

MATHEMATICS NOTES

GRADE 7 JUNIOR SECONDARY

COMPLETE TEACHING/LEARNING NOTES UPROVED BY KICD

*The PDF Comprises Part of the notes for the named
Subject/Learning Area above.*

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COMPLETE MATHEMATICS NOTES
FOR JUNIOR SECONDARY
SCHOOLS (GRADE 7)

COMPREHENSIVE AND SIMPLIFIED CBC COMPLETE NOTES
JUNIOR SECONDARY (GRADE 7)

About the book:

Education is a key for a country's development, but it becomes a hindrance when it is unequally distributed. This big problem of disparity in Education system can be solved through technology. Hence it's high time we embrace technology in Education sooner than later.

Teachers will therefore use the book in their laptops to teach and even give students notes to read online after revision.

Acknowledgment:

We would like to acknowledge K.L.B for using some of their examples and illustration. We would also like to acknowledge K.N.E.C for using their Examiners to prepare some revision questions at the end of each strand/topic.

**BELOW IS A SAMPLE OF THE NOTES FOR
MATHEMATICS GRADE 7**

COMPREHENSIVE AND SIMPLIFIED CBC COMPLETE NOTES
JUNIOR SECONDARY (GRADE 7)

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NUMBERS

Whole numbers

Place value



Group Activity

- Place each of the following numbers in the correct order on a place value chart.

137 284

1 000 000

15 463 978

100 000 000

| Number | Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|--------|----------------------|------------------|----------|-----------------------|-------------------|-----------|----------|------|------|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

- What is the place value of digit 1 in each number?
- Share your work with other groups.

Example 1

What is the place value of each digit in the number 125 346 078?

| Number | Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|-------------|----------------------|------------------|----------|-----------------------|-------------------|-----------|----------|------|------|
| 125 346 078 | 1 | 2 | 5 | 3 | 4 | 6 | 0 | 7 | 8 |

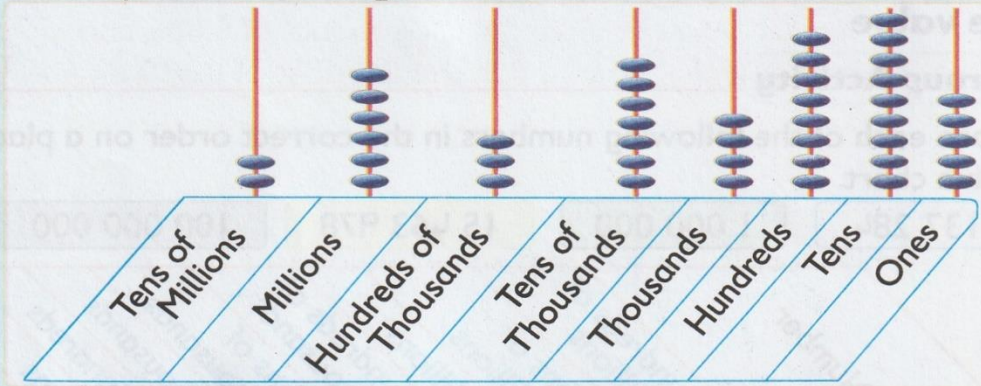
- The place value of digit 8 is **ones**.
- The place value of digit 7 is **tens**.
- The place value of digit 0 is **hundreds**.
- The place value of digit 6 is **thousands**.
- The place value of digit 4 is **tens of thousands**.
- The place value of digit 3 is **hundreds of thousands**.
- The place value of digit 5 is **millions**.
- The place value of digit 2 is **tens of millions**.
- The place value of digit 1 is **hundreds of millions**.

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Example 2

The abacus below shows the number of people targeted by the Ministry of Health to be vaccinated against Corona Virus Disease (COVID-19). What is the place value of digit 2 in the number?



The place value of digit 2 is **tens of millions**.

Practice exercise 1

- What is the place value of digit 7 in each of the following numbers?
 - 725 183
 - 17 286 305
 - 71 289 456
 - 207 956 381
 - 372 508 639
 - 700 000 000
- Copy and complete the place value chart below.

| Number | Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|----------------|----------------------|------------------|----------|-----------------------|-------------------|-----------|----------|------|------|
| a) 529 367 | | | | | | | | | |
| b) 4 673 218 | | | | | | | | | |
| c) 34 208 951 | | | | | | | | | |
| d) 129 734 865 | | | | | | | | | |

- What is the place value of digit 2 in the number 234 561 708?
- Identify the digit that is in the millions place value in the number 8 735 629.
- Identify the digit that is in the tens of millions place value in the number 24 630 598.
- Which digit is in the hundreds of millions place value in the number 136 752 048?

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7. The government supplied books worth sh 308 421 956 to Junior Secondary schools in a certain county. What is the place value of digit 0 in the number?
8. The population of a certain country is estimated at 49 563 287. What is the place value of digit 4 in the number?
9. What is the place value of digit 3 in the product of 9 485 and 12?
10. What is the place value of digit 8 in the quotient of 8 510 and 46?

Total value



Group Activity

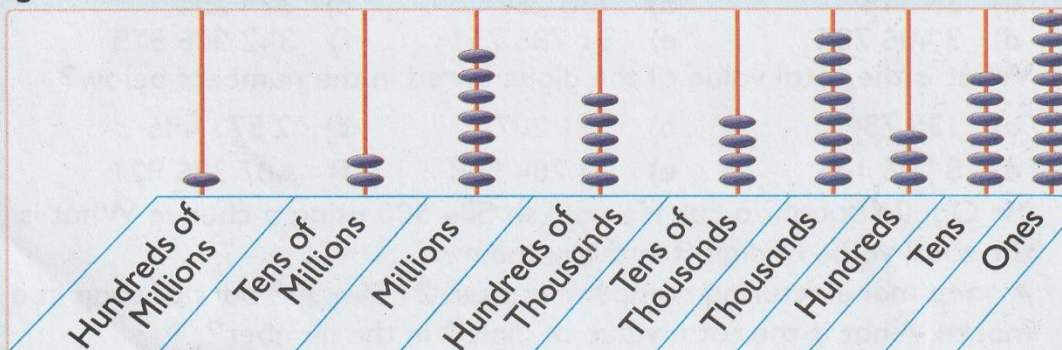
1. Make number cards like the ones shown below.



2. Use the digits to form:
 - a) the smallest possible 8-digit number.
 - b) the largest possible 8-digit number.
3. Draw a place value chart.
4. Use the numbers you have formed to fill in the place value chart.
5. What is the total value of each digit in the numbers?
6. Share your work with other groups.

Example 3

The abacus below represents a certain number. What is the total value of digit 7 in the number?



The number represented on the abacus is 127 548 369.

The place value of digit 7 is **millions**.

The total value of digit 7 is $7 \times 1\,000\,000$.

The total value of digit 7 is **7 000 000** or **seven million**.

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Example 4

A construction company spent sh 185 463 507 when building a bridge. What is the total value of each digit in the number?

| Number | Place value | Total value |
|--------|-----------------------|--|
| 1 | Hundreds of Millions | $1 \times 100\,000\,000 = 100\,000\,000$ |
| 8 | Tens of Millions | $8 \times 10\,000\,000 = 80\,000\,000$ |
| 5 | Millions | $5 \times 1\,000\,000 = 5\,000\,000$ |
| 4 | Hundreds of Thousands | $4 \times 100\,000 = 400\,000$ |
| 6 | Tens of Thousands | $6 \times 10\,000 = 60\,000$ |
| 3 | Thousands | $3 \times 1\,000 = 3\,000$ |
| 5 | Hundreds | $5 \times 100 = 500$ |
| 0 | Tens | $0 \times 10 = 0$ |
| 7 | Ones | $7 \times 1 = 7$ |

Practice exercise 2

1. The place value chart below shows a certain number.

| Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|----------------------|------------------|----------|-----------------------|-------------------|-----------|----------|------|------|
| 2 | 5 | 0 | 6 | 3 | 9 | 7 | 8 | 1 |

What is the total value of each digit in the number?

- What is the total value of digit 3 in each of the following numbers?
 - 36 549
 - 138 267
 - 379 254
 - 3 406 789
 - 31 786 251
 - 342 806 579
- What is the total value of the digits in red in the numbers below?
 - 135 784
 - 981 207
 - 2 573 496
 - 8 496 105
 - 23 784 569
 - 407 386 921
- Mr Ogolla bought a car. He paid sh. 984 500 using a cheque. What is the total value of digit 9 in the number?
- A soap manufacturing company packed 21 546 309 bars of soap in a month. What is the total value of digit 2 in the number?
- What is the difference between the total value of digit 5 and the total value of digit 2 in the number 358 206 749?
- A vaccine manufacturing company produced 304 867 195 vaccines in one year. What is the total value of digit 0 in the number?

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8. How many groups of hundreds are there in the total value of digit 6 in the number 863 495?
9. What is the total value of digit 1 in the quotient of 3 072 and 24?
10. How many times is the value of digit 4 greater than the value of digit 2 in the number 348 527?

Reading and writing numbers in symbols



Group Activity

1. Read and write the following numbers in symbols.
 - a) Three million, four hundred and sixty two thousand, nine hundred and seventy five.
 - b) Three hundred and sixty eight million, four hundred and seventy thousand, five hundred and twenty three.
2. Share your work with other groups.

Example 5

Write twenty seven million, nine hundred and eighty five thousand, three hundred and sixty four in symbols.

| Number in words | Number in symbols |
|--|-------------------|
| Twenty seven million | 27 000 000 |
| Nine hundred and eighty five thousand | 985 000 |
| Three hundred | 300 |
| Sixty | 60 |
| Four | + 4 |
| Twenty seven million, nine hundred and eighty five thousand, three hundred and sixty four. | 27 985 364 |

Example 6

Write three hundred and eighty four million, six hundred and forty two thousand, nine hundred and thirty five in symbols.

| Number in words | Number in symbols |
|--|-------------------|
| Three hundred and eighty four million | 384 000 000 |
| Six hundred and forty two thousand | 642 000 |
| Nine hundred | 900 |
| Thirty | 30 |
| Five | + 5 |
| Three hundred and eighty four million, six hundred and forty two thousand, nine hundred and thirty five. | 384 642 935 |

COMPREHENSIVE AND SIMPLIFIED CBC COMPLETE NOTES

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Practice exercise 3

- Write the following numbers in symbols.
 - Eight thousand, five hundred and sixty two.
 - Ten thousand, two hundred.
 - One hundred thousand, six hundred.
 - Nine hundred and ninety nine thousand, nine hundred and fifty.
 - One million, one hundred.
 - Two million, seven hundred and sixty thousand, two hundred and thirty three.
 - Fifty eight million, seven hundred and sixty four thousand, two hundred and ninety three.
- The amount of money spent on health care projects in a county was two hundred and fifty million, eight hundred and twenty one thousand, four hundred and thirty eight shillings. Read and write this amount in symbols.
- Read and write the number just before eighty million, seven hundred and ninety six thousand, three hundred and ten in symbols.
- What is seventy eight million, two hundred and fifty three thousand, eight hundred and eighty eight less five thousand in symbols.
- In the year 2020, the population of Eastern Africa countries was estimated at four hundred and fifty seven million, two hundred and thirty thousand, seven hundred and three. Read and write this amount in symbols.

Reading and writing numbers in words



Group Activity A

- Make number cards like the ones shown below.

52 465

236 895

2 356 480

- Draw a place value chart.
- Use the place value chart to read and write the numbers in words.
- Share your work with other groups.

COMPREHENSIVE AND SIMPLIFIED CBC COMPLETE NOTES JUNIOR SECONDARY (GRADE 7)

Group Activity B

1. Fatuma sold a printer and was paid using the cheque shown below.

MZALENDO
MZALENDO BANK OF KENYA LIMITED
NKURUMA ROAD BRANCH

Date 18 - 02 - 2022

11 - 051

Pay Fatuma Sally

Kenya Shillings Two hundred and fifty thousand, four hundred and seventy five only

18/11/21

Ksh** 250 475**

Cheque Number 029753 Bank Code 110511 Account Number 0150 9966 0325

2. Discuss the features of the cheque.
3. Make three dummy cheques with the amounts shown below.
- sh 178 650

sh 620 500

sh 999 999
4. Why are cheques written both in words and in figures?
5. Share your work with other groups.

Example 7

A county government spent 8 257 085 shillings to buy medical equipment for its Level Five Hospital. Write the amount of money spent in words.

| | | | | | | |
|----------|-----------------------|-------------------|-----------|----------|------|------|
| Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
| 8 | 2 | 5 | 7 | 0 | 8 | 5 |

The amount 8 257 085 in words is eight million, two hundred and fifty seven thousand and eighty five.

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Practice exercise 4

1. Read and write each of the following numbers in the place value chart below in words.

| Number | Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|--------|----------------------|------------------|----------|-----------------------|-------------------|-----------|----------|------|------|
| a) | | | | 5 | 2 | 1 | 3 | 9 | 4 |
| b) | | | 3 | 1 | 4 | 6 | 7 | 5 | 0 |
| c) | | 5 | 2 | 7 | 5 | 0 | 9 | 8 | 4 |
| d) | 2 | 0 | 5 | 9 | 3 | 4 | 6 | 7 | 1 |

2. Read and write each of the following numbers in words.
- a) 9 560 b) 15 250 c) 86 790
 d) 101 228 e) 384 760 f) 999 999
 g) 1 000 000 h) 2 360 845 i) 4 156 221
3. A hardware shop bought building materials worth sh 999 984 and paid by a cheque. Write the amount paid in words.
4. In a certain county, there are 2 032 156 registered voters. Write the number of voters in words.
5. A school spent sh 5 368 490 to build new classrooms for Junior Secondary. Write the amount of money spent in words.
6. The number cards below show the amount of money spent to construct two roads in a certain county.

Road A
sh 92 463 550

Road B
sh 198 765 900

- Read and write the amount of money spent to construct each road in words.
7. Use the digits 1, 2, 9, 3, 4, 7, 5, 6 and 8 to form four different 9-digit numbers.
- a) Read and write the smallest number formed in words.
 b) Read and write the largest number formed in words.
8. It is estimated that in the year 2019, there were 495 600 boys and 501 200 girls in Grade Four in Kenya. Write the total number of the learners in words.

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Rounding off numbers up to the nearest millions



Group Activity

1. A manufacturing company packed 2 546 387 litres of cooking oil in a year. Draw a place value chart and use it to round off the number of litres to the nearest:
 - a) Tens of thousands.
 - b) Hundreds of thousands.
 - c) Millions.
2. Share your work with other groups.

When rounding off numbers to the nearest millions, we consider the digit in the hundreds of thousands place value. If the digit is 0, 1, 2, 3 or 4, we round off to the same million. If the digit is 5, 6, 7, 8 or 9, we round off to the next million.

Example 8

Round off 3 486 952 to the nearest:

- a) Hundreds of thousands.

| Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|----------|-----------------------|-------------------|-----------|----------|------|------|
| 3 | 4 | 8 | 6 | 9 | 5 | 2 |
| 3 | 5 | 0 | 0 | 0 | 0 | 0 |

3 486 952 rounded off to the nearest hundreds of thousands is **3 500 000**.

- i) Consider the digit in tens of thousands place value. The digit in tens of thousands place value is 8.
- ii) Round off 3 486 952 to the next hundred thousand.

- b) Millions.

| Millions | Hundreds of Thousands | Tens of Thousands | Thousands | Hundreds | Tens | Ones |
|----------|-----------------------|-------------------|-----------|----------|------|------|
| 3 | 4 | 8 | 6 | 9 | 5 | 2 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 |

3 486 952 rounded off to the nearest millions is **3 000 000**.

- i) Consider the digit in hundreds of thousands place value. The digit in hundreds of thousands place value is 4.
- ii) Round off 3 486 952 to the same million.

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Practice exercise 5

1. Copy and complete the table below.

| | Number | Rounded off to the nearest hundreds of thousands | Rounded off to the nearest millions |
|----|-----------|--|-------------------------------------|
| a) | 183 492 | | |
| b) | 1 243 687 | | |
| c) | 4 956 872 | | |

2. Round off the following numbers to the nearest hundreds of thousands.

- a) 76 384 b) 537 862 c) 876 943 d) 2 314 978

3. Round off the following numbers to the nearest millions.

- a) 387 256 b) 679 521 c) 1 257 840 d) 3 683 579

4. In a certain country, 325 400 people go to work by train. Round off the number of people to the nearest hundreds of thousands.

5. A trader bought goods worth sh 654 296. Round off the amount of money to the nearest millions.

6. A manufacturing company sold 3 609 578 exercise books in one year. Round off the number of the exercise books to the nearest millions.

7. During the 2019 census, the population of three counties was recorded as follows:

| County | Number of people |
|---------|------------------|
| Turkana | 926 976 |
| Nakuru | 2 162 202 |
| Nairobi | 4 397 073 |

Round off the total population in the three counties to the nearest millions.

Rounding off numbers up to the nearest hundreds of millions

 **Group Activity**

1. Make number cards like the ones shown below.

36 872 547

153 679 201

2. Draw a place value chart and use it to round off each number to the nearest:

- a) Millions. b) Tens of million. c) Hundreds of millions.

3. Share your work with other groups.

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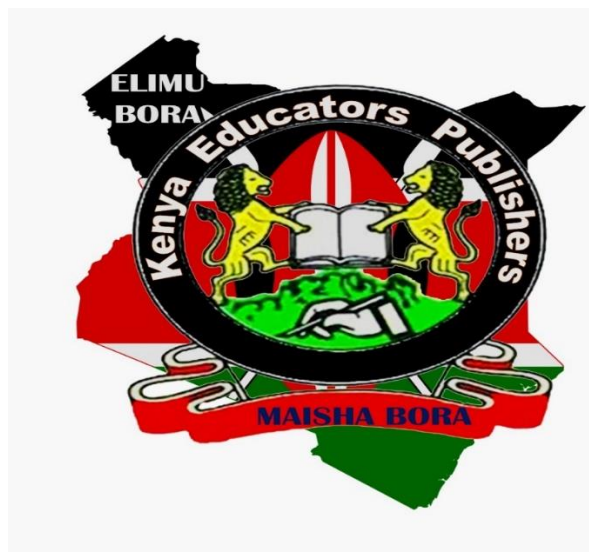
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