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ST. ANDREW'S CLASS 10 WEEK 2 MATHEMATIC NOTES.

TOPIC 1: NUMBERS

Numbers Concepts

Learning Outcomes:

- The number of tenths, tens, hundreds and thousands that are in whole numbers and their different forms of representation:

    i. Write whole numbers in words. (1)
    ii. Write whole numbers in numerals. (1)
    iii. Place numbers in place value tables. (1)
    iv. Determine place value of any digit in a rational number. (1)
    v. Give value of each digit in a rational number. (1)
    vi. Write number in compact or expanded form. (2)

- The relative size and place value structure of the rational number:
    i. Comparing the sizes whole numbers up to 10 digits. (1)
    ii. Comparing the sizes of decimals. (2)
    iii. Rounding decimals. (1)

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REVISION

Whole numbers and place value

The set of **whole numbers** is made up of all the counting numbers as well as zero.
0, 1, 2, 3, 4, 5, 6, 7,…
This is an **infinite** set of numbers, which means you can never finish counting.
Whole numbers can be written as **numerals** or in words.

Number	Words
671	six hundred and seventy-one
1 786	One thousand seven hundred and eighty-six
40 344	Forty thousand three hundred and forty-four
867 345	Eight hundred and sixty seven thousand three hundred and forty-five

In the base 10 system each **place** has a value ten times greater than the place on its right.
The place values can be grouped or 'nested' into threes and are read together.
A table, called the place-value 'house', can be used with every whole number to show the place value of each digit.

Example

Q. Write in words, 920 678 152.
A. Place the number 920 678 152 into the table.

Millions			Thousands					
H	T	O	H	T	O	H	T	O
2	2	0	6	7	8	1	5	2

The number can now be read in **nests** of three.
'Nine hundred and twenty million, six hundred and seventy-eight thousands, one hundred and fifty-two'.

Q. What is the value of the digit 7 in the number 1 587 453?
A. Place the number 1 587 453 in the table.

Millions			Thousands					
H	T	O	H	T	O	H	T	O
		1	5	8	7	4	5	3

7 is in the ones in the thousand 'house'. The value of the 7 is 7 000.

Q. Give the value of each digit in the number 537 246
A. Imagine the number in the place-value 'house'.

The digit 5 has a value of five hundred thousands	500 000
The digit 3 has a value of three ten thousands (thirty thousand)	30 000
The digit 7 has a value of seven thousands	7 000
The digit 2 has a value of two hundreds	200

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The digit 4 has a value of four tens (forty) 40
The digit 6 has a value of six ones (six) 6
Numbers can be written in **compact** or **expanded form**.

Example

Q. Write the compact number 8 345 908 in expanded form.
A. 8 345 908 × 1 000 000 + 3 × 100 000 + 4 × 10 000 + 5 × 1 000 + 9 × 100 + 0 × 10 + 8 × 1
Q. Write 3 × 10 000 + 1 × 1 000 + 0 × 100 + 6 × 10 + 7 × 1 in compact form.
A. 30 000 + 1 000 + 0 + 60 + 7 = 31 067

Activity 1.2

1. Copy and complete the table.

		Millions			Thousands					
		H	T	O	H	T	O	H	T	O
a.	210									
b.	145 326									
c.	7 254									
d.	90 325									
e.	6 721 560									
f.	9									
g.	56 300 310									

2. Write the following numbers in words.

a. 82 b. 347 c. 8 064 d. 98 765 e. 610 587

f. 2 528 678 g. 471 856 923.

3. Write the following numbers in numeral form.

a. five hundred and ninety-five

b. six thousand three hundred and four

c. twenty-seven thousand nine hundred and thirty-eight

d. one million two hundred and sixty-seven thousand eight hundred and fifty-one

e. Forty thousand five hundred and nine

4. Write the following compact numbers in expanded form.

a. 457 b. 36 c. 2 980 d. 7 429 165

e. 536 f. 7 450 987 g. 3 001

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5. Write the following expanded numbers in compact form.

a. 5 x 100 + 2 x 10 + 2 x 1

b. 8 x 1000 + 7 x 100 + 6 x 10 + 4 x 1

c. 3 x 10000 + 9 x 1000 + 0 x 100 + 7 x 10 + 0 x 1

d. 4 x 100000 + 3 x 10000 + 6 x 1000 + 8 x 100 + 0 x 10 + 1 x 1

6. Write the following numbers in order of value, from largest to smallest.

a. 7 095, 6 795, 6 895, 7 096

b. 1 978, 1 678, 1 987, 1 967

7. What is the value of the digit 6 in each of the following numbers?

a. 2 647

b. 601

c. 56 821

d. 21 065

e. 6 521 437

f. 10 600

g. 481 269

8. Which digit in each of the following has the value in the tens?

a. 46

b. 971

c. 6 325

d. 921 464