ADD, STEP 2

Lesson Plan: Number Concept, Add, Step 2

Activity Screen Shot

Theme Host: Chuck

Animal Friend: Caribou/Reindeer

OVERVIEW

Students practice adding two integers using the metaphor of combining two sets of objects, and are introduced to mathematical expressions of the form "2+3=5".

PRINCIPAL LEARNING GOAL(S)

- Reinforce the concept of addition as combing two sets of objects
- Reinforce use of a structured representation of quantities (a counter)
- Introduce students to equations such as "2+3=5", representing the action of combining two sets of objects or of adding two numbers

PREREQUISITE KNOWLEDGE AND SKILLS

- Been exposed to the symbol "+" in the context of combining two sets of objects

RESOURCES NEEDED

- Two strings, each with one-colour beads but each with a different colour and different number

POTENTIAL DIFFICULTIES

- Students may experience difficulty in selecting the correct numeral for the total. Ask such students what strategy is being used, perhaps suggesting counting the cells in the total counter. Alternatively, suggest the "counting on" strategy, starting with the larger number and continuing to count animals in the field with fewer animals.

WARM UP ~ 3-5 MINUTES

Show the students two strings of beads, one hanging from each hand (say one with 2 red beads, the other with 6 blue beads). Ask one student how many beads there are on the left hand string, and another student how many beads there are on the right hand string. After students respond, ask for strategies for figuring out how many beads there are on the two strings together? Write suggested strategies on the board, restating each strategy aloud. Then the ask students to do Step 2 on the computer, keeping the strategies in mind.

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) *What was this step about? What were you supposed to do?*
   It is possible that students will say that you need to figure out the total of all animals on the screen. Help students to describe the situation in detail: there are two fields, perhaps each with a different number of animals, and we need to find the total number of animals, i.e., as if we put all the animals together in one field.

2) *When you have already correctly entered the number of animals in each of the two fields separately, what strategy did you use to determine how many animals were in the two fields combined? Did we put this strategy on the blackboard during the warm-up activities with the beads?*
   Restate and write any new strategies on the blackboard. If the students have already proposed the "counting up" strategy, then jump to point 5 in this set of suggestions. If not, then points 3 and 4 can be used to first generate that particular strategy.

3) *Hold up the first string (say with 2 red beads) and ask how many beads are on this string. When the students say "2", put this string down and out of sight and hold up the other string and ask what strategy can be used to count the total number of beads on both strings just by counting with this string.*
   If no student suggests continuing the count from 2, i.e., "counting up", hold up 2 fingers, and then 6 more fingers and say out loud "3, 4, 5, 6, 7, 8", and then repeat the process with the beads.

4) *Hold up the second string (say with 6 blue beads) and ask how many beads are on this string. When the students say "6", put this string down and out of sight and hold up the other string and ask what strategy can be used to count the total number of beads on both strings just by counting with this string. Is this the same result as the one just obtained a few minutes ago?*
   This time skip the fingers and directly count the beads as "7, 8". Hopefully all the students will remember that this is the same total. Spend a little time discussing whether it was easier starting from 2 or from 6, and why one might be easier. (Hopefully a student will remark that starting with the larger number makes the “counting on” strategy easier.)

5) *How would we express these two similar but slightly different processes using mathematical symbols, and how are the mathematical symbol representations (i.e., equations) different?*
   Invite the students to explain how to write equations for each of the problems just done above by “counting on”. Write their answer(s) on the board. Hopefully, some students will suggest “2 + 6 = 8” and “6 + 2 = 8” which will allow you to discuss the notion that addition is “commutative”, i.e., the order of addition does not impact the answer.