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Mathematics: The Language of STEM

100 Hungry Ants Going to a Picnic

CONTENT AND TASK DECISIONS

Grade Level(s): Kindergarten

Description of the Task: Students will count 100 ants going to a picnic. They will count the ants one by one and place them in groups of ten and count by tens from there to 100. They will point to each ant as the name the corresponding number that goes with it.

Indiana Mathematics Content Standards:

K.NS.1: Count to at least 100 by ones and tens and count on by one from any number.

K.NS.4: Say the number names in standard order when counting objects, pairing each object with one and only one number name and each number name with one and only one object. Understand that the last number name said describes the number of objects counted and that the number of objects is the same regardless of their arrangement or the order in which they were counted.

Indiana Mathematics Process Standards:

PS.4: Model with mathematics.

Students will use the ants to describe various ways of counting to 100. They will use different methods to count to 100 and will communicate with others on how they organized their ants.

PS.7: Look for and make use of structure.

Students will look for a pattern while counting to 100. They will organize their ants into groups of 10 to 100.

Mathematics Content Goals:

Students will count to 100 by using ants. They will count to 100 by ones and tens. They will place their ants in groups to get to 100. They will use the number names when counting each ant to 100.

Language Objectives:

Speaking - Students will count to 100 and match number words with objects while counting.

Materials:

- 100 Hungry Ants book
- ant manipulatives - enough for 100 for each group of students
- picnic manipulatives
- camera to take a picture of each group's ants lined up

THE LESSON

Before: This phase of the lesson should be designed to get students ready for problem solving. It also provides an opportunity for you to find out what they already know about the topic. Describe how you will accomplish each of the following in this phase of the lesson:

- **Activate prior knowledge** (including the specific questions you will ask to raise students' curiosity and activate or determine their prior knowledge),

Start off by reading the book, *100 Hungry Ants* by Elinor Pinczes. Introduce vocab words like picnic and ants. Discuss with students about why the ants are in a line and going to a picnic. Ask students to observe how the ants are walking to the picnic during the story and how they are changing their groupings.

- **Be sure the problem is understood, and**

Students will be counting to 100 by ones and tens. They will be counting by using the ant manipulatives and naming the numbers of the ants as they are counting. They are lining up their ants so that their ants can get to their picnic “faster”. Students will be in groups of 2 or 3, counting out the ants together as a team. They can first count by ones. Then, they can line the ants up in groups of 25, 20, and then 10. They will move each ant as they say that number name. They will have to count, discuss, and explain with each other how they can line up their ants so that the ants could get to their picnic faster.

- **Establish clear expectations** (including the specific expectations you have for students to record their mathematical thinking in writing or drawing).

I want students to work in groups of 2 or 3 to solve this task. They are expected to work together, counting, and lining up their ants to get to their picnic. When they have finished each “line up” of their ants, they should take a picture to discuss with the class at the end of this task.

During: This phase of the lesson should be designed for students to explore the focus task. Describe specifically what the students will be doing in this phase. Include a description of how the students will record their mathematical thinking in writing or drawing throughout the investigation. Describe how you will accomplish each of the following in this phase of the lesson:

- **Let go,**

Students will begin counting out the ants and lining them up.

- **Listen actively,**

The teacher will be listening (in each group) for:

- Students that are talking with each other, Students that are working together in their group
- Students counting to 100 by ones
- Students counting to 100 by tens
- Students using number names and motioning to each ant as they use that number name when counting
- Students discussing other possible “line ups” to get their ants to their picnic faster
- Students taking pictures of their various lines to show all possible lines

- **Provide appropriate support** (including the specific questions you will ask to focus students’ thinking on the critical features of the task or to help students who are stuck), and

The teacher will ask questions such as: What will you do first? How are you going to line up your ants now? What number comes after “x” (if there is trouble counting to 100)? What is another way you can line up your ants? Why?

- **Provide worthwhile extensions.**

What are some other ways you can line up and count your ants? What if you had more than 100 ants coming to the picnic? What if the ants are in between two different picnics? How would you count and break up your ants to go to either picnic?

After: In this portion of the lesson, students should work as a community of learners, discussing, justifying, and challenging various solutions to the problem all have just worked on. Here is where much of the learning will

occur. It is critical to plan sufficient time for a discussion and make sure the During portion does not go on for too long. Describe how you will accomplish each of the following:

- **Promote a mathematical community of learners** (Describe how the students will present their solution strategies. How will you organize the discussion to accomplish the mathematical goals? Which solutions will be shared and in what order?)

I want students to present their pictures to the whole class to examine. I want students to carry on a discussion about how their “line ups” of their ants are similar/different to their own lines in their groups AND to other groups of students’ lines. I want to start with the students that struggled with this task first and work up to the ones that were able to try many different “line ups”. They will talk about the process - what they did first, next, and last. Students will finally talk about improvements they would make to have the ants get to their picnics faster. Other students will quietly listen and will be able to ask questions during the presentations.

- **Listen actively without evaluation** (How will you respond to students’ presentations of their solutions?)

I will ask questions such as: What did you do first when counting your ants and lining them up? What way did you try next? Which “line up” would allow the ants to all arrive at the picnic the fastest? Which “line up” would slow the ants down to getting to their picnic?

- **Make connections** (What questions will you ask to help students make sense of the mathematics, make connections, see patterns, and make generalizations?)

Did you notice any patterns when you were counting to 100 by ones or tens? When is there a time in your life that you need to be able to count to at least to 100? When is there a time when you need to count by tens to 100? Why is it important to point/motion to objects you are counting? What are some objects that you need to count? (examples: counting money, counting any objects that you might have/need counted, separating things evenly into groups of 10, etc.)

- **Summarize main ideas** (How will you formalize the main ideas of the lesson? How will you reinforce appropriate terminology, definitions, or symbols?)

From this lesson, students will demonstrate how to count to 100 by ones and tens. They will point to objects (ants) and use their number names while counting them.

ASSESSMENT

Observe: Describe how you will observe students to gather evidence about what they are learning, and describe the specific evidence of mathematical understanding that you will look for in your observations.

I will observe students counting to 100 by ones and tens. I will look for students to point to the ants as they are naming the numbers. I will look at the students’ pictures to see how they lined up their ants to demonstrate counting to 100.

Ask: List the specific questions you will ask students to assess their learning.

Sentence Structure: I counted to 100 by making _____ (groups) lines of _____ ants in each (group) line.