Form 2 Mathematics Notes

Strand 1: NUMBER CONCEPT

By the end of this topic students should be able to:

i. **Use place value chart to:**
   a. **Write** numbers in words (included decimal numbers)
   b. **Identify** value and place value of any numbers
   c. **Expand** numbers (included index notation)
   d. **Write** numbers in compact form (ordinary or numerical form)
   e. **Express** numbers in similar or equivalent form

ii. **Explain** strategy for identifying the smallest and largest whole numbers within a set of given number

iii. **Use** the symbol < or > when comparing numbers

iv. **Identify** prime numbers

v. **Determine** the prime factors of a numbers

vi. **Revise** the concept of index notation and concise way of representing numbers

vii. **Define** the term integer and discuss where they occur in everyday life

viii. **Convert** between fraction, percentage, and decimal

ix. **Define** square and square roots with examples

x. **Calculate** square of a numbers and a square roots of a numbers

xi. **List** and **calculate** LCM (lowest common multiple)

1. Use place value chart to:

A. WRITE NUMBERS IN WORD (INCLUDED DECIMAL NUMBERS)

➢ To write numbers in words you must draw a place value charts as shown below to help you

BILLIONS			MILLIONS			THOUSANDS			ONES		
HB	TB	B	HM	TM	M	HTh	Tth	Th	H	T	0

(where H is for hundreds, T is for tens, O is for ones)

➢ Put the given numbers on the place value chart before writing in words

Examples 1: Write 82,320,905,735 in words.

(let's put the number in the place value chart)

BILLIONS			MILLIONS			THOUSANDS			ONES		
HB	TB	B	HM	TM	M	HTh	Tth	Th	H	T	0
	8	2	3	2	0	9	0	5	7	3	5

➢ 82 billion, 320 million, 905 thousand, 735 ones

Write in words: eighty-two billion, three hundreds twenty million, nine hundreds and five thousand, seven hundred and thirty-five

Example 2: Write these numbers in words

a. 521432318
b. 4324
c. 76321500
d. 89567

(remember to draw place value charts to help you)

	BILLIONS			MILLIONS			THOUSANDS			ONES		
	HB	TB	B	HM	TM	M	HTh	Tth	Th	H	T	0
a.				5	2	1	4	3	2	3	1	8
b.									4	3	2	4
c.					7	6	3	2	1	5	0	0
d.								8	9	5	6	7

SOLUTIONS

a. 521 million, 432 thousand, 318 ones
ANS: five hundred twenty-one million, four hundred thirty-two thousand, three hundreds and eighteen.

b. 4 thousand, 324 ones
ANS: four thousand, three hundred and twenty-four

c. 76 million, 321 thousand, 500 ones
ANS: seventy-six million, three hundred twenty-one thousands and five hundred

d. 89 thousand, 567 ones
ANS: eighty-nine thousands and five hundred and sixty-seven

B. WRITE DECIMAL NUMBERS IN WORDS

- To write decimal numbers in words you will first read it before writing in words
- To read decimal you must:
  - i. Read the whole number part if there is one
  - ii. Read the decimal points as AND
  - iii. Read the numbers to the right of the decimal point as you would a whole number
  - iv. Read the place value of the last digit
  - v. Write all that you've read in words

Examples: write these numbers in words (hint: place value chart may help you)

a. 13.578
b. 3.2
c. 276.44

	ONES			.	TENTHS	HUNDREDTHS	THOUSANDTHS
	H	T	O	.			
a.		1	3	.	5	7	8
b.			3	.	2		
c.	2	7	7	.	4	4	

SOLUTIONS

a. Thirteen **AND** five hundred seventy-eight thousandths
   Or
   Thirteen **point** five seven eight
b. Three **AND** two tenths
   Or
   Three **point** two
c. Two hundred seventy-seven **AND** forty-four hundredths
   Or
   Two hundred seventy-seven **point** four four.

C. IDENTIFY VALUE AND PLACE VALUE OF ANY NUMBERS

Place value tells you the **VALUE** of each digit in a numbers.

Examples : identify the place value and the value of the digit **9** in 71,905,346,521.

BILLIONS			MILLIONS			THOUSANDS			ONES		
HB	TB	B	HM	TM	M	HTh	Tth	Th	H	T	O
	7	1	9	0	5	3	4	6	5	2	1

Place Value: the digit **9** is in the **hundred million** place

Value of **9** is **9 Hundred million** or 900000000

D. EXPAND NUMBERS (INCLUDED INDEX NOTATION)

- Expand numbers mean writing numbers in expanded form. It can be written using index notation form

Example 1: Write **6738024** in the expanded form using index notation

MILLIONS			THOUSANDS			ONES		
HM 100000000 (10^8)	TM 10000000 (10^7)	0M 1000000 (10^6)	HTh 100000 (10^5)	Tth 10000 (10^4)	Th 1000 (10^3)	H 100 (10^2)	T 10 (10^1)	0 1 (10^0)
		6	7	3	8	0	2	4

Expanded Form: 6000000 + 700000 + 30000 + 8000 +20 + 4

To use index notation:

6738024 = 6 x1000000 + 7 x 100000 + 3 x 10000 + 8 x 1000 + 2 x 10 + 4

Index notation: $6 \times 10^6 + 7 \times 10^5 + 3 \times 10^4 + 8 \times 10^3 + 2 \times 10^1 + 4 \times 10^0$

Example 2: write 841752 in expanded form using index notation

MILLIONS			THOUSANDS			ONES		
HM 100000000 (10^8)	TM 10000000 (10^7)	0M 1000000 (10^6)	HTh 100000 (10^5)	Tth 10000 (10^4)	Th 1000 (10^3)	H 100 (10^2)	T 10 (10^1)	0 1 (10^0)
			8	4	1	7	5	2

Expanded Form: 800000 + 40000 + 1000 + 700 +50 + 2

To use index notation:

6738024 = 8 x 100000 + 4 x 10000 + 1 x 1000 +7 x 100 + 2 x 10 + 4

Index notation: $8 \times 10^5 + 4 \times 10^4 + 1 \times 10^3 + 7 \times 10^2 + 5 \times 10^1 + 2 \times 10^0$

E. WRITE NUMBERS IN COMPACT FORM (ODDINARY OR NUMERICAL FORM)

Examples: Write the following in compact forms

a. $4 \times 10^5 + 2 \times 10^4 + 7 \times 10^3 + 5 \times 10^2 + 3 \times 10^1 + 9 \times 10^0$

SOLUTION

- 400000 + 20000 + 7000 + 500 + 30 + 9

Compact form: 427539 (ANS)

b. 3000000 + 40000 + 900 + 1

SOLUTION

- Compact form:3040901(ANS)

F. EXPRESS NUMBERS IN SIMILAR OR EQUIVALENT FORMS

Equivalent representation of the same numbers

Example: 1.75million is equivalent or the same with 1¾ millions and 1750000

- First you can change .75 into fraction by multiply with 100 then simplify and you will found out .75 is equal to ¾ in fraction. (depending your multiplication from the place value of each decimal point shows in place value chart)
- Therefore 1.75 million can be written as 1¾millions then you can write in compact form and found out 1750000 million.

ii. EXPLAIN STRATEGY FOR IDENTIFYING THE SMALLEST AND LARGEST WHOLE NUMBER WITH IN A SET OF GIVEN NUMBER.

STRATEGY: ORDERING

- In ordering there are **ASCENDING ORDERS** and **DESCENDING ORDERS**

Ascending orders; ordering set of number from smallest to largest .

Example: Order this set of numbers in Ascending orders

5,9,13,3,7,1

Solution: 1,3,5,7,9,13

Descending order: ordering set of number from largest to smallest.

Example: Order this set of number in Descending orders

5,9,13,3,7,1

Solution: 13,9,7,5,3,1

Example: from the set of numbers below identify the smallest and the largest number .

382,156,251,87,79,490

- Used ordering method to help you, but you either use Ascending or Descending order because they will give out the same answer.

Ascending order: 79,87,156,251,382,490

Solution

Smallest number: **79** , Largest number : **490**

Descending order: 490,382,251,156,87,79

Solution

Smallest number: **79**, Largest number: **490**

iii. USE SYMBOL < OR > WHEN COMPARING NUMBERS

Symbol < means **Less than**

Symbol > means **greater than**

- You may compare numbers using < or >.

Example: Compare 88 and 32 using symbol < or >

Solution

Let's say 88 is greater than 32, therefore we will use symbol of greater than.

88 > 32

Or

Let's say 32 is less than 88, therefore we will use symbol of less than

32 < 88