c) ${}^{+}8 + {}^{-}4$ means ${}^{+}8 - 4 = {}^{+}4$

(b)
$$+5++2$$
 (d) $-12+-16$ $= {}^{+}28$

(ii)
$$-2y + 2y + 2y$$

Means $-2y + 2y = 0$

Activity

The pupils will do exercise 9:8, 9:9, 9:10 on page 198. A New primary MTC BK 6 pages 198.

Ne wmk 168-170

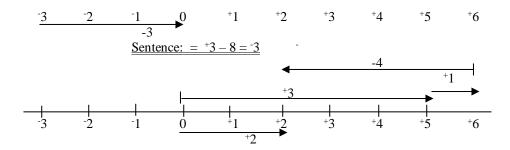
Remarks

LESSON 4

Subtopic: Operations on integers
Content: Subtraction on number line

Example: (i) Write the subtraction sentences gives





Sentence: +5 + + 1 - 4 = +2

S

SUBTOPIC: Operations on integers
Content: Subtraction of integers:

Examples: (i) Work out: (Use the inverse of 2nd integer in qn (ii)

(a)
$$7-5$$
 (b) $+7-+5$ (c) $-7-+5$
= 12 means means
 $+7-5$ $-7-5$
= 2 = -12

(ii) Evaluate 4 - - 2 -8 - (-10)(a) (b) $+7-(^{-}3)$ (c) Means inverse is +3 inverse is +10 4 +7 + 3-8 + 10+ 2 = 10

Activity

The pupils will do exercise 9:12, 9:13 without using a number line.

A New MK Bk 6 pages 171-175

Old mk 201

Remarks

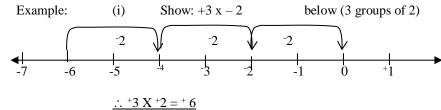
LESSON 5

Subtopic: Operations on integers

Content: Multiplying integers on a number line

+ x + = + + x - = - - x - = + - x + = -

Without a number line.



Activity

Pupils will do exercise 12:14 page 112 from A New Mk 2000 BK 6 page 112. Tr's collection

Old mk 205

Remarks

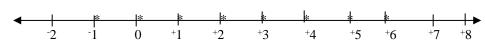
LESSON 6

Subtopic: Sets on a number line.

Content: - Interpreting sets of integers on a number line.

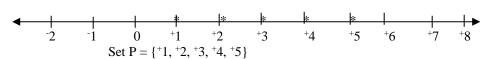
- Representing sets of integers on a number line.

Examples: (i) Write the set y shown below.



Set $Y = \{-1, 0, +1, +2, +3, +4, +5, +6, -----\}$





(iii) Find the set shown

Subtopic:

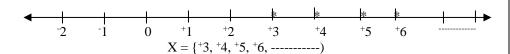
Find the solution sets.

Content:

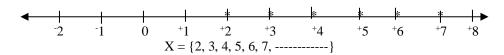
Give the solution sets using a number line.

Examples:

If X > 2 find possible values of X



If X > 2 find the solution set for X. (ii)



Activity

The pupils will do exercises 13:3 and 13: 4 page 115.

A new MK BK 6 (Old Edn)

Old mk 207

Remarks

LESSON 7

Subtopic:

Inequalities Solve inequalities Content:

Find solution sets.

Example:

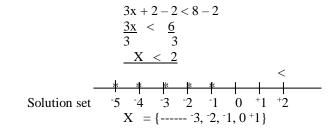
Solve 2x > 8(a)

Soln: $\underline{2x} >$ 2

X > 8

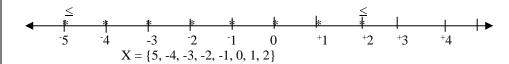
(b) Solve and give the solution set:

$$3x + 2 < 8$$



(c) Solve:
$$-10 < 2x < -4$$

 $\frac{10}{2} \le \frac{2x}{2} \le \frac{-4}{2}$
 $\frac{7}{2} \le x \le 2$



Ref: old Mk pg 210

REVISION WORK ON INTEGERS

- 1. **Evaluate**
 - 8 - 3 (a)
- $^{-}9 6$
- (c) Decrease +7 by - 7
- 2. Work out:
 - -3 x 0 (a)
- $0.8 \times (-4)$ (b)
- 3. Use a number line to add:
 - $^{-}6 + 4$ (a)
- 4 + 7 (b)
- (c) Find the additive inverse of +6.
- Add: $^{-}6 + 6$ (d)

⁻6 x ⁺2

 $^{+}14 - 14$ (e)

4. Work out:

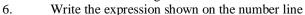
(d)

- +8 - 8 (a)
- (b) (e)
- ⁻10 ⁺ 15 $^{-}12 \div ^{-}3$
- The temperature of ice fell from -3°C by 5°C. Find the temperature of ice. 5.

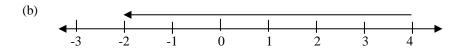
 $^{+}9 \div ^{+}3$

(c)

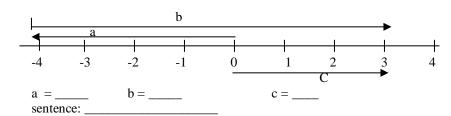
(b) Umeme men are to plant an electric pole 650cm. If 80 cm goes below the ground level. What is the height of the pole seen?

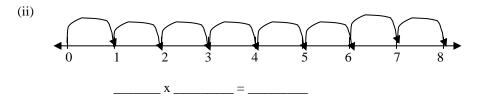






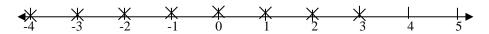
(c) Give the sentence shown





7. Solve: 2y > 4 and give the solution set.

- (b) Give a set of integers for which: $2x + 3 \ge 5$
- (c) Find the set T shown below



(d) Represent $W = \{-3, -2, -1, 0 + 1, +2, +3, +4\}$ on a number line

(a) Solve for X in 3x + 5 < 8

8.

- (b) Find the sum of ⁻2 and 12.
- (c) Temperature on top of a mountain is 30^{0} at noon. It drops by -10^{0} C. What is the new temperature?
- (d) Find **r** if $(^{-}2) + \mathbf{r} = 0$
- 9. (a) If $X = \{\text{even numbers between } 10 \text{ and } 20\}$. Find the solution set of 10 < x < 20.
 - (b) Jie walked 4 metres. He remembered he had left some money behind and made 7 steps back to pick the money. Show it on a number line.
 - (c) I think of a number, multiply it by 3 and subtract 4 from it, the answer is greater than 14. Find the number.

10. Simplify:
$$\frac{2}{3} \times 6$$
 (b) $^{-2}(^{-}y + 1)$

(c) Solve:
$$3 \ge 3x \ge 9$$
 (d) $-4p \le 8$

- 11. Add: (a) ${}^{+}20 + {}^{-}8$ (b) ${}^{-}8 + {}^{-}20$ (c) ${}^{+}8 + {}^{+}60$
- 12. Arrange the following integers.
 - (a) $\{-2, 4, 8, 3, -1, 0\}$ in ascending order
 - (b) $\{^{+}10, ^{-}15, 3, 9, 0, ^{-}1\}$ in descending order
 - (c) Use >, < or = to compare.

 - (iii) +4 ------ 400
- (iv) 0 -----1

13. n - 3 = 3 find the value of n.

- (b) What is the sum of $^{-}$ 3y and $^{+}$ 7y?
- (c) Work out y: If $y = \{\text{prime numbers less than } 10\}$
- 14. Study the date below:

$$(^{-2}, ^{+3}, ^{+4}, ^{-2}, ^{-5}, ^{+2})$$

- (a) Find their mode.
- (b) Work out their range
- (c) What is the median?
- 15. A rat climbs a pole of 50 m high. It climbs 10m and slides 2m down. What distance from the ground level will it be after sliding 6 times?

UNIT 10 ALGEBRA LESSON 1

Sub-topic: Algebraic Expressions

Writing phrases for Algebraic expressions by Content:

adding

(ii) subtracting (iv)

(iii) multiplying dividing

Examples:

Add b to a = a + b(1)

(2) Add 5 to n = n + 5

(3) Subtract b from a = a - b

(4) Subtract 5 from n = n - 5

(5) Multiply b by a = ab

(6) Multiply n by 5 = 5n

Divide b by a = b(7)

Divide n by $5 = \underline{n}$ (8)

Activity

Pupils will do the following exercises from A New Mk Book 6 pages 374 and 375 14:1, 14:2, 14:3, 14:4 and 14:5

Fountain pg 187

Remarks

LESSON 2

Subtopic: Substitution

Content: 1. Expanding Algebraic terms

Substitution

Examples: Expand the following (a)

 $2p = 2 \times p$ 1.

2. 3p q = 3 x p x q

3. $4q^2 = 4 \times q \times q$

 $(4q)^2 = 4q \times 4q$

(b) Substitute and find the value of the given expressions below.

> (i) Given b = 6

If p = 8, q = 6, a = 2

Find:
$$b + 8$$
 what is pqa
 $6 + 8$ pqa = p x q x a
= 14 = 8 x 6 x 2
= 96

3. Given
$$b = 6$$
, $c = -3$, $a = 2$
Find $\underline{bc} = \underline{b \times c}$

$$a$$

$$= \underline{6 \times 3}$$

$$\underline{2^{1}} = \underline{3 \times 3}$$

Activity:

Pupils do exercises 14:6 and 14:7 from A New Mk Book 6 on page 376 New MK 180-181

Remarks

LESSON 3

Examples:

Sub topic: Like terms

Content: Collecting and simplifying the like terms

> Simplify: r+r+r+r= 3r

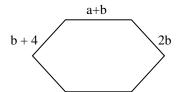
2. Simplify: 3x + 4x + 2x7x + 2x9x

3. 3h x 3 $3 \times h \times 3$ = 9h

 $3x2 \times 4x^{2}$ 4. $= 3 \times 4 \times 3 \times 3$ $= 12x^4$

5. x + y + 2x + 4yX + 2x + y + 4y3x + 5y

3x + 6y - x - 2y3x - x + 6y - 2y2x + 4y



a + b + b + 4 + a + 3b + a + 2ba + a + a + b + b + 3b + 2b + 4

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$$3a + 7b + 4$$

a

b

3h

Activity

Pupils will do the following exercises 14:8, 14:9, 14:10, and 14:11 on pages 377, 378, 379 from A New MK Book 6. New Mk 182-183

Remarks

LESSON 4

Subtopic:

Algebra involving brackets Removing brackets by:

Content:

- 1. Multiplying every term inside the brackets by the factor outside it
- 2. Substituting and finding the values of the unknowns.
- 3. Changing positive and negative signs involving brackets.
- 4. Solving and simplifying equations

Examples:

- 1. Remove the brackets 2. If b = 1 and c = -3 2 (a + 3) = (2 x a) + (2 x 3) find: 3b - c = 2a + 6 = (3 x b) - c = (3 x 1) - 3= 3 - 3 = 0
- 3. -(2x-2y) 4. $\frac{1}{2}(8a+4b)$ -2x(-2y) $=(\frac{1}{2}x 8a) + (\frac{1}{2}x 4b)$ $=\frac{1}{2}x + 2y$ $=\frac{4a+2b}{2}$
- 5. 3(x+3)-2(x-1)3x+9-2x+23x-2x+9+2=x+11

Activity:

Pupils will do the following exercises 14:12, 14:13, 14:14, 14:15, 14:16 and 14:17 from MK MTC BK 6 pages 380, 387 and 382. Fountain pg 188-189

Remarks:

LESSON 5

Subtopic: Forming equations

Content: Forming and solving equations involving addition.

Examples: 1.
$$p + 4 = 12$$

 $P + 4 - 4 = 12 - 4$
 $P = 8$

2. Amanda had some pineapples. She bought 6 more pineapples altogether. How many pineapples had she before?

Let the pineapples be p

Before	more	total
P	6	11

$$P + 6 = 11$$
 She had 5 pineapples $P + 6 - 6 = 11 - 6$ $P = 5$.

Finding the unknown.

Forming and solving equations involving subtraction.

Examples: 1. Find the value of: b-3=8 b-3+3=8+3 $\therefore b=11$

Activity:

Pupils will do the following exercises: 14:23 and 14:24 on page 386 from A New Mk MTC book 6 New Mk 184-185

Remarks.

LESSON 6

Subtopic: Finding the unknown.

Content: Forming and solving equations involving multiplication

Examples: 1. Solve: 2x = 8 $\frac{2x}{2} = \frac{8}{2}$ x = 4

2. 4 buses carried y passengers each. Altogether they carried 320 passengers. How many passengers did each bus carry? Passengers in 4 buses = (4 buses Xy passengers)

$$\begin{array}{rcl}
4 \text{ x y} & = & 320 \text{ passengers} \\
\underline{4y} & = & \underline{320} \\
\underline{Y} & = & 80
\end{array}$$

Each bus carried 80 passengers.

Content: Collect like terms and simplify.

Examples: 1. 3g + g + 2g = 30 6g = 30 6g = 5

Activity:

Pupils will do the following exercises 14: 27 and 14: 28 on page 388 from A New Mk book 6.

MK new edition 186

LESSON 7

Subtopic: forming equations

Musa is twice as old as Anna. Their total age is 18 years.

How old is Anna? Let Anna's age be x.

Anna	Musa	Total
X years	2x years	18 years

$$X + 2x = 18$$
 Anna's age is 6 years.
 $\frac{3x}{3} = \frac{18}{3}$
 $X = 6$

Activity:

Pupils will do the following exercises 14: 27 and 14: 28 on page 390 from A New Mk book 6.

MK new edition 186

Remarks.

LESSON 8

Subtopic: Finding the unknown.

Content: Equations involving fractions

Examples:

(i)
$$\frac{\underline{a}}{3} = 4$$

$$\frac{\underline{a}}{3} = \frac{4}{1}$$

$$3 \times \underline{a} = \frac{4}{1} \times 3$$

$$\underline{a} = 12$$

2. Find the number of oranges that can be divided among 5 boys, so that each gets 6 oranges.

Let the number of oranges be p

P = 30 oranges

3. Solve: 5p + 2 = 12

$$5p + 2 - 2 = 12 - 2$$

$$4 \quad x \quad 5p = 10 \ x \ 4$$

$$5p = 40$$

$$5 \quad 5 \quad P = 8$$

Activity:

Pupils will do exercises 14:29 and 14:30 on page 389 from A New Mk MTC book

Old MK 390 New Mk 187

Remarks.

LESSON 9

Subtopic:

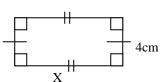
Application of equations

Content: Example

Forming and solving equations using a perimeter

X = 8 cm

1. The perimeter of a rectangle is 24cm. Find X.



$$\begin{array}{rcl} L + W + L + W & = & \text{perimeter} \\ X + 4 + x + 4 & = & 24 \text{ cm} \\ X + x + 4 + 4 & = & 24 \text{ cm} \\ 2x + 8 - 8 & = 24 - 8 \\ & \frac{2x}{2} & = & \frac{16}{2} \end{array}$$

Activity:

Pupils will do exercise 14: 32 on page 395-396 from A New Mk MTC

New Mk 191

Remarks.

LESSON 10

Subtopic: Solving equations involving brackets

Content: Removing the brackets

Examples 1. Solve: 3(y + 4) = 21

$$(3 xy) + (3 x 4) = 21$$

 $3y + 12 = 21$

$$3y + 12 - 12 = 21 - 12$$

 $3y = 9$
 $3 = 3$
 $Y = 3$

2. Solve:
$$5(y+1)-3(y-1)=14$$

 $(5 \times y) + (5 \times 1) - (3 \times y) - (-3 \times 1) = 14$
 $(5y+5)-(3y+3)=14$
 $5y+5-3y+3=14$
 $5y-3y+5+3=14$
 $2y+8=14$
 $2y+8-8=14-8$
 $2y=\frac{6}{2}$
 2
 $Y=3$

Activity:

Pupils will do exercises 14:33 and 14:34 on pages 392 and 393 from A New Mk Bk 6.

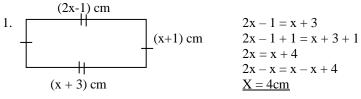
Remarks.

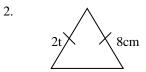
LESSON 11

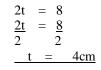
Subtopic: Application of Algebra

Content: Forming equations and finding the unknown.

Examples:







Activity:

Pupils will do exercise 14:37 on page 394 from A New Mk book 6. New Mk 190-191

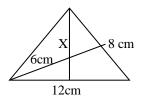
Remarks.

REVISION WORK ON ALGEBRA

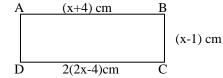
- 1. (i) Add: m to 6
- (ii) subtract 4 from b
- (iii) multiply 2 by t
- (iv) Divide x by 7
- 2. If p = 8, r = 4, q = 6, c = 3. Find the value of
 - (a) $\frac{p+r}{qc}$
- (b) <u>pq</u> rc
- 3. Simplify: (a) 3x + 6y x 2y
- (b) $2x^3 \times 2x^3$

- 4. Remove the brackets
 - (a) 4(1-3b)
- (b) +3x (y-1)
- (c) 4(x+3) + 2(x+3)
- 5. Odoi made some stools, he was given 5 more stools and got 13 stools altogether. Find the number of stools Odoi made.
- 6. Akiiki harvested some sacks of potatoes, she sold 15 of them and kept 2 for her family. Find the number of sacks she harvested.
- 7. (a) Solve for m: 13m = 260
 - (b) I think of a number, multiply it by 9. If the result is 108. What number did I think of?
- 8. A father is 3 times as old as his daughter. Their total age is 48 years. How old is the daughter?
- 9. The perimeter of the square of side p cm is 28cm, Find P.

- 10. Solve: $\frac{5p}{4} = 2 = 12$
- 11. Solve: (a) 5(y+1)-3(y-1)=14
 - (b) 5x + 1 = 4x + 4
- 12. Find X



13. Figure ABCD is a rectangle.



- (i) Find the value of X.
- (ii) Find the actual width and length
- (iii) Find the perimeter and area of the rectangle.

SYMMETRY

Remarks _____