

# SUBTRACT, STEP 4

## Lesson Plan: Number Concept, Subtract, Step 4

### Activity Screen Shot



### Theme Host: Chuck



### Animal Friend: Dall's Sheep



### OVERVIEW

This step focuses on “counting up”, which is a use of addition to perform subtraction. Where the previous three activities used the metaphor of moving animals from one location to another (“take away” as subtraction), which kept the total unchanged, in Step 04, the student adds new animals to one location, to reach a requested total.

### PRINCIPAL LEARNING GOAL(S)

- Present a situation so that students become accustomed to choosing between direct subtraction and “counting up”
- Reinforce the idea that an equation is a symbolic/mathematical description of the number relationships seen between the two sets and the total number of objects in both sets

### PREREQUISITE KNOWLEDGE AND SKILLS

- Completed previous activities in Subtract

### POTENTIAL DIFFICULTIES

- Students not computing how many Dall’s sheep must be added to the pasture before adding some and instead simply adding Dall’s sheep and observing the Total counter, which means that they are aware that the Total represents the sum of the barn and the pasture
- To aid in ensuring that they first compute and then use the Total counter to verify that their computation was correct demonstrate the step in advance, ask how one might determine how many Dall’s sheep must be added to the pasture to get the requested total
- Students may have difficulty correcting the equation so discuss the equation seen at the beginning of Phase 2 asking which counter each number in the equation corresponds to and how they know this

### WARM UP ~ 3-5 MINUTES

Hold up your right hand and display a certain number (e.g., 4) of open fingers, simultaneously displaying your left hand with all fingers closed. Ask the class how many fingers you are showing? Once the class answers correctly, close some fingers on the right hand (e.g., 2) and open the same number on the left hand. Ask how many fingers you are

now showing. Once the correct answer has been achieved, point out that this is how the previous activities were done, always keeping the total number of animals the same. Next restart displaying the original configuration (e.g., 4 fingers on the right hand, 0 fingers on the left hand) and ask how many fingers you are showing. Follow up by opening some fingers (e.g., 2) on your left hand asking how many fingers are showing now. Once the correct answer is given tell students that this activity is similar in that they add extra animals to the pasture, not "subtract" them from the barn by moving them to the pasture.

### 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) *When the equation first appeared, what did each number represent?*  
You are hoping that the students recognize that the equation is of the form, # of Dall's sheep in the barn + # of Dall's sheep in the pasture = # of Dall's sheep in the barn and the pasture together. If students are confused as to which number corresponds to which set (or union of two sets), then walk them through one puzzle piece, and as you add Dall's sheep to the pasture, ask them which numbers are increasing, and which is staying the same. Then ask if any set has not changed, and if so, which.
- 2) *When the equation first appeared, how come two of the numbers were the same?*  
Attempt to elicit from students that addition of 0 does not change a total. Ask students to generate stories, e.g., if I have 3 candies and my brother doesn't give me any candies, that is he gives me 0 candies, I still have 3 candies. This will help them to make sense of equations of the form  $\# + 0 = \#$ .
- 3) *What happened when you added the first Dall's sheep to the pasture?*  
Students should say that when you add one Dall's sheep to the pasture, the counter for the barn, the number below the barn counter and the actual number of Dall's sheep in the barn all stay the same. However, the numeral in the number box under the pasture, the pasture counter and the actual number of Dall's sheep in the pasture all increase by one. Also, the total counter and the numeral underneath of it both change, increasing by one. If no student mentions these changes, and you have a projector, then display the step, add a Dall's sheep to the pasture, and then ask again what they just saw happen.

