Fishing

Build 3 boats. There are 4 people fishing on each boat. Each person may catch up to 3 fish. How many fish were caught?

Grade Levels Pre-K-2

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Context

I wanted to give my students an open problem that would allow them to define some of the important elements. Thus, they are allowed to determine how many fish each person catches. Students have been working in class cutting pieces of material to help them understand mathematics problems. They are making their own manipulatives.

What This Task Accomplishes

This problem allows students to define the task by allowing different people to catch different numbers of fish. Each individual may catch up to three fish.

What the Student Will Do

Students will give different people in the boats different numbers of fish and determine how many total fish were caught. In fact, most children gave each person one fish. There were a few that said people caught no fish, an interesting observation given that this was not an explicit part of the instruction.

Time Required for Task

Cutting out the material and pasting took some time, but they were able to do the rest of the problem in about 30 minutes.

Interdisciplinary Links

This task can be used with units on science, social studies and art

Teaching Tips

The use of manipulatives was very important to my students in solving this problem. Many of the children's solutions were very nicely done.

Suggested Materials

- Material to cut (to make boats and fish)
- Paper
- Pencil
- Manipulatives (if you do not want to take the time to let the children cut out and make their own material)

Possible Solutions

Any number between zero and 36 is appropriate as long as no person catches more than three fish.

Benchmark Descriptors

Novice
The student writes that there are three boats with four people in each boat. S/he says that each caught one fish. The student seems to understand the problem, but then says the total number of fish caught is six. The solution is wrong, given the assumptions the student made. The mathematical reasoning is wrong.

Apprentice
The strategy here is appropriate. The student notes four people in three boats, and all of them got one fish. S/he then says that there are 11 fish, even though his/her picture shows 12. S/he did not count correctly.

Practitioner
This solution may be borderline between Practitioner and Expert. The student has a clear understanding of the problem and uses two strategies. There are two solutions - putting one fish on each pole and using the formula. The explanation is clear.

Expert
Unlike others, this student allows some to catch two fish, while others catch one or none. This indicates a deeper understanding of the problem, with more refined and complex reasoning. The explanation is clear and effective and the drawing shows the student's reasoning.