NVACS: Number and Operations in Base Ten

In Kindergarten, students must:

Work with numbers 11 – 19 to gain foundations for place value.

K.NBT.1 - Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Before working with numbers to twenty as a group of ten and some ones, students need to spend time working on the following concepts.

- Counting fluently and accurately to 120 in meaningful ways. (see Counting and Cardinality for Kindergarten)

- Composing and decomposing numbers
  Students fluently know combinations to 5 and can figure it out for any number to 10. (see Operations and Algebraic Thinking for Kindergarten)

- Making a ten
  Students know, for example, that if they have 8 that they need 2 more to make 10. (see Operations and Algebraic Thinking for Kindergarten)

- Making ten and some ones
  Students know, for example, that if they have 8 and they get 4 more, that they could break up the 4 into a 2 and 2. They can add 2 to the 8 and make 10, then add 2 more on.

Students in kindergarten need to work with materials that can be grouped and ungrouped such as, connecting cubes, beans in cups, etc. Base ten blocks are not preferable in kindergarten as students do not understand that one stick of ten is the same as ten ones.

Straws can be used but once they are bundled, most students at this level lose the idea of ten. Once bundled, it becomes one group whereas a group of cubes in a ten stick still shows ten ones put together.

Making a Ten: Students should be able to tell what goes with any number from 1-10 to make ten.

For Example: Use ten frames with some dots filled in. Students tell how many more are needed to make ten.
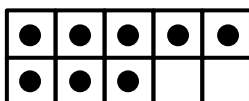
There are 8 dots.. I need 2 more to make 10.

10 = 8 + 2

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For Example: Put two towers of cubes side by side. One tower should have ten, the other less than ten. The students identify the first tower as having ten and then tell how many the second tower has and how many it needs to make ten.
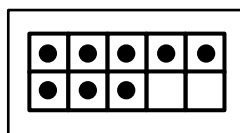
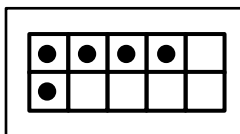There are 7 yellow cubes. I need 3 more to make 10.

10 = 7 + 3

Making a Ten and Some Ones:

Students should be able to tell how to break up a number so that part of it can finish a ten and the rest can be added to the ten.

For Example: The student draws two ten frame cards from a pile.

I have an 8. I need 2 more to make 10. I can break the 5 into 2 and 3.

10 = 8 + 2

10 + 3 = 13

Story Problems About Ten and Leftovers:

Students act out, retell, model using materials or drawing pictures to represent what is going on in the story.

For example: Have a group of more than ten students come up to the front.

Tell them that they are going to sit at tables in the lunchroom and each table can only hold ten students.

Find out how many students there are. (14)

Ask if there are enough students to fill a table and have some leftovers? How many leftovers? How many would that be all together?

Write the equation on the board. 14 = 10 + 4.

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Build a Ten and Leftovers:

Students should be able to count out a set of objects from 11 – 19 and tell if they have enough to make a ten and leftovers. They should be able to make ten into a group and know how many leftovers they have.

For example: Use containers holding 11-19 cubes in each. The student counts the cubes, builds a tower of 10 and some leftovers, and records.

I could build a tower of 10 and 4 leftovers. That's 14.

$10 + 4 = 14$
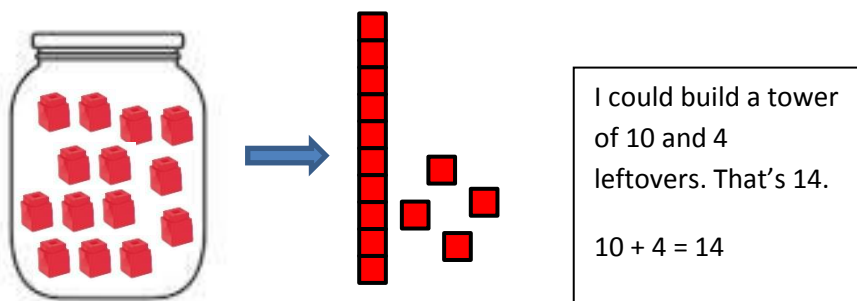
Symbols:

The teacher should be modeling the writing of equations to describe the mathematical situations as often as possible. Students in kindergarten can be asked to write equations on small white boards during whole group or small group experiences where the teacher can monitor the students for accuracy and form.

When students have had opportunities to practice recording with guidance, they should be recording equations to match the work that they are doing independently.