

Build, Trade and Compare

Use base-ten models to understand three-digit numbers.

GRADE 2 • 2.NS.2

2.NS.2 “The student will demonstrate an understanding of the ten-to-one relationships of the base 10 number system to represent, compare, and order whole numbers up to 999. Write the three-digit whole number represented by a given model (e.g., concrete objects, pictures of base 10 blocks). Read, write, and represent three-digit numbers in standard form, expanded form, and word form, using concrete or pictorial representations. Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place (ones, tens, hundreds) and value of each digit in a three-digit whole number (e.g., in 352, the 5 represents 5 tens and its value is 50). Investigate and explain the ten-to-one relationships among ones, tens, and hundreds, using models. Compose and decompose whole numbers up to 200 by making connections between a variety of models (e.g., base 10 blocks, place value cards, presented orally, in expanded or standard form) and counting strategies (e.g., 156 can be 1 hundred, 5 tens, 6 ones; 1 hundred, 4 tens, 16 ones; 15 tens, 6 ones). Plot and justify the position of a given number up to 100 on a number line with pre-marked benchmarks of 1s, 2s, 5s, 10s, or 25s. Compare two whole numbers, each 999 or less, represented concretely, pictorially, or symbolically, using words (greater than, less than, or equal to) and symbols ($>$, $<$, or $=$). Justify reasoning orally, in writing, or with a model. Order up to three whole numbers, each 999 or less, represented concretely, pictorially, or symbolically from least to greatest and greatest to least.”

NAME _____

DATE _____

Build every requested model. An adult reads aloud. Write short records; explain your reasoning aloud.

Materials and setup

Per pair: 10 hundred flats with unit grids, 20 ten rods and 20 unit cubes of the same base-ten set. Use a clear tabletop and pencil. Return pieces before starting a new task.

Try the idea

Ten ones make one ten; ten tens make one hundred. A hundred flat shows a 10-by-10 grid of unit squares. Trade equal amounts without changing the total.

Try it together

An adult shows one unit cube and one ten rod. Why are they worth different amounts?

Check real pieces

Look	Record
Unit cube	1 one
Ten rod	10 ones

Line up 10 unit cubes along the ten rod. They cover the same length as the rod. A unit cube is 1; the ten rod is worth 10 ones.

1. Build and read

Build 3 hundreds, 4 tens and 2 ones. Write the number, its expanded form and its number name.

2. A zero in the middle

Build 506. Record the number of each kind of piece. Point to what the zero tells you.

Pieces in 506

Look	Record
Hundred flats	
Ten rods	
Unit cubes	

3. Trade a hundred

Build 1 hundred, 4 tens and 6 ones. Trade the hundred for ten rods. Record the total and how many rods you now have. Explain why the value stays the same.

4. Another way to build 156

Build 156 with 1 hundred, 5 tens and 6 ones. Trade one ten rod for unit cubes. Record the new pieces in the table. Count to check that the value is still 156.

After trading one ten

Piece	My count
Hundreds	
Tens	
Ones	

5. Compare collections

Build 126 and 162 side by side. Which collection is greater? Write a comparison using $<$ or $>$. Point to the pieces that decide.

6. Put numbers in order

Build 694, 649 and 691 in turn. Keep a written record of each model's hundreds, tens and ones. Write the numbers from least to greatest.

7. A trade near the limit

Build 9 hundreds, 8 tens and 19 ones. Make one trade to show only single-digit counts of each piece. Write the number and describe the trade.

Teacher notes

Assess actual construction and trades, not just written arithmetic. In task 3 place ten rods over a hundred flat to verify equality. Task 4 uses a nonstandard decomposition below 200. For task 6 build sequentially to stay within supplied pieces; read each completed model before clearing it. All represented values stay at or below 999.

Task 1

342; $300 + 40 + 2$; three hundred forty-two.

Task 2

5 hundreds, 0 tens, 6 ones. The zero means no tens in this standard grouping.

Task 3

146; 14 ten rods and 6 unit cubes. Ten tens equal the hundred that was traded.

Task 4

1 hundred, 4 tens, 16 ones. $100 + 40 + 16 = 156$.

Task 5

$126 < 162$. The hundreds match; 6 tens are more than 2 tens.

Compare equal hundreds, then tens. Verify both built collections before clearing them.

Task 6

649, 691, 694. Models: 6H 4T 9O; 6H 9T 1O; 6H 9T 4O.

After matching hundreds, compare tens; then compare ones for 691 and 694. Check each actual model.

Task 7

999. Trade 10 of the 19 ones for 1 ten: 9 hundreds, 9 tens and 9 ones.