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P6, Mathematics , Unit 1: Reading, writing and comparing whole numbers beyond 1,000,000

LESSON 1: Reading and writing numbers beyond 1,000,000 in words and in figure and their operations.

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Unit 1: Reading, writing and comparing whole numbers beyond 1,000,000

- 1.1 Reading and writing numbers beyond 1,000,000 in words
- Activity1:

Now match the number figures to their corresponding number words.

2,999,999

1,259,000

14,140,219

Fourteen million, one hundred forty thousand, two hundred nineteen.

Two million, nine hundred ninety-nine thousand nine hundred ninety-nine.

One million, two hundred fifty-nine thousand.

1.1 Reading and writing numbers beyond 1,000,000 in words

➤ Example 1

A country has a population of 5,600,002. Write the population in words.

➤ Solution:

Group the population in digits of threes. (5),(600),(002)

Draw a place value table and fill in the digits.

Write in words the values in the three-digit groups below.

Millions			Thousands			Units		
			H	T	O	H	T	O
		5	6	0	0	0	0	2
Five			Six hundred			two		

The population is five million, six hundred thousand two.

1.1 Reading and writing numbers beyond 1,000,000 in words

➤ Example 2

A water tank holds 82,999,555 litres of water. Write the litres in words.

➤ Solution:

A water tank holds 82,999,555 litres of water. Write the litres in words.

Solution

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
	8	2	9	9	9	5	5	5
Eighty-two			Nine hundred ninety-nine			Five hundred fifty-five		

Eighty-two million nine hundred ninety-nine thousand, five hundred fifty-five litres.

1.2 Reading and writing numbers beyond 1,000,000 in figures

Activity

Match the following cards accordingly:

Four million, five hundred sixty-five thousand, two hundred seventy.

One million, nine hundred thousand, nine hundred ninety-nine.

One million, three hundred thousand, eight hundred sixty.

1,900,999

1,300,860

4,565,270

1.2 Reading and writing numbers beyond 1,000,000 in figures

➤ Example 1

Write “one million, two hundred seventy thousand, one hundred thirty-six” in figures.

➤ Solution

One million -----	1,000,000
Two hundred seventy thousand -----	270,000
One hundred thirty-six -----	136
<hr/>	
	1,270,136

➤ Example 2

Mahama Refugee Camp received three hundred forty-two million, six hundred two thousand, six hundred thirty-one Rwandan francs from the government for buying food for the refugees in 2016. Write the amount in figures.

1.2 Reading and writing numbers beyond 1,000,000 in figures

➤ Solution

Three hundred forty-two million	342,000,000
Six hundred two thousand -----	602,000
Six hundred thirty-one -----	631
	<hr/>
	342,602,631

1.3 Finding place value and values of numbers up to 7 digits

➤ **Example 1:** What is the place value of each digit in 8,356,421?

➤ **Solution**

Method 1: Count the digits in the number. There are 7 digits, now draw a place value table as shown below.

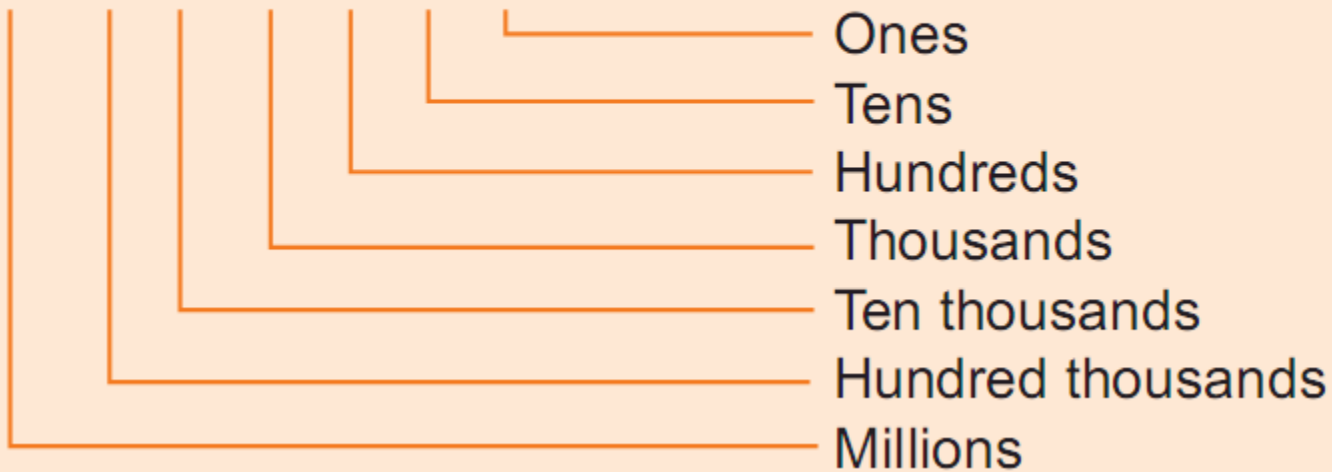
Period	Millions			Thousands			Units		
Place value	H	T	O	H	T	O	H	T	O
Number			8	3	5	6	4	2	1
			$8 \times 1,000,000$	$3 \times 100,000$	$5 \times 10,000$	$6 \times 1,000$	4×100	2×10	1×1
Value			8,000,000	300,000	50,000	6,000	400	20	1

- The place value of 8 is millions.
- The place value of 3 is hundred thousands.
- The place value of 5 is ten thousands.
- The place value of 6 is thousands.
- The place value of 4 is hundreds.
- The place value of 2 is tens.
- The place value of 1 is ones.

1.3 Finding place value and values of numbers up to 7 digits

Method 2

8, 3 5 6, 4 2 1



1.3 Finding place value and values of numbers up to 7 digits

➤ Example 2

What is the value of 8 in 4,835,634?

➤ Solutions

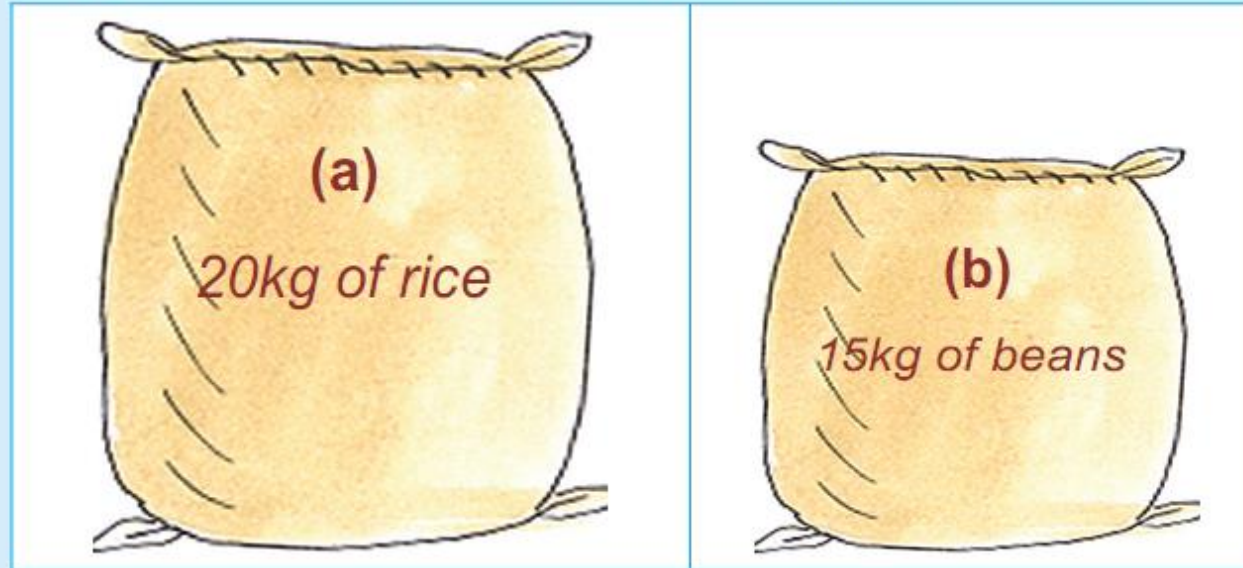
Period	Millions			Thousands			Units		
Place value	H	T	O	H	T	O	H	T	O
Number			8	3	5	6	4	2	1
			$4 \times 1,000,000$	$8 \times 100,000$	$3 \times 10,000$	$5 \times 1,000$	6×100	3×10	4×1
Value			4,000,000	800,000	30,000	5,000	600	30	4

Therefore the value of 8 is 800,000.

1.4 Comparing numbers using $<$, $>$ or $=$

Activity

1. Study the figure below and answer the questions that follow.



- (a) Which one is bigger than the other?
- (b) Explain your answer.
- (c) Complete the sentence using either $<$, $>$ or $=$. That is A B.

1.4 Comparing numbers using $<$, $>$ or $=$

➤ Example 1

Compare 6,312,542 and 6,312,452 using $<$, $>$ or $=$.

➤ Solution:

Draw a place value table and fill in the numbers.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		6	3	1	2	5	4	2
		6	3	1	2	4	5	2

Compare the digits in each place value from left to right.

$6 = 6$, $3 = 3$, $1 = 1$, $2 = 2$, $5 > 4$ in the hundreds of units place value.

Therefore, $6,312,542 > 6,312,452$

1.4 Comparing numbers using $<$, $>$ or $=$

➤ Example 2

Compare 42,635,989 and 42,543,129 using $<$, $>$ or $=$.

➤ Solution

Draw a place value table and fill in the numbers.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
	4	2	6	3	5	9	8	9
	4	2	5	4	3	1	2	9

Compare the digits in each place value from left to right.

$4 = 4$, $2 = 2$, $6 > 5$ in the hundred thousands place value.

Therefore, $42,635,989 > 42,543,129$.

1.4 Comparing numbers using $<$, $>$ or $=$

➤ Example 3

Imanirere sold clothes worth 2,560,320 Frw in 2015. She sold clothes worth 4,576,670 Frw in 2016. Compare the sales over the two years using $<$, $>$ or $=$.

➤ Solution

Draw a place value table and fill in the numbers.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		2	5	6	0	3	2	0
		4	5	7	6	6	7	0

Compare the digits in each place value from left to right.

$2 < 4$ in the millions place value.

Therefore $2,560,320 < 4,576,670$

1.5 Arranging numbers in ascending and descending order

Example

Arrange the following numbers in ascending and descending order. **1,707,055** **1,770,550**
3,025,446 **3,205,446**

Solution

Use a place value table to compare the digits.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		1	7	0	7	0	5	5
		1	7	7	0	5	5	0
		3	0	2	5	4	4	6
		3	2	0	5	4	4	6

- Start comparing from the highest place value to the lowest place value.
- In ones of millions, $1 = 1$, $3 = 3$, but $1 < 3$ and $3 > 1$.
- In hundred thousands, $7 = 7$, $0 < 2$, so, $3,205,446 > 3,025,446$; $3,025,446 > 1,770,550$; $1,770,550 > 1,707,055$.
- Also, $1,707,055 < 1,770,550$; $1,770,550 < 3,025,446$ and $3,025,446 < 3,205,446$.
- Ascending order is the arrangement from the smallest to the biggest. So, the ascending order is 1,707,055; 1,770,550; 3,025,446; 3,205,446.
- Descending order is the arrangement from the biggest to the smallest. So, the descending order is 3,205,446; 3,025,446; 1,770,550; 1,707,055.

1.6 Adding numbers beyond 1,000,000

Example 1

Add: 6,325,904 and 2,834,978.

Solution

Arrange the digits according to place values.

Then add the two whole numbers starting from the right (ones) to the left

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		¹ 6	3	¹ 2	¹ 5	9	¹ 0	4
	+	2	8	3	4	9	7	8
		9	1	6	0	8	8	2

Units

- Add ones: $4 + 8 = 12$. Write 2 under ones and carry 1 to tens.
- Add tens: $0 + 7 + 1 = 8$. Write 8 under tens.
- Add hundreds: $9 + 9 = 18$. Write 8 under hundreds and carry 1 to thousands.

1.6 Adding numbers beyond 1,000,000

Thousands

- Add thousands: $5 + 4 + 1 = 10$. Write 0 under thousands and carry 1 to ten thousands.
- Add ten thousands: $2 + 3 + 1 = 6$. Write 6 under ten thousands.
- Add hundred thousands: $3 + 8 = 11$. Write 1 under hundreds thousands and carry 1 to millions.

Millions

- Add Millions: $1 + 6 + 2 = 9$ write 9 under millions.

Therefore, $6,325,904 + 2,834,978 = 9,160,882$.

Example 2

Find the sum of 4,629,208; 2,823,004 and 5,987,253.

Solution

Arrange the digits according to place values.

Then add the two whole numbers starting from the right (ones) to the left.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		² 4	¹ 6	¹ 2	9	2	¹ 0	8
		2	8	2	3	0	0	4
	+	5	9	8	7	2	5	3
	1	3	4	3	9	4	6	5

1.6 Adding numbers beyond 1,000,000

Units:

- Add ones: $8 + 4 + 3 = 15$. Write 5 under ones and carry **1** to tens.
- Add tens: $0 + 0 + 5 + \mathbf{1} = 6$. Write 6 under tens.
- Add hundreds: $2 + 0 + 2 = 4$. Write 4 under hundreds.

Thousands:

- Add thousands: $9 + 3 + 7 = 19$. Write 9 under thousands and carry **1** to ten thousands.
- Add ten thousands: $2 + 2 + 8 + \mathbf{1} = 13$. Write 3 under ten thousands and carry **1** to hundred thousands.
- Add hundred thousands: $6 + 8 + 9 = 24$. Write 4 under hundred thousands and carry **2** to millions.

Millions: Add millions: $4 + 2 + 5 + \mathbf{2} = 13$. Write 3 under millions and carry 1 to ten millions. Therefore, $4,629,208 + 2,823,004 + 5,987,253 = 13,439,465$

1.7 Solving problems involving addition of numbers beyond 1,000,000

Example

Builders used 5,762,426 bricks to build the foundation of a house and 3,028,987 bricks to put up walls of the house. Find the total number of bricks that were used to complete the house.

Solution

Arrange the digits according to place values. Then add the two whole numbers starting from the right (ones) to the left.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		5	7	6	2	4	2	6
	+	3	0	2	8	9	8	7
		8	7	9	1	4	1	3

Units

- Add ones: $6 + 7 = 13$. Write 3 under ones and carry 1 to tens.
- Add tens: $2 + 8 + 1 = 11$. Write 1 under tens and carry 1 to hundreds.
- Add hundreds: $4 + 9 + 1 = 14$. Write 4 under hundreds and carry 1 to thousands.

1.7 Solving problems involving addition of numbers beyond 1,000,000

Thousands

- Add thousands: $2 + 8 + 1 = 11$. Write 1 under thousands and carry 1 to ten thousands.
- Add ten thousands: $6 + 2 + 1 = 9$. Write 9 under ten thousands.
- Add hundred thousands: $7 + 0 = 7$. Write 7 under hundreds thousands.

Millions

- Add Millions: $5 + 3 = 8$ write 8 under millions.

The total bricks that were used to complete the house are 8,791,413.

1.8 Subtracting numbers beyond 1,000,000

➤ Example 1

Subtract: $6,345,625 - 2,124,304$

➤ Solution

Arrange the digits according to place values.

Put the larger number at the top of the table followed by the smaller number.

Subtract the two whole numbers starting from the right to the left.

Remember to borrow then re-group where necessary as you subtract.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		6	3	4	5	6	2	5
	-	2	1	2	4	3	0	4
		4	2	2	1	3	2	1

1.8 Subtracting numbers beyond 1,000,000

Units

- Subtract ones: $5 - 4 = 1$, write 1 under ones.
- Subtract tens: $2 - 0 = 2$, write 2 under tens.
- Subtract hundreds: $6 - 3 = 3$, write 3 under hundreds.

Thousands

- Subtract thousands: $5 - 4 = 1$, write 1 under thousands.
- Subtract ten thousands: $4 - 2 = 2$, write 2 under ten thousands.
- Subtract hundred thousands: $3 - 1 = 2$, write 2 under hundred thousands.

Millions

- Subtract Millions: $6 - 2 = 4$, write 4 under millions.

Therefore, $6,345,625 - 2,124,304 = 4,221,321$.

➤ Example 2

Subtract 1,899,550 litres from 2,985,620 litres.

➤ Solution

1.8 Subtracting numbers beyond 1,000,000

➤ Solution

Arrange the digits in the table according to place values.

Put the larger number at the top of the smaller number.

Subtract the two whole numbers starting from the right to the left.

Remember to borrow then re-group where necessary.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		2	8 ⁸	8 ⁷	15	6 ⁵	12	0
	-	1	8	9	9	5	5	0
		1	0	8	6	0	7	0

Units

- Subtract ones: $0 - 0 = 0$, write 0 under ones.
- Subtract tens: $2 - 5 =$ (not possible), borrow 1 from hundreds, then regroup with tens to get $12 - 5 = 7$. Now write 7 under tens.
- Subtract hundreds: $5 - 5 = 0$, write 0 under hundreds.

1.8 Subtracting numbers beyond 1,000,000

Thousands

- Subtract thousands: $5 - 9$ (not possible), borrow 1 from ten thousand, then regroup with thousands to get $15 - 9 = 6$. Now write 6 under thousands.
- Subtract ten thousands: $7 - 9$ (not possible), borrow 1 from hundred thousand, then regroup with ten thousands to get $17 - 9 = 8$. Write 8 under ten thousands.
- Subtract hundred thousands: $8 - 8 = 0$, write 0 under hundred thousands.

Millions

- Subtract Millions: $2 - 1 = 1$, write 1 under millions.

Therefore, $2,985,620 \text{ litres} - 1,899,550 \text{ litres} = 1,086,070 \text{ litres}$.

1.9 Solving problems involving subtraction of numbers beyond 1,000,000

► Example

A juice company produced 7,003,453 litres last week. It sold only 5,654,000 litres in the week. How many litres of juice remained unsold?

► Solution

Arrange the digits in the table according to place values.

Put the large number at the top of the small number.

Subtract the two whole numbers starting from the right to the left.

Remember to borrow then re-group where necessary.

Millions			Thousands			Units		
H	T	O	H	T	O	H	T	O
		6 7	9 0	9 0	13	4	5	3
	-	5	6	5	4	0	0	0
		1	3	4	9	4	5	3

1.9 Solving problems involving subtraction of numbers beyond 1,000,000

Units

- Subtract ones: $3 - 0 = 3$, write 3 under ones.
- Subtract tens: $5 - 0 = 5$, write 5 under tens.
- Subtract hundreds: $4 - 0 = 4$, write 4 under hundreds.

Thousands

- Subtract thousands: $3 - 4$ (not possible), borrow 1 from millions, then first regroup with hundred thousands, then later regroup with ten thousands to get $13 - 4 = 9$. Write 9 under thousands.
- Subtract ten thousands: $9 - 5 = 4$, write 4 under ten thousands.
- Subtract hundred thousands: $9 - 6 = 3$, write 3 under hundred thousands.

Millions

- Subtract Millions: $6 - 5 = 1$, write 1 under millions.
1,349,453 litres of juice remained.

1.10 Multiplying numbers beyond 1,000,000

Example

Multiply 1,603,421 by 132.

Solution

Arrange in vertical order according to the place values of each digit.

$$\begin{array}{r} 1\ 6\ 0\ 3\ 4\ 2\ 1 \\ \times \quad 1\ 3\ 2 \\ \hline 3\ 2\ 0\ 6\ 8\ 4\ 2 \\ 4\ 8\ 1\ 0\ 2\ 6\ 3\ 0 \\ +\ 1\ 6\ 0\ 3\ 4\ 2\ 1\ 0\ 0 \\ \hline 2\ 1\ 1,\ 6\ 5\ 1,\ 5\ 7\ 2 \end{array}$$

$1,603,421 \times 2$ (ones)
 $1,603,421 \times 30$ (tens)
 $1,603,421 \times 100$ (hundreds)

Therefore, 1,603,421 multiplied by 132 = 211,651,572.



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