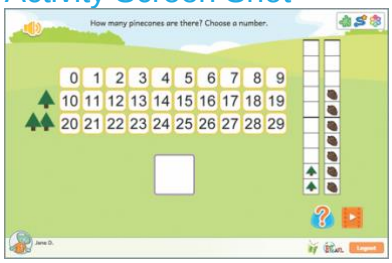
PLACE VALUE, STEP 3

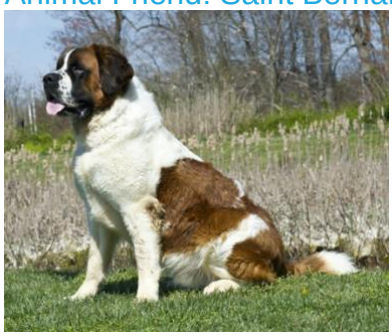
Lesson Plan: Number Concept, Place Value, Step 3

Activity Screen Shot



Theme Host: Chuck

Animal Friend: Saint Bernard



OVERVIEW

This step helps students develop a connection between representation of a number between 0 and 29 using a tree counter (tens) and a pinecone counter (ones) and the corresponding abstract symbolic representation.

PRINCIPAL LEARNING GOAL(S)

- Reinforce students' awareness of the relationship between the number of "trees" needed to represent a number between 1 and 29 and the number of "tens"
- Ensure that for a number between 0 and 29 students can move from a semi-abstract representation of the number using counter(s) with trees and pinecones to the abstract symbolic representation

PREREQUISITE KNOWLEDGE AND SKILLS

- Students should already be familiar with using tree counters and pinecone counters to represent the numbers between 11 and 29
- Students should have seen written numbers between 0 and 29 used to represent a number already presented using counter(s)

RESOURCES NEEDED

- Images of tree and apple counters (Appendix 1)
- Images of a tree counter and/or pinecone counter as well as of a structured number line (Appendix 2)

POTENTIAL DIFFICULTIES

- Some students may not yet have realized that the number of trees corresponds to the number of tens of pinecones. A discussion of the previous step can help.

WARM UP ~ 3-5 MINUTES

Display images of counter(s) holding a combination of apple trees and/or individual apples (see Appendix 1). Tell students that each apple tree represents ten apples and then ask students to hold up left hand fingers indicating the number of "tens" of apples, followed by right hand fingers indicating the number of "ones" or single apples. Finally, ask students to say the number their two hands of raised fingers represents.

MAIN ACTIVITY ~ 20 MINUTES

Initially students are shown a field containing pinecones and asked to choose how many trees are needed to count the pinecones. The software then moves pinecones into the counters and students are then asked to select the number corresponding to the counter representation.

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:

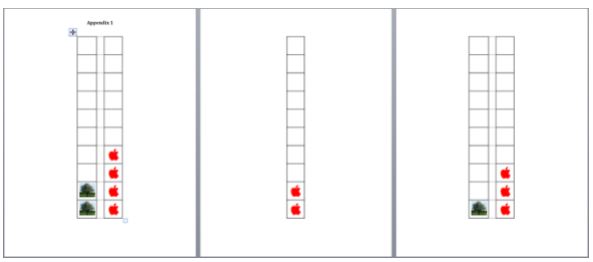
1) *If you added one or more trees why did the trees all go directly into the same counter?*
   In Step 2 counters that students added, like the original counter, counted pinecones. Trees appeared in counters only after students finished using counters to represent the total number of pinecones. In Step 3, students are now asked to count trees (pairs of groups of five pinecones), so to reinforce this trees are immediately shown in a "tree counter". Draw student attention to this.

2) *If you added one or two trees why were they added to the counter on the left of the original counter?*
   It is also useful to focus student attention on this and to attempt to draw out from them the idea that the trees correspond to the "tens", and "tens" are always written to the left of "ones".

3) *If possible, display the second phase of Step 3 using a projector or see Appendix 2 for a screen shot sheet that you can hold up in front of the class. Tell the students to imagine that there are 36 pinecones and ask them what would change in this screen.*
   This attempts to make students think about the structure of the next group of 10 numbers in terms of: needing an additional "tree"; needing an additional row of numbers, with three trees on the left, running from 30 to 39. This discussion will aid students in visualizing two digit numbers in terms of "trees" (or "tens") and "pinecones" (or "ones"), allowing them to work with numbers up to 99.

4) *Don't prompt the following discussion. Just use it if it occurs.*
   If students say that seeing 24 as two "trees" in a tree counter and four pinecones in a regular counter tells them that 24 = 10 + 10 + 4, encourage this way of seeing/decomposing numbers because when students eventually add/subtract two digit numbers this point of view can be helpful. For example, if students are faced with the question of what is 35 + 23 equal to, thinking of 35 as 10 + 10 + 10 + 5 and 23 as 10 + 10 + 3 makes it easy to see that the answer has 5 "tens" and 8 "ones", and so is 58. If no student makes this type of comment, but you see a way to elicit the idea without giving the idea directly to the students, then by all means do so.

APPENDIX 1



APPENDIX 2