

Name: Leta Roberts
Hooker Elementary School
Cool Tools to Solve Challenging Word Problems

ONE HUNDRED HUNGRY ANTS

Grade Level/Subject:

Grade Level: 2, 3

Subject(s):

- Mathematics/Arithmetic
- Mathematics/Process Skills
- Language Arts/Literature/Children's Literature

Topic: This is a problem solving math lesson based on the story, One Hundred Hungry Ants by Elinor Pinczes. Students learn how to find math combinations that lead into the early multiplication and division lessons.

Objectives (P.A.S.S.): Grade 2

Standard 1.1 Describe, extend and create patterns.

Standard 1.2 Formulate and record generalizations about number patterns.

Standard 5.1 Collect, sort, organize and display data in charts, bar graphs, and tables.

Standard 5.2 Summarize and interpret data.

Select and use an appropriate method, materials and strategy to solve problems, including mental mathematics, paper and pencil and concrete objects.

Objectives:

1. Students will be able to find the factors of a number by organizing counters into equal rows.
2. Students will be able to work cooperatively in groups to complete a problem solving worksheet.

Introduction:

Materials:

- One Hundred Hungry Ants by Elinor Pinczes
- 150 pennies for each group of students
- overhead projector
- pencils
- scrap paper
- 150 Pennies Worksheet

Today we are going to begin our math lesson a little differently; we are going to begin by reading the book, One Hundred Hungry Ants by Elinor Pinczes."

Instructional process:

After the story is read, show the ant formations on an overhead projector as a review. "The 100 hungry ants broke into two groups of 50, then four groups of 25, five groups of 10, and lastly 10 groups of five." Today's lesson will have students working in small groups to find the factors of 150 by creating various row arrangements. "You are going to be thinking like the smallest ant in the story to solve today's activity. You are going to see how many equal row arrangements you can make with 150 pennies! You will have 20 minutes to work in groups of three to figure out how many combinations you can come up with." Then show students the worksheet they have to complete for the activity. Go over all the directions. The worksheet information can be presented on an overhead projector so that students can follow along with the teacher's directions.

"Each member of the group will have a job. One member of the group is going to be the materials person; this person is responsible for getting the materials for the group and returning all of the materials when the activity is finished. The materials person is also responsible for making sure that the materials are not being misused. Another person in the group is going to be the recorder; this person is responsible for writing the group's answers on the worksheet. However, during this activity, the recorder is not going to be the only one writing information and ideas on paper; everyone in the group will be solving the problem. The recorder will then copy the ideas from the scrap sheets and record them on the worksheet. A third person will have the job of being the presenter. Once the activity is completed, the presenter will come to the front of the class and present the group's findings and the strategies their group used to solve the problem."

"I will group you into groups of three. Remember that we are working in groups and we must remember the group rules. Everyone must use indoor voices, respect others and the materials that you are working with, and everyone must participate. Right now I would like the materials person from each group to come to the front table to get a bag of pennies, a worksheet, and a piece of scrap paper for the three people in your group. When I say "begin," you are going to get started. The first thing your group needs to do is to write your group members' names on the worksheet."

Students at work: At this time students are working diligently as a group to figure out how many different ways they can arrange the 150 pennies in equal rows. At this time the teacher is walking around the room, offering hints to the groups that are having trouble, offering encouragement, and making observations.

Closure:

When the time limit is up, get the class's attention to signal that everyone needs to remain quiet for further directions. Begin by asking all materials people to put their pennies back in the baggies and return them to the front table. Students will stay seated in their groups, and the teacher will call the presenter from each group to tell the class the number of combinations their group figured out. The groups will then tell the class the strategies their group used to solve the problem. Once the presenters have presented, they will staple their group's scrap paper and worksheet together and set them on the front table.

Assessment:

The homework assignment will be to find the factors for the number 80. Once the children have come up with the factors, they are to write a story to go along with the factors that they found. They can share their stories during the next class period.

Modifications/Accommodations:

Technology Integration Scenarios:

1. To integrate technology into a classroom with only one computer and a projector, the teacher could create a visual representation of how the "One Hundred Hungry Ants" made it to the picnic. The best way to show the students would be by using Microsoft PowerPoint to create a slide show showing all the of the row formations that the ants used to make it to the picnic.
2. A cluster of computers in a classroom, along with a projector, are easily integrated into this lesson. As the students are working in groups on this problem solving activity, each group would have a computer in front of them. The students would then type their answers and findings onto a computer based worksheet, or just on a blank word processing document. With their typed answers, the students could show their group findings to the class by creating a PowerPoint presentation.
3. If a computer lab is available, students could use the Math Blaster software program. The students will be able to take their beginning knowledge about early multiplication and gradually increase their multiplication facts in a mathematically successful and fun program.

Reflection:

- Some students found one of the number combinations and did not try to find others, and some found the other combinations but not have an organized strategy for doing so.
- Some of the students found several number combinations but lacked seeing the relationship between the number combinations and multiplication . For example: Knowing that pennies could be arranged in 3 rows of 50 but not noticing that 3 multiplied by 50 equals 150 and that this relates to 3 multiplied by 5.
- A few students found all possible combinations and were aware of the relationship between the numbers and multiplication.

This was a good activity to help the students realize that there is an association between adding and multiplying.