

Understand place value (Standards 2.NBT.1–4).

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

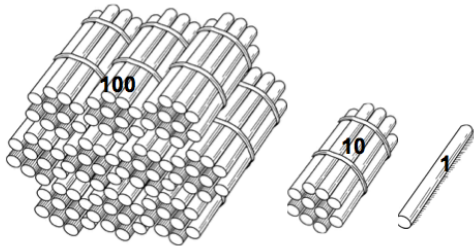
- 100 can be thought of as a bundle of ten tens called a "hundred."
- The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Please Note: Although not stated in the core, it is important that students use and understand the terms digit and value. Digit: any numeral from 0-9 not identifying a set value. Value: a quantity of a given number determined by the place in a given number ie. the 7 in 78 is equal to 70. In first grade students understand and represent adding two, two-digit numbers (See 1. NBT. 2).

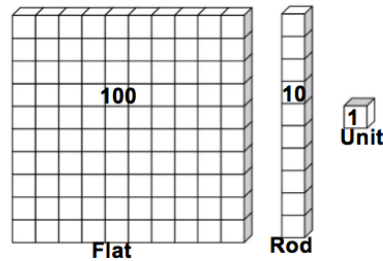
Key Elements: Students need to understand each number has a value depending on its location in a number: $706 = 7 \text{ hundreds} + 0 \text{ tens} + 6 \text{ ones}$ ($700 + 0 + 6$).

Concrete Model:

Use straws or popsicle sticks to represent place value. Students need to understand that one straw or one unit represents one, a bundle of ten straws and one rod represent ten, and a group of ten bundles and a flat represent a hundred. Have the students count one by one or compare size to see the relationship of each. When using the place value blocks, have students line up 10 units next to one rod to see that they are equal to each other.

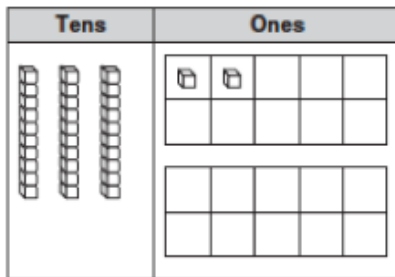


Straws to represent 100, 10, and 1

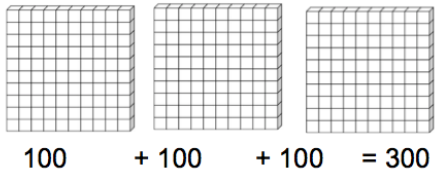


Place Value Blocks representing 100, 10, and 1

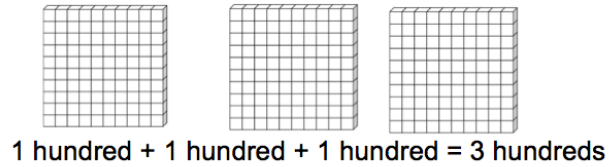
In first grade students have worked with the ten frame model and understand how to use it to help to count up to ten. Connect to student learning by using a ten frame to show that ten units (ones) equals to a rod (ten).



Students should count by 100, 10, and 1 using the manipulatives while using the corresponding written form.



AND



Picture Model: After students have an understanding of the concrete model, have them represent different place value numbers using a picture.



Drawing squares to represent hundreds



Drawing sticks to represent tens



Drawing circles to represent ones

Abstract Model: Students will write equations to represent the different values. Writing equations in this way is known as expanded form, also referred to as expanded notation.

$$467 = 400 + 60 + 7 \text{ or } 7 + 60 + 400 = 467$$

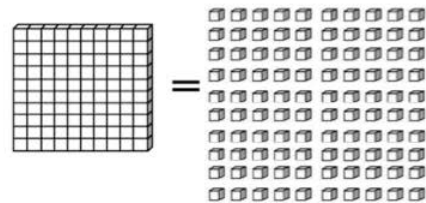
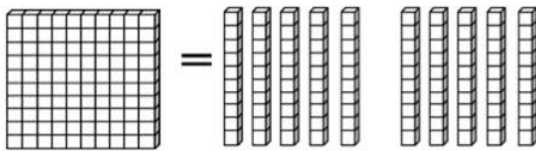
Using place value tents may help to represent this model.



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Students also need to understand that each number can be represented using each type of value. Students can represent the following with concrete or abstract models:

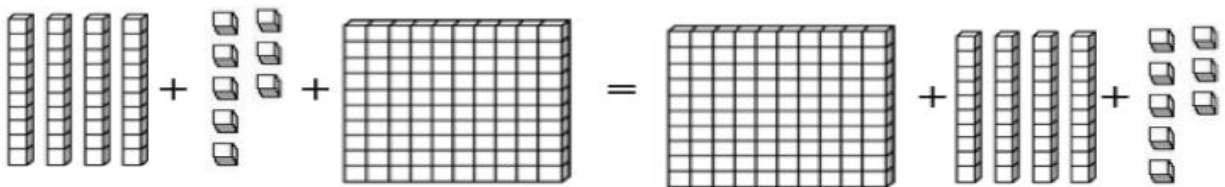
- 467 equals 467 ones
- 467 equals 46 tens and 7 ones
- 467 equals 4 hundreds and 6 tens and 7 ones



To

check for student understanding, use place value out of order:

- What number is 5 tens, 8 ones, 7 hundreds? (Answer: 758)
- Rearrange expanded form: $5 + 100 + 90 = 195$



Some questions students will need to understand:

- How many tens are in 281? Answer: 28 tens
- How many hundreds are in 200? Answer: 2
- What is the value of the tens place of the number 281? Answer: 80

Use place value understanding and properties of operations to add and subtract (Standards 4–6).

Standard 1.NBT.6 Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

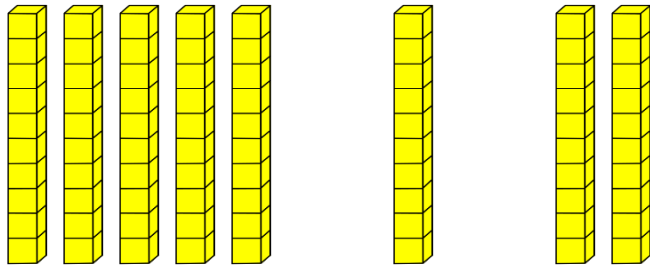
Key Elements:

Students need practice with manipulatives before they create models (pictures) to represent their thinking.

Students will solve subtraction problems with multiples of ten by using models (manipulatives), drawings, and strategies.

Models

Base Ten Blocks: Use Base Ten blocks to model subtraction with decade numbers. For example: $80 - 20 = ?$ Students place 8 ten sticks on their desk. They take away 2 of the tens sticks and find that they have 6 ten sticks left. Count the tens sticks by 10s.

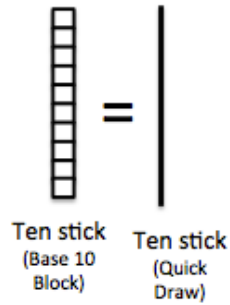


count: “10” “20” “30” “40” “50” “60”

Could also model using: mini ten frames, bean cups

Drawings

Tens sticks and ones drawings: After practice with the base ten blocks, students begin to draw pictures of the base ten blocks using sticks for 10s and circles for 1s. To represent a ten

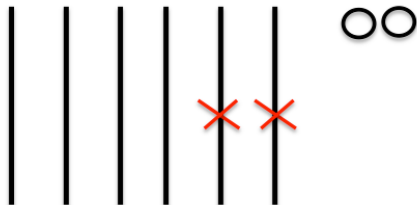


stick in base ten, use a straight line (see picture).

Example 1: $80 - 20 = ?$ would be drawn as:



Example 2: $62 - 20 = ?$ would be drawn as:



Strategies

Related Facts: Students can use known facts to solve subtraction problems using decade numbers. For example, if a student knows that $8 - 2 = 6$, then the student may know that $80 - 20 = 60$.

Fingers: Students may use their fingers as '10 sticks' and hold up 8 fingers, put down 2 fingers and see that 6 fingers are left, then they convert those fingers into tens for an answer of 60.