

Teacher Note

Three Approaches to Story Problems

Students commonly take one of these three approaches to solving an addition or subtraction story problem:

- Counting All
- Counting On (or Up) or Back (or Down)
- Numerical Reasoning

Each approach is described below and illustrated with examples of student work on the following problem. (Subtraction story problems are presented in Investigations 2 and 3.)

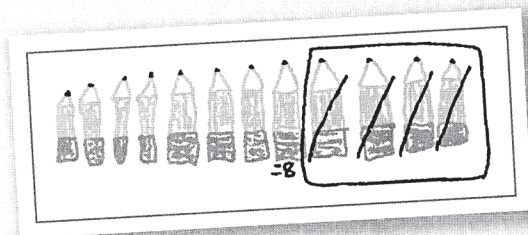
Last night I picked up 12 pencils from the floor. I put 4 of the pencils in the pencil box. How many pencils did I have left in my hand?

Counting All

When young students first encounter story problem situations, they usually model the actions in the problem step-by-step in order to solve it.

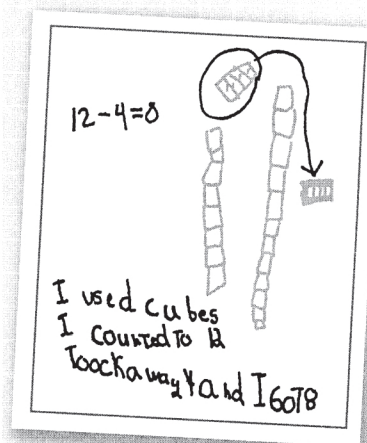
Students who are using a direct modeling strategy might count out 12 cubes, take 4 of them away to represent the 4 that were put in the pencil box, and then count the number of cubes remaining.

Leah drew 12 pencils, crossed out 4, and then counted the remaining pencils.



Leah's Work

Edgar counted out 12 cubes, took away 4, and counted the remaining cubes.



Edgar's Work

As students gain skill in visualizing problem situations and begin to develop a repertoire of number relationships they know, they gradually develop other strategies based on counting on or counting back and on numerical reasoning. These strategies require visualizing all of the quantities of the problem and their relationships, and recognizing which quantities are known and which need to be found.

Counting On or Counting Back

Some students, who perhaps feel more confident visualizing the problem mentally, use strategies that involve counting on or counting back.

Deshawn counted on his fingers. To get 12, he explained that he used both hands and visualized 2 “imaginary fingers.” He counted back from 12, first counting back 2 in his head, using his imaginary fingers and then counting back 2 more on his actual fingers to get 8.