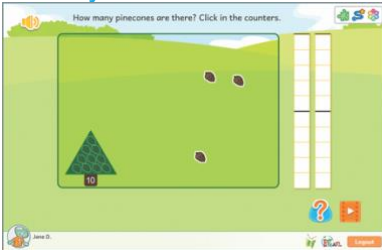


PLACE VALUE, STEP 1

Lesson Plan: Number Concept, Place Value, Step 1

Activity Screen Shot



Theme Host: Chuck



Animal Friend: German Shepherd



OVERVIEW

Using “trees” (10 pinecones), “pinecones,” and counter(s), this step creates a first understanding of “tens” and “ones” places.

PRINCIPAL LEARNING GOAL(S)

- Introduce the use of multiple counters to represent numbers that are between 11 and 29
- Demonstrate the concept of counting “tens” and “ones” separately

PREREQUISITE KNOWLEDGE AND SKILLS

- Practiced using counters to represent numbers of objects between 1 and 9
- Practiced writing two-digit numbers, left to right

POTENTIAL DIFFICULTIES

- This is the first time students will be using more than one counter to count a number beyond 10. A quick demonstration in advance by the teacher explaining how this works will help avoid initial difficulties.
- Students may not realize that the number of counters visible is always equal to the number of trees (10’s) plus one (for loose pinecones). As the teacher circulates amongst the students the teacher may help by asking “why do you think that there are three counters this time?”

WARM UP ~ 3-5 MINUTES

The teacher starts with 28 blocks of the same size and colour. Use 14 blocks to build a tower. Then separately the teacher builds both a pyramid (4 on bottom, then 3, 2, and 1) and an adjacent 4-block tower. Ask students which of the two arrangements of blocks is easier to count, and why.

MAIN ACTIVITY ~ 20 MINUTES

Students are shown a field containing some combination of pinecones and/or pine trees (10 pinecones per tree.) Then students are asked to count all pinecones and click on the counter(s) to indicate the total. The teacher assists when necessary.

CONSOLIDATION ~15 MINUTES

To help students consolidate their new knowledge and make connections to prior learning, allow time for subsequent discussion. The questions below raise important issues:

1) *How did you count the number of pinecones in the field?*

There is a continuum of strategies that students use:

- a) Some students ignore the pine tree structure and count each individual pinecone within tree(s) or on the grass. This is a beginning strategy and shouldn't be encouraged.
- b) Some count the first tree as 10 pinecones, but then continue counting individual pinecones, whether in a tree or on the grass.
- c) Others realize that each tree corresponds to 10 pinecones, carry out an addition of "10's", and then "count on" the pinecones on the grass.
- d) Finally, some students realize that the number of trees determines which interval of values the number of pinecones lies in, i.e., no trees means 1 to 9 pinecones, 1 tree means 10 to 19 pinecones, 2 trees means 20 to 29 pinecones.

The goal of this discussion is to move students as far along this hierarchy of strategies as possible, without saying "this is how you should do it". Ask students to compare strategies. Which is easiest? Fastest? Most likely get you to the correct answer?

2) *When there was one tree and some pinecones on the grass, how many counters were displayed? Why?*

Hopefully someone will say 2 counters, and explain that one full counter was used to represent the tree and one partially full counter was used to represent the pinecones on the grass. If no student can explain this, then draw a "pyramid tree (4, 3, 2, 1)", several separate pinecones and one counter on the board and ask whether all of the pinecones would fit into the one counter. Use this method to lead students to the understanding that each tree corresponds to one full counter, and one additional counter is needed for any non-tree pinecones.

3) *Did you notice that pinecones from trees filled counters from left to right bottom to top, and the rightmost counter was partially filled by pinecones from the grass? Why is it done this way?*

Hopefully some students did notice. If so, ask them how to write, say 26. Point out that like all writing that we do in English, we write from left to right. Thus, the "2" is written first and corresponds to 20 (or two trees or two full counters). Then the "6" is written next and corresponds to the pinecones in the grass and a partially filled counter on the right. You may expand upon this by asking what would correspond to "45".

