FIRST TERM E-LEARNING NOTE

SUBJECT: MATHEMATICS **CLASS: JSS1**

Weeks	Topic
1	Whole Numbers Counting and Writing (i) Millions (ii) Billions (iii) Trillions
2	Whole Numbers Continued: Problems solving in quantitative aptitude reasoning using large numbers
3	Lowest Common Multiple (L.C.M) and Highest Common Factor (H.C.F) of Whole Numbers. (a) Concepts of L.C.M and H.C.F (b) L.C.M and H.C.F of quantitative reasoning
4	Fractions: (a) Meaning of Fraction (b) Types of fractions (Proper & Improper) (c) Mixed numbers
5	Fractions continued: Equivalent Fractions (Identify and apply equivalent fractions in showing commodities and problems solving in quantitative aptitude)
6	Fractions continued. (a) ordering of fractions (b) conversion of fractions to percentage and vice versa (c) conversion of fraction to decimal and vice versa
7	Review of the first half term's work and periodic test
8	Fractions continued: Addition and subtraction of fractions
9	Fractions Continued: (a) Multiplication and Division of fractions (b) Prime numbers and factors
10	Estimation: (i) Concept of estimation and reasons (ii) Estimation of dimensions and reasons (iii) Estimation of capacity(volumes) and mass of objects (iv) Estimation of other things (v) Quantitative reasoning involving estimation
11	Revision of the 1st term's work and preparation for the first term examination
12	First term examination

WEEK ONE
TOPIC: WHOLE NUMBERS

CONTENT

- Introduction
- System of Counting
- Counting in Millions
- Counting inBillions and Trillions

INTRODUCTION

1. Counting

It is likely that mathematics began when people started to count and measure. Counting and measuring are part of everyday life.

Ancient people used fingers and toes to help them count or group numbers in different number bases. This led them to collect numbers in groups: sometimes 5s (fingers of one hand), sometimes 10s (both hands) and even in 20s (hands and feet). When people group numbers in 5s, we say they use a base five method. The most common bases used were five, ten and twenty. For example, a person with thirty two cows would say 'I have six fives and two cows' when counting in **base ten.** The most widely used base is base ten also called the denary system.

Other bases of counting: seven and sixty

7 days = 1 week
60 seconds = 1 minute
60 minutes = 1 hour
In English, **'dozen'** means 12, **'score'** means 20 and **'gross'** means 144

System of Counting

1. **Tally System**

   Tally marks were probably the first numerals.

   The ancient people employed tally marks to count large numbers. The tally marks were scratched on stones or sometimes cut on sticks but today we use tally marks to count or record large data, especially in statistics.

A tally mark of 5 is written by putting a line across a tally count of 4.
i.e |||| = 4 and 𝍸 = 5

Example 1

Draw the tally marks for each of the following numbers:

(a) 34 (b) 15

Solution

(a) 34 = 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||||

(b) 15 = 𝍸 𝍸 𝍸

EVALUATION

1. During a dry season, it did not rain for 128 days. How many weeks and days is this?
2. What is the number represented by 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||
3. Draw the tally marks for each of the following numbers: (a) 43 (b) 52

2. Roman numerals

The Romans used capital letters of the alphabets to represent numbers. Many people believe that the Romans used the fingers to represent numbers as follows:

I for one finger, II for two fingers, III for three fingers, V for five fingers and X for the combination of two hands (or two V's) .

The Roman also used L for fifty, C for hundred, D for five hundred and M for one thousand as shown below.

Hindu-Arabic	Roman Numeral	Hindu-Arabic	Roman Numeral
1	I	20	XX
2	II	40	XL
3	III	50	L
4	IV	60	LX
5	V	90	XC
6	VI	100	C
7	VII	400	CD
8	VIII	500	D
9	IX	900	CM
10	X	1000	M

The Roman used the subtraction and addition method to obtain other numerals. For example

(a) IV means V- I i.e. 5- 4 = 4
(b) VI means V+ I, i.e. 5 + 1 = 6
(c) IX means X- I, i.e. 10 – 1 = 9
(d) XXIV means XX + IV = 20 + 4 = 24
(e) CD means D- C = 500 – 100 = 400
(f) MC means M + C = 1000 + 100 = 1100

Example 1

Change the following numbers to Roman numerals: (a) 2459 (b) 3282

Solution

(a) 2459--- 2000 = MM
400 = CD
50 = L
9 = IX
2459 = MMCDLIX

(b) 3282 = 3000 + 200 + 80 + 2
= MMM CC LXXX II
i.e 3282 = MMMCCLXXXII

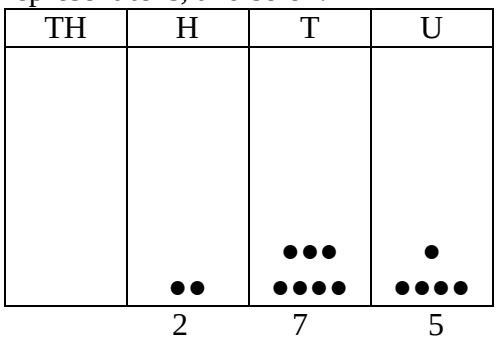
EVALUATION

1. Write the following Roman figures in natural (or counting) numbers:
   (a) MMMCLIV (b) MMCDLXXI (c) MCMIX (d) DCCCIV
2. Write the following natural numbers in Roman figures:
   (a) 2659 (b) 1009 (c) 3498 (d) 1584

3. The Counting board

A counting board is a block of stone or wood ruled in columns. Loose counters, pebbles, stones or seeds in the columns show the value of the numbers in the columns.

Counters in the right-hand column (U) represent units, counters in the next column (T) represent tens, and so on.

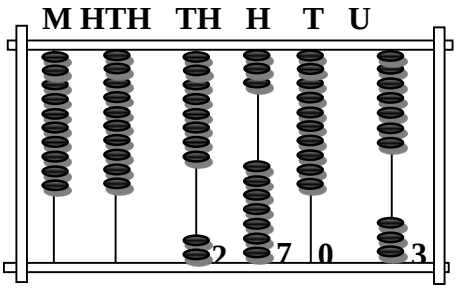


The diagram below is a counting board showing the number 275.

4. The Abacus

An abacus is a frame consisting of beads or disks that can be moved up or down (i.e. slide) on a series of wires or strings. Each wire has its own value. Both abacus and counting board work in the same way when carrying out calculations.

Example 1

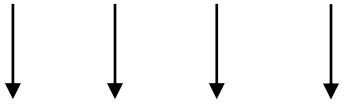


An Abacus showing 2703

5. Place Value of Numbers

Numbers of units, tens, hundreds,…….., are each represented by a single numeral.
(a).For a whole number:
- the units place is at the right-hand end of the number.
- the tens place is next to the units place on the left, and so on

For example: 5834 means ↓
5 thousands, 8 hundreds, 3 tens, and 4 units.
See the illustration below:



5 8 3 4

(b) for decimal fraction, we count the places to the right from the decimal point as tenths, hundredths, thousandths, etc.
See the illustration below:

↓ ↓ ↓ ↓ ↓
6 . 7 9 8

6 → units
. → decimal
7 → tenths
9 → hundredths
8 → thousandths

Example 1:
What is the place value of each of the following?
(a) the 9 in 10269
(b) the 2 in 2984
Solution:
(a) the 9 in 10269 is = 9 units or nine units
(b) the 2 in 2984 is = 2 thousands or two thousands

Example 2
What is the value of each of the following?
(a) the 8 in 1.85
(b) the 0 in 16.08
Solution:
(a) the 8 in 1.85 is = 8 tenths or eight tenths
(b) the 0 in 16.08 is =0 in tenths or zero tenths

Example 3
What is the value of each digit in 3 865 742
Solution

3	8	6	5	7	4	2
M	H. Th	T.Th	Th	H	T	U

Digit	Value	Word Form
3	3 000 000	Three million
8	800 000	Eight hundred thousand
6	60 000	Sixty thousand

5	5 000	Five thousand
7	700	Seven hundred
4	40	Forty
2	2	Two

EVALUATION

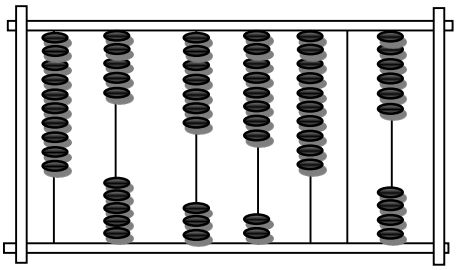
1 (a) The place value of 5 in 5763 is ……

(b)What is the place value 1 in 5.691?

2. Give the value of each digit in 489 734

3. Write down the number shown in the following figures:

(a)



READING ASSIGNMENT

1. Essential Mathematics for JSS1 by AJS Oluwasanmi page 3-7
2. New General Mathematic for Jss1 by M. F. Macrae et al page 17-18.

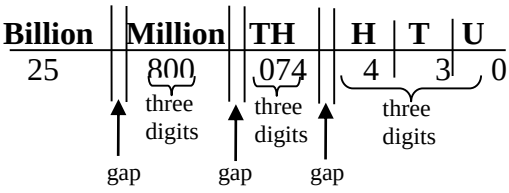
Counting and Writing in millions, billions and trillions

The figures 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are called digits or units.

The table below gives the names and values of some large numbers.

Name	Value
One thousand	**1 000**
Ten thousand	10 000
One hundred thousand	100 000
One million	**1 000 000**
Ten million	10 000 000
One hundred million	100 000 000
One billion	**1 000 000 000**
One trillion	**1 000 000 000 000**

Large numbers can be read easily by grouping the digits in threes starting from the right hand side as shown below.



The 1st gap separates hundreds from thousands and the second gap separates thousands from millions and the third gap separates million from billion.

Thus 25 800 074 430 reads twenty five billion, eight hundred million, seventy four thousand, eight hundred and ninety.

Example

Write the following in figures:

(a) twelve billion, three hundred and nine million, ninety five thousand, six hundred and sixty three

(b) six trillion, four hundred and thirty billion, one hundred and five million, two hundred and one thousand and fifty four
(c) nine hundred and four billion, five hundred and forty million, three hundred and seventy thousand, seven hundred and fifty

Solution

(a) You can work it out as…