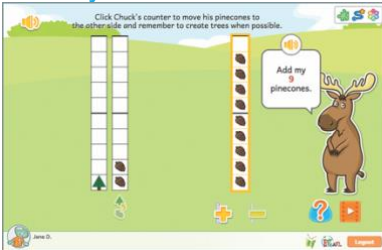# PLACE VALUE, STEP 8

Lesson Plan: Number Concept, Place Value, Step 8

Activity Screen Shot

Theme Host: Chuck

Animal Friend: Yorkshire Terrier

OVERVIEW
Students develop an understanding for addition of a one-digit number to a two-digit number.

PRINCIPAL LEARNING GOAL(S)
Students demonstrate profound understanding of the algorithm for addition involving two-digit numbers by being able to:
- use pine tree and pinecone counters as metaphors for tens and ones
- write an equation that represents the addition operation

PREREQUISITE KNOWLEDGE AND SKILLS
- Practiced counting pine trees and pinecones separately
- Wrote two digit numbers based on a count of pine trees/pinecones
- Wrote equations/additions that result in a two-digit total and involve the notion of "carrying"

RESOURCES NEEDED
- ~38 large Lego blocks of the same size
- A small sheet of cardboard

POTENTIAL DIFFICULTIES
- Some students may carry out the exercise mechanically, not thinking in advance about either how many of Chuck's pinecones can currently be added to their own pinecone counter, or whether they should first add another pinecone counter. On screen you will see this as pinecones that are being transferred falling to the right of the student's pinecone counter and then reverting to Chuck's counter.

WARM UP   ~ 3-5 MINUTES
1) Build two towers of 10 blocks each and balance the cardboard sheet on top of them. Place another tower of less than 10 blocks under the cardboard sheet, e.g., 6 blocks high.
2) With a loose pile of additional blocks visible (e.g., no more than 13), ask the class what you should do if you want to use all the remaining blocks that you have, but

don't want to have any towers higher than the two towers that support the "ceiling" of cardboard.

3) Guide students toward the answer of adding more to the small tower, until it has 10 like the others, and then starting a new tower.

MAIN ACTIVITY   ~ 20 MINUTES

Given counter representations of a two-digit number and a one-digit number, students are asked to use these to add the two numbers.

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) *Sometimes a matching pair gives us the correct total, and sometimes there is no matching pair that gives us the correct total. Has anyone noticed this? Is there a rule that tells us when there is and when there isn't a matching pair that gives us the correct total?*
Elicit from students the idea that a new counter is needed when the number of pinecones adds up to more than 10.

2) *When you converted a full pinecone counter to a tree, what happened in the pine tree counter?*
Elicit from students the idea that the number of pine trees went up by 1 when this happened.

3) *If you have already demonstrated to your class the algorithm for addition beyond 9, ask students how the number of pine trees going up by 1 is related to the idea of "carry 1"?*
Wait for students to draw the connection between the activity and the algorithm.