Get Them All

Summary

Students will develop a number sense through recognition and practice with benchmark numbers.

Main Core Tie

Mathematics Grade 2
Strand: OPERATIONS AND ALGEBRAIC THINKING (2.OA) Standard 2.OA.1

Additional Core Ties

Mathematics Grade 2
Strand: NUMBER AND OPERATIONS IN BASE TEN (2.NBT) Standard 2.NBT.7
Mathematics Grade 2
Strand: NUMBER AND OPERATIONS IN BASE TEN (2.NBT) Standard 2.NBT.9

Materials

- *One Hundred Hungry Ants*
- *Magic School Bus Gets Ants In Its Pants*
  100 plastic ants

What Makes 10?

- *What Makes 10? Mat*
  Base ten blocks

Close to 100

- *Close to 100 Game Cards*
- *Close to 100 Scoresheets*

Salute!
  Salute with 1s, 10s, and 100s

Additional Resources
Books

- *Magic School Bus Gets Ants In Its Pants*
  , by Joanna Cole; ISBN 059040024X
- *One Hundred Hungry Ants*
  , by Elinor Pinczes; ISBN 0395631165

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Additional Media
  100 plastic ants, available from http://www.realcooltoys.com/index.html, Item ACC-08919
  Base ten blocks, available from www.educatorsoutlet.com, variety of blocks available
  Math Activities with Base 10 Blocks–Addition and Subtraction, available from www.educatorsoutlet.com, Item #10657
  Salute with 1's, 10's and 100's, available from www.enc.org, ENC #012273

Background for Teachers

Students need to develop number sense through recognition and practice with benchmark numbers. Having a firm understanding of tens and hundreds will help students be more skilled in both addition and subtraction. It will help them see the relationships between the four operations. It will also help them to become mathematical problem solvers, and to understand how and why numbers and math work as they do.

Intended Learning Outcomes

1. Demonstrate a positive learning attitude toward mathematics.
2. Become mathematical problem solvers.
3. Reason mathematically.

Instructional Procedures

Invitation to Learn

Read *The Magic School Bus Gets Ants In Its Pants* aloud to the class.

Scatter 100 plastic ants on the floor or desks in the classroom. Instruct students to hurry and get them all! They can't leave one ant on the floor or soon there will be thousands of ants invading the classroom!

Have each student gather some ants, then take them back to their desks and carefully count how many they have. Tell them that you know there were 100 ants originally. Students must figure out how they can tell if they have really gotten them all. Hopefully, they will come up with the idea that they can put together all their groups of ants and find a total.

Journaling: Students record the ideas in their journals.

Instructional Procedures

Ask students what math operation is used to put together all the groups and find a total? Review addition vocabulary of addends and sum. Tell students that each group of ants is one of the addends, and that when all addends are put together, they should get a sum of 100.

Have students call out the number of ants they each have and write a column addition problem on the board or overhead. Have the class help add them together. Hopefully this will be a little bit difficult for them. Tell students that they will learn strategies for making addition easier today.

Read *One Hundred Hungry Ants*. As you read, write each situation as an addition problem on the board.

Have students regroup their ants so they get numbers that are easier to add (e.g., they might put them into groups of 5, 10, 20, or 25's).

Students repeat step 2 and see how much easier it is to add up the ants.

Teach or review the concept of "benchmark" numbers—numbers such as 10s, 25s, 100s, etc. that are easy for us to work with and understand. We often use them to estimate in real life. Do several examples of column addition together to help them practice finding combinations of addends that give benchmark numbers.

Complete the next three activities to reinforce number sense with benchmark numbers.

What Makes 10

Start this activity using base ten blocks and the *What Makes 10? Mat* . Do each problem on the overhead and have students use the manipulatives at their desks.

The task is to find out how many more you need to make 10 each time you place a certain number of blocks on the mat.

Sample problem 1: Place 5 blocks on the mat, ask "What makes 10?" Have students give answers out loud, and then prove their answers by continuing to place blocks on the mat until all the spaces are filled up. Continue doing this and expand it to make multiples of 10.

Sample problem 2: Place 2 base ten sticks and 3 blocks on the mat. Have students predict what multiple of 10 they will have when they complete "What makes 10?"

After students understand the concept and have practiced it with manipulatives, it is quick and easy to use fingers to do this activity. Whenever you have a few seconds to fill, hold up some fingers and then ask, "What makes 10?" Extend it to multiples by flashing 10, 20, 30, then hold up three fingers and ask "What makes 10?" "That ten makes what?" (40)

You can also play *What Makes 10?* with a deck of playing cards with face cards removed. Shuffle the deck and deal out all the cards between two to four players. Players lay out the first nine cards in a 3" x 3" grid. Each player tries to find combinations that make 10. For each card taken, replace it with the next card from the hand. Play continues for two minutes. The player with the most correct combinations wins.

Close to 100

Adapted from *Investigations in Numbers, Data, and Space*, by Dale Seymour Publications.

Students play in pairs so you need one deck of cards for each pair of students. Each deck consists of 44 cards—four of each of the digits 0-9, plus four "wild cards." Each individual player needs a *Close to 100 Scoresheet*.

The object of the game is to create two digit numbers whose sum is as close to 100 as possible. Each game consists of five rounds.

For Round 1, deal six cards to each player. Players choose any four of the cards to make two 2-digit numbers that, when added together, come as close as possible to a total (sum) of 100. Wild cards may be assigned any value. Each player records his/her numbers and the total on his/her *Close to 100 Scoresheet*. The player's score for the round is the difference between that total and 100. The used cards are discarded, and the two cards remaining in each hand are kept for the next round.

For Rounds 2 through 5, deal out four new cards to each player and repeat the steps in Round 1.

At the end of five rounds players total their scores. The player with the lowest total wins the game.

Salute!

This game can be adapted to play and practice with addition, subtraction, or multiplication.

Arrange students into groups of three, one student is designated as the "calculator." Play three games so each student has a turn to be the calculator.

Cards are divided equally between two players.

One game consists of five rounds. This can be adjusted to fit shorter or longer time periods.

For each round, the calculator says "Salute!" The other two students salute each other by taking the top card off their pile without looking at it and holding it up to their foreheads face out. The calculator then announces the sum of the two numbers. The players look at each other's cards and race to determine the value of their own card.

Example: Johnny holds up a 30 and Susie holds up a 9. The calculator announces 39. Johnny figures out that his card must be 30 since Susie's is 9 and announces 30. He wins and collects both cards.

The winner is the player with the most cards collected at the end of the designated number of rounds.

Switch roles until each student has had an opportunity to be the calculator.

This game can be adapted to play and practice with addition, subtraction, or multiplication.

Extensions

Use *One Hundred Hungry Ants* as a connection between repeated addition and multiplication. It is an excellent introduction to the meaning of multiplication.

Use the revised version of the children's song "The Ants Go Marching One by One" to review addition concepts.

(Complete original words and music are available at: http://www.niehs.nih.gov/kids/lyrics/antsgo.htm)

To the tune of "The Ants Go Marching One by One"

Oh when we add we get them all, the sum, the sum

Oh when we add we get them all, the sum, the sum

Combine the addends and total them up
It works just fine if you mix them up
So when you add you must make sure you get them all
Add, Add, Add, Add, Add, Add, Add, Add!
Do other sums with the song.
Example:
The ants go marching 30 by 30 Hurrah, hurrah
The ants go marching 30 by 30 Hurrah, hurrah
Let's find which addends we can add up
To get the sum we must hurry up
And the ants go marching 30 by 30 by 30 by 30
add, add , add, add, add, add, add, add, add!

- Bring an ant farm for students to observe in the classroom.
- Do a unit on ants during science. Have students write math problems using ants and ant behaviors (e.g., There were 235 ants in the ant farm. We added 47 new ants. How many ants are now in the ant farm?).
- Create a detailed closeup drawing of an ant as it would look under a magnifying glass. Use a magnifying glass shape as the frame, do the actual artwork in a 6" diameter circle and glue it onto the frame where the glass would be on a magnifying glass.

Family Connections

Send a letter home to families explaining the concepts you are studying. Encourage families to go outside together and find an ant colony to observe and make up problems about the ants as they watch them.

Assessment Plan

- Monitor students as you do the activities to assess understanding. Evaluate the *Close to 100 Score Sheets* to see how accurate the problems and solutions are.
- Construct quizzes with column addition and have students show or write which combinations of addends they looked for to make benchmark numbers.

Bibliography

Research Basis

Walsh, S. (2000). How To Add, Subtract, Multiply, and Divide Natural Numbers Online at http://faculty.ed.u,uc.edu/-swalsh/Math%20Articles/ASMD.html
This article explains the history of math and how the standard algorithms came into existence. It also explores the reasons why algorithms are important and the concept that before algorithms are taught, students need to have a thorough understanding of the process of the operation and how and why it works.
Raimi, R.A. (2002). On Algorithms of Arithmetic, Department of Mathematics, University of Rochester, Online at: www.nychold.org/raimi-algs0209.html
This article explores why students still need to learn to perform basic mathematical operations rather than relying solely on calculators. Raimi draws an interesting comparison between walking and driving a car. After cars were invented, people did not completely quit walking. People choose whether to walk or drive by doing what makes the most sense for the situation. He suggests that we teach students the same concept in math—use the method that makes the most sense.

Authors

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