

4th Grade Unit 1 Mathematics

Dear Parents,

The Mathematics Georgia Standards of Excellence (MGSE), present a balanced approach to mathematics that stresses understanding, fluency, and real world application equally. Know that your child is not learning math the way many of us did in school, so hopefully being more informed about this curriculum will assist you when you help your child at home.

Below you will find the standards from Unit One in bold print and underlined. Following each standard is an explanation with student examples. Please contact your child's teacher if you have any questions.

NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.

This standard calls for students to extend their understanding of place value related to multiplying and dividing by multiples of 10. In this standard, students should reason about the magnitude of digits in a number.

Example:

How is the value of the 2 in the number 582 similar to and different from the value of the 2 in the number 528?

NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

This standard refers to writing numbers in various ways (expanded, written, standard, etc).

Example: 285

- Expanded forms may include: $200 + 80 + 5$
- Written form: two hundred eighty-five
- Base-ten: 2 hundreds, 8 tens, 5 ones; 28 tens, 5 ones; 1 hundred, 18 tens, 5 ones

Students should also be able to compare two multi-digit whole numbers using appropriate symbols.

Example: $28,458 < 28,485$

NBT.3 Use place value understanding to round multi-digit whole numbers to any place.

This standard refers to using place value understanding, which extends beyond an algorithm or procedure, for rounding. This is "rounding by reason" not by "rote". The expectation is that students have a deep understanding of place value and number sense. We want students to be able to explain and reason about the answers they get when they round. They should have a good understanding of the benchmark numbers that a given number is between and the approximate location (or proximity) of that given number to each of the benchmarks. Students should have numerous experiences using an empty number line as a tool to support their work with rounding.

Example:

- Question: Round 237 to the nearest ten.

Student 1:

I know that 237 is located between 230 and 240. I also know that 235 is halfway between 230 and 240 and that 237 is more than 235. This means that 237 is closer to 240 than 230, so 237 would round to 240.

Student 2:

I know that 237 is located between 230 and 240. I know that it is 7 more than 230 and 3 less than 240, so it is closer to 240. This means that the nearest ten to 237 is 240.

Student 3

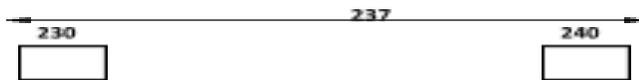
I drew an empty number line.



I thought about the tens that 237 would be between and marked them on my empty number line.



Next, I knew that 237 is a little more than 235, which would be halfway between 230 and 240. I placed 237 on my number line to show this.



Because 237 is closer on the number line to 240 than 230, I know that 237 would round to 240.

Example:

On a vacation, your family travels 267 miles on the first day, 194 miles on the second day, and 34 miles on the third day. About how many total miles did your family travel?

Some typical estimation strategies for this problem include:

Student 1

I first thought about 267 and 34. I noticed that their sum is about 300. Then I knew that 194 is close to 200. When I put 300 and 200 together, I get 500.

Student 2

I first thought about 194. It is really close to 200. I also have 2 hundreds in 267. That gives me a total of 4 hundreds. Then I have 67 in 267 and the 34. When I put 67 and 34 together that is really close to 100. When I add that hundred to the 4 hundreds that I already had, I end up with 500.

Student 3

I rounded 267 to 300. I rounded 194 to 200. I rounded 34 to 30. When I added 300, 200, and 30, I know my answer will be about 530.

NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Students build on their understanding of addition and subtraction, their use of place value, and their flexibility with multiple strategies to make sense of the standard algorithm. They continue to use place value in describing and justifying the processes they use to add and subtract.

When students begin using the standard algorithm, their explanation may be quite lengthy. After much practice with using place value to justify their steps, they will develop fluency with the algorithm. Students should be able to explain why the algorithm works.

Example:
$$\begin{array}{r} 3892 \\ + 1567 \\ \hline \end{array}$$

Student explanation for this problem:

1. Two ones plus seven ones is nine ones.
2. Nine tens plus six tens is 15 tens.
3. I am going to write down five tens and think of the 10 tens as one more hundred. (*Denotes with a 1 above the hundreds column*).
4. Eight hundreds plus five hundreds plus the extra hundred from adding the tens is 14 hundreds.
5. I am going to write the four hundreds and think of the 10 hundreds as one more 1000. (*Denotes with a 1 above the thousands column*).
6. Three thousands plus one thousand plus the extra thousand from the hundreds is five thousand.

Example:
$$\begin{array}{r} 3546 \\ - 928 \\ \hline \end{array}$$

Student explanations for this problem:

1. There are not enough ones to take 8 ones from 6 ones so I have to use one ten as 10 ones. Now I have 3 tens and 16 ones. (*Marks through the 4 and denotes with a 3 above the 4 and writes a 1 above the ones column to be represented as 16 ones.*)
2. Sixteen ones minus 8 ones is 8 ones. (*Writes an 8 in the ones column of the answer.*)
3. Three tens minus 2 tens is one ten. (*Writes a 1 in the tens column of the answer.*)
4. There are not enough hundreds to take 9 hundreds from 5 hundreds so I have to use one thousand as 10 hundreds. (*Marks through the 3 and denotes with a 2 above it. Writes down a 1 above the hundreds column.*) Now I have 2 thousands and 15 hundreds.
5. Fifteen hundreds minus 9 hundreds is 6 hundreds. (*Writes a 6 in the hundreds column of the answer.*)
6. I have 2 thousands left since I did not have to take away any thousands. (*Writes 2 in the thousands place of the answer.*)