Number and Operations in Base Ten
2.NBT.A*

Cluster A

Understand place value.

STANDARD 1 **2.NBT.A.1:** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. 100 can be thought of as a bundle of ten tens—called a "hundred."

b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

STANDARD 2 **2.NBT.A.2:** Count within 1000; skip-count by 5s, 10s, and 100s.

STANDARD 3 **2.NBT.A.3:** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

STANDARD 4 **2.NBT.A.4:** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

*Major cluster

Number and Operations in Base Ten 2.NBT.A

Cluster A: Understand place value.
Grade 2 Overview

Students extend their understanding of place value to hundreds and to thousands by bundling 10 tens to make a hundred and later extend that understanding to bundling 10 hundreds to make 1 thousand. It is important to scaffold the work of this cluster so that students understand the concept of 1 hundred and then multiple hundreds. Conceptual understandings and skills built in previous grades should be explicitly connected to the new ideas in Grade 2 including place value, counting, and comparing numerals to 1,000.

Standard for Mathematical Practice
SFMP 2. Reason abstractly and quantitatively.
SFMP 3. Construct viable arguments and critique the reasoning of others.
SFMP 4. Model with mathematics.
SFMP 5. Use appropriate tools strategically.
SFMP 6. Attend to precision.
SFMP 7. Look for and make use of structure.
SFMP 8. Look for and express regularity in repeated reasoning.

In second grade, students continue to develop a deep understanding of place value and use that understanding to add and subtract within 1,000. This cluster focuses on the development of place value up to and beyond 100. Students should use the structure of building tens out of 10 ones, building hundreds out of 10 tens, and building a thousand out of 10 hundreds. This is the structure of our base-ten place value system. It is built on repeated reasoning that every time you have 10 of a particular item, you group it to make the next place value unit. Students use precision in describing their work with appropriate vocabulary and reading numbers accurately. They explain their reasoning to classmates throughout the cluster and compare their thinking with that of their peers.

Related Content Standards

K.NBT.A.1 KCC.C.7 1.NBT.B.1 1.NBT. B.2 1.NBT.B.3

STANDARD 1 (2.NBT.A.1)

Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. *100 can be thought of as a bundle of ten tens—called a "hundred."*

Students begin to unitize or consider 10 tens as a group or unit called 1 hundred.

What the TEACHER does:

- Review earlier place value experiences using concrete materials. Ask students to model and describe what happens when they have 10 ones. Reinforce the concept that 10 ones can be bundled into 1 ten.
- Introduce the next place on the place value chart (Reproducible 11).
- Develop student vocabulary to see a hundred as a unit composed of 10 tens.
- Give students bundles of 10 straws or linking cubes and have them make groups of 100.

What the STUDENTS do:

- Given bundles of tens, students group them into bundles of 100 and place them in the appropriate place on the place value chart.
- Understand the vocabulary that 1 hundred is made up of 10 tens.

GRADE 2

Addressing Student Misconceptions and Common Errors

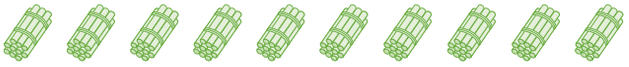
Although students may correctly place concrete representations on the hundreds chart and be able to read the number represented accurately, they may become confused when writing the numeral since there are no objects in the tens or ones place, as in the number 405 or 450. Provide students with numeral cards that include the digit 0 so that students can put the 0 in the tens place and ones place to represent that there are no objects in those places. This should help them transition between the concrete representation and the written numeral.

b. *The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).*

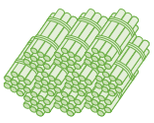
Once students understand the concept that 10 tens can be bundled to make 1 hundred, they explore multiples of 100 using pictures, numbers, and words. Although not explicitly stated, representing, describing, and reading all numbers from 1 to 999 are included in this standard.

What the TEACHER does:

- Give the students bundles of 10 straws to group into one hundred.



10 tens



1 hundred

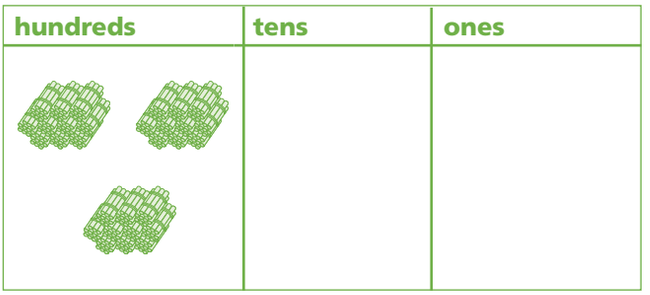
What the STUDENTS do:

- Use concrete materials to bundle groups of 10 to represent numbers including 100, 200, 300, . . . 900 as bundles of 1 hundreds with no tens and no ones.
- Place concrete representations on a place value chart to reinforce that the number is made up of hundreds and no tens and no ones.
- Describe the multiples of 100 using words that include the number of groups of a hundred to reinforce understanding a hundred as a unit that is different from tens and ones. For example,

  200 is 2 bundles of 10 tens. 300 is 3 bundles of 10 tens.

What the TEACHER does (continued):

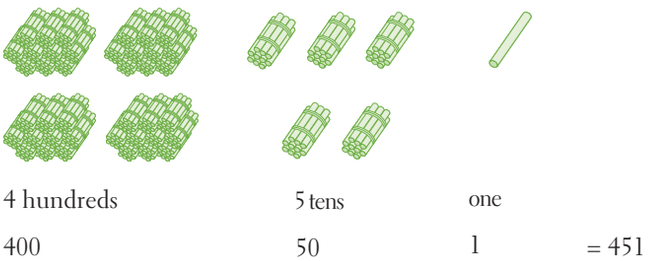
- Build on experiences of bundling 10 tens into 1 hundred by giving students tasks in which they bundle more tens into 2 hundreds, 3 hundreds. Placing bundles of hundred on a place value chart reinforces the concept that these numbers represent bundles of 1 hundred with no tens and no ones. For example, 300 is represented by 3 hundreds, 0 tens, and 0 ones (Reproducible 11).



- Pose questions that reinforce the concept that each group of 10 tens makes 1 hundred. Ask students to describe the number of straws in terms of the number of hundreds. For example, 5 bundles of 100 would be 500.
- Connect physical and pictorial representation with written numerals for multiples of 100. Discuss why the digit 0 must be in the tens place and ones place.
- Use formative assessment protocols, including tasks, student explanations, and worksheets to determine if students understand unitizing and can describe multiples of 100 up to 900 as a number of hundreds with no tens and no ones.
- Begin to provide experiences with other numbers up to 999. Extend experiences of bundling hundreds with some leftover tens. Put the straws on the place value chart and have students describe the number and write the numeral.
- Extend experiences to numbers that would include tens and ones so students need to bundle to make as many hundreds as possible and as many tens as possible with some ones leftover.
- Explicitly connect work with concrete materials and place value charts to pictures, verbal descriptions, and writing numbers.
- Guide students to make explicit connections between concrete materials and pictorial representations for place value. As students orally describe a number in terms of place value, they also connect that understanding to the written numeral.
- Give a number from 100 to 999 for students to construct using straws and describe the value of each place.

What the STUDENTS do (continued):

- Use concrete materials to represent any number from 1 to 999 by making as many groups of hundreds as possible and placing those in the hundreds place on a place value chart. Place any leftover tens in the tens place and ones in the ones place.
- Describe the representation using numbers and words. For example,



- Write the numerals and identify how the written number shows the number of hundreds, tens, and ones.
- Connect words to the written numeral. For example, 3 hundreds, 2 tens, and 4 ones is written as 324 and read as three hundred twenty-four.

Addressing Student Misconceptions and Common Errors

Watch for students who reverse digits. These students need additional opportunities to decompose numbers into groups of hundreds, tens, and ones and put them in the correct place on a place value chart. Describing the number in terms of hundreds, tens, and ones should be followed by writing the numeral below the concrete representation.

Observe students who may be counting hundreds, tens, and ones separately.

For example,

they count as 100, 200, 300 . . . 10, 20 . . . 1, 2, 3

rather than counting as 300, 20, 3 . . . 323.

These students need additional practice relating the representation or picture to the accurate word name for the number.

Notes

GRADE 2