

Picnic Field Day

Summary

This activity uses the book *100 Hungry Ants* to help students learn to complete partitive divisions problems.

Main Core Tie

Mathematics Grade 2

[Strand: GEOMETRY \(2.G\) Standard 2.G.2](#)

Additional Core Ties

Mathematics Grade 2

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(2.OA\) Standard 2.OA.4](#)

Materials

- 30 cookies
- 30 laminated cookies
- *One Hundred Hungry Ants*
, by Elinor J. Pinczes
- 100 plastic ants
- [100 Hungry Ants recording sheet](#)
- Five food baskets one per group
- Sets of laminated [Picnic Foods](#) (30 grapes, watermelon, cookies, sandwiches, and chips)
- [Picnic Food Question Cards](#)
- [Food Plan Recording sheet](#)
- [Picnic Games Question Cards](#)
- [Game Plan Recording Sheet](#)
- [Picnic Pass Paper](#)

Additional Resources

Books

- *One Hundred Hungry Ants*
, by Elinor J. Pinczes; ISBN 0395631165,

Background for Teachers

There are two types of division problems: *Measurement Division* and *Partitive Division*. It is critical teachers understand the difference between the two types of problems because children typically solve the problems in very different ways.

Measurement Division problems state the total number of objects and the number of objects in each group. The unknown is the number of groups. (e.g. There are eighteen marbles. Each bag holds six marbles. How many bags are there?)

Partitive Division problems state the total number of objects and the number of groups. The unknown is the number of objects in each group. (e.g. There are eighteen marbles and three bags. How many marbles are in each bag?)

In this activity students are asked to complete *Partitive Division* problems.

Intended Learning Outcomes

5. Understand and use basic concepts and skills.

Instructional Procedures

Invitation to Learn

Show the class a plate of real cookies. Tell them that you want to share with a group of people and ask them if they have any ideas on how you could share. Listen to several ideas. Set the plate of cookies aside and start the lesson.

Instructional Procedures

Separate your class into four groups: one group of 10, one group of five, one group of three and one group of two. Have each of the groups sit together where they can see all of the other groups. If you have extra students, they can be your cookie experts and help you write answers on the board. Divide your chalkboard or whiteboard into four sections labeled 10, 5, 3, and 2. Do only one group, starting with the group of 10. Using your *30 laminated cookies* ask the students to discover how they will share the cookies equally among the group. Have your cookie experts record all strategies for dividing the cookies among the group. Repeat for each group. Discuss how the size of the group affected their fair share. Which group would they want to be a part of? At the end you could use your whole class as the group you pick to share with. Give each student a cookie as his or her fair share.

Divide the students into small groups. Give each group one set of 100 plastic ants and each student a copy of the *100 Hungry Ants recording sheet*.

Read *One Hundred Hungry Ants*. As you read the story, stop each time the ants divide and have your students model the division with their plastic ants. Allow them time to draw a representation of how the ants divided into groups. Have them record this on their *100 Hungry Ants recording sheet*. When you have finished reading the story ask students if there are any other ways that the ants could divide into equal groups.

After you have read the story invite your class on a "picnic." Provide five baskets of food; place one type of food in each basket. Use real food, plastic food, or the pictures of food that are provided. (five foods copied on colored sheets, laminate and cut out). As a review and to model the [Picnic Food Question Cards](#), divide the chips together as a class. Model how they could divide the 30 chips between ten, five, three, and two friends. Model how to record the question and the strategies used to solve it.

Divide your class into four groups. Provide each group with one basket, related *Picnic Food Question Cards* and [Food Plan Recording Sheets](#) to record their solutions. Students are to work together to solve the problem and record their solutions. When all groups are finished the baskets can be rotated to the next group.

Tell the class, now that we have eaten, it is time for the picnic games. Divide your class into five groups. Pass out the [Picnic Game Question Cards](#) one to each group, and a [Game Plan Recording Sheet](#) one per student. Pass out manipulatives to represent the students playing the game. Students are to work together to solve the problem and record their solutions. When all groups are finished the questions can be rotated to the next group.

Ask students what food would you bring to the picnic to share? Allow them to choose their own number and item to bring. If they cannot think of one, provide the students a choice of a food item and the amount that they will bring. If you provide them a number it should be multiples of two, three, five, or 10 (e.g., six, eight, 10, 12, 15, 20, 21, 25, 27, or 30). Students should write the food they are bringing, the amount they are bringing, and how they will divide it on their *Picnic Pass Paper*.

Extensions

Curriculum Extensions/Adaptations/ Integration

Use the picnic pass food items and numbers that students chose (without solutions)

Have students pull problems from your Picnic Pass collection to solve. They may solve the same

way or use a different number of friends to share with.

Have a monthly Division Jar. Place items in the jar to divide as a class. Keep a Journal of what was in the jar and how it was divided. Keep in mind the larger the number the more time you will need to divide it as a class.

Divide your class into groups, and have them line up for recess. Say, "I will take the class to recess when you are divided into even groups of two (three, five, or 10). Only choose one number per day and choose a number that works with your number of students. Have a few children stay out if the numbers require it.

Family Connections

Send home a number. Invite students to divide their number as many ways as they can with someone at home. (60, 90, 120, and 150 are large numbers that are divisible by two, three, five, and 10)

Send the division jar home with students. Have them return it with items to divide and share. Remind students that the items will not be returned.

Assessment Plan

Check individual work as students divide the ants. Are they able to divide when the specific model or picture is given?

Check the students' *Picnic Pass Papers*. What number did they choose and how did they divide the objects. Do they show understanding of the concept?

Bibliography

Research Basis

Carpenter, T.P., Frank, M.L., Jacobs, V.R., Fennema, E., & Empson, S.B. (1999). *Children's Mathematics: Cognitively Guided Instruction*, Heinemann, Portsmouth, NH. 33-52.

Children typically begin to solve *Partitive Division* problems with direct modeling. Students will often deal objects into groups however, many do not deal systematically one by one. Children often rely on trial and error rather than counting strategies such as repeated addition and doubling, which is typical for students solving *Measurement Division* problems. Base ten manipulatives can be helpful for children solving *Partitive Division* problems. They will often begin by separating the tens and unbundling the remaining ones.

Mulligan, J.T., Mitchelmore, M.C., (1998). Young children's intuitive models of multiplication and division, *Journal for Research in Mathematics Education*, Volume 28.3 p. 309-330.

Students intuitively link multiplication and division problems together. The teacher's task is to assist students as they widen their repertoire of calculation strategies. First, teachers should provide word problems that allow students to use direct modeling strategies. Next, students should be encouraged to use grouping strategies such as repeated addition or doubling. Finally, when students display competency using initial strategies, the standard operations can be introduced.

Authors

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