1 BRIDGES IN MATHEMATICS

GRADE 1 SUPPLEMENT

Set A2 Number & Operations: Numerals to 1,000

Includes

Skills & Concepts

★ read aloud numerals from 0–1,000

★ analyze the magnitude of digits through 999 on the basis of their place values

Bridges in Mathematics Grade 1 Supplement
Set A2 Numbers & Operations: Numerals to 1,000

Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

Set A2 ★ Activity 1

ACTIVITY

The Digit Switcher

Overview
An imaginary, math-loving friend writes letters to the class to help children learn to read and understand 3-digit numerals.

Skills & Concepts
★ read aloud numerals from 0–1,000

★ analyze the magnitude of digits through 999 on the basis of their place values

You'll need
★ class number line (see Set A1, Activity 1)

★ letters from the Digit Switcher (see Advance Preparation)

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Advance Preparation Each time the Digit Switcher pays a "visit" to your class, you'll need to write a short letter for her (or him). The first time, you might write a letter similar to the one shown below. Put it in an envelope addressed to the children in your room and arrange with someone from the office to deliver it during Number Corner, or fasten it to board where it will catch students' attention when you meet in your discussion circle.

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Instructions for The Digit Switcher

1. Open the letter and read the first part to your students. Stop right before the list of numerals. Doubtless, the children will be intrigued and curious about this mysterious friend, her/his whereabouts, and how she/he knows about them, so take a minute or two to discuss their questions. Explain that you don't know much more than they do, but you can share the list of numbers the Digit Switcher sent.

> Dear First Graders,
>
> My name is Digit Switcher. I'm very shy, so you'll never see me, but I love math! My favorite trick is making numbers bigger. I know today is your 13th day of school. Thirteen is a good number, but try these on for size!
>
> 113, 213, 313, 413, 513, 613, 713, 813, and 913
>
> See you later, alligators!
> D. Switcher

2. Write the number 13 on the whiteboard or a piece of chart paper. Then list the Digit Switcher 's "bigger numbers" underneath, taking time to help your students read each one as it's recorded: one hundred thirteen, two hundred thirteen, three hundred thirteen, and so on. (Be sure children don't insert the word "and" between the hundreds and the tens as they read these numbers. "And" is reserved for decimal numbers alone. For instance, 4.13 is read as "four and thirteen hundredths", but 413 is read as "four hundred thirteen".)

Activity 1 The Digit Switcher (cont.)

3. Once you've listed all the numerals and read them with your students, ask children to comment on the list. What do they notice about these numbers? Which digits remain the same each time? Which digits change? What is the place value of the digit that changes from one number to the next?

```
13
113
213
313
413
513
613
713
813
913
```

> **Students**   *They all have 13 in them! That funny lady must really like 13.*
> *They go 1, 2, 3, 4, 5, 6, and like that at the beginning.*
> *Those are hundreds, like 100, 200, 300, and 400. She keeps making the hundreds get higher and higher.*
> *Do you think we'll get another letter tomorrow?*

4. Arrange for the Digit Switcher to "visit" your class from time to time up through the 99th day of school. Be as creative as you like with the letters you write and the ways in which they're delivered to your classroom. Each time, include a list of numerals based on the number you'll be entering on the class number line that day. You don't have to limit yourself to a single sequence of numbers, though, and you don't have to list them in order every time. On the next page is an example of a letter you might write later in the school year, after the Digit Switcher has paid several or more visits.

Activity 1 The Digit Switcher (cont.)

Dear First Graders,

Hello, Dearies! It's me again, Digit Switcher, with some new numbers for the 64th day of school. Are you ready? Watch while your teacher writes these on the board, and read them with her.

464, 764, 964, 164, 264, 564, 164, 364, 664, and 864

Now see if you can help your teacher put them in order. Which number is smallest? Which is biggest? How do you know?

After awhile, crocodiles!
D. Switcher

Extensions
- Talk about the hundreds, tens, and ones places in the numbers the Digit Switcher sends. Then introduce the idea of analyzing the magnitude of the digits in some of the numbers on the basis of their place values. For instance, what does the 7 mean in the number 764? Is it the same as the numeral 7 all by itself? No! The 7 in 764 means 7 hundreds or 700 because it's in the hundreds place. The 6 in 764 means six tens or 60 because it's in the ones place. The 4 in 764 is in the ones place, so it really does just mean 4. Return to this idea each time the Digit Switcher sends a new list of numbers for the students to read.
- After the Digit Switcher has sent several note to the class, have him or her start switching the value of the digits in the tens and/or the ones place in some of the numbers. If he/she sends a note on 87th day of school, for instance, it might include 187, 287, 386, 487, 547, 682, 787, 827, and 934.
- Put up a mailbox for the Digit Switcher and invite children to write letters back to her/him. Students might include some of their favorite 1, 2, and 3-digit numbers in their notes, and explain why they like those numbers so much. They might also include other things they know about math, because the Digit Switcher loves all kinds of math. Story problems, Friday Figuring charts, hand-written equations, or other mathematical discoveries would all be appreciated.

Set A2 ★ Activity 2

ACTIVITY

3-Digit Shuffle

Overview
Students draw numbered index cards from a deck and place them in a pocket chart to form and read 1-, 2-, and 3-digit numerals.

Skills & Concepts
★ read aloud numerals from 0–1,000

★ analyze the magnitude of digits through 999 on the basis of their place values

You'll need
★ 10–13 3" × 5" index cards (see Advance Preparation)

★ a pocket chart

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Advance Preparation Use a wide-tipped permanent marker to write a numeral on each of the ten cards from 0 through 9. You may want to laminate these cards. You may also want to make 3 place value cards (1s, 10s, 100s) for some of the extension activities.

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Instructions for 3-Digit Shuffle

1. Gather children to your discussion circle. Seat them in such a way that volunteers can make their way up to the pocket chart and everyone has a good view of the chart. Show them the 10 index cards you've prepared. Then mix the cards and fan them out in your hand in such a way that students cannot see the writing on them.

2. Invite a volunteer to pick a card from your hand and post it in the pocket chart. Have the class read the numeral together, and then choose another volunteer to choose a second card. Ask him or her to post it in the pocket chart to the left of the first card, leaving no space between the two. Work with the class to read the 2-digit number that results.

3. Ask a third volunteer to choose a card and post it in the pocket chart to the left of the first two cards. Work with the class to read the 3-digit number that results. Then remove all 3 cards and go through the progression again as students read the numbers and share any observations they may have.
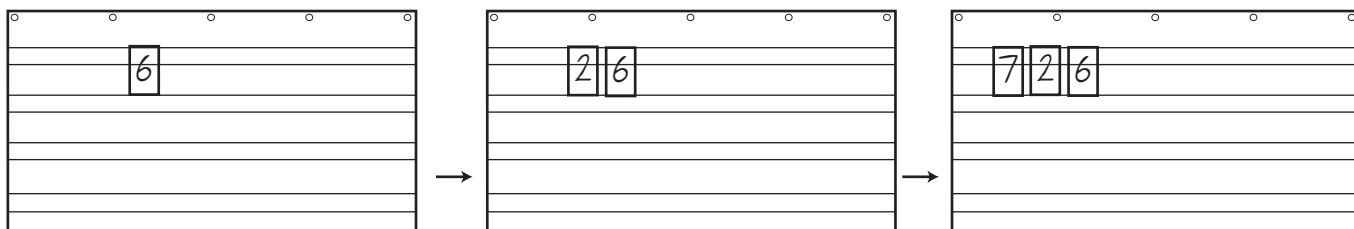
Students *First it was 6. Then it was 26 because Marco got a 2.*
*Yep, that made it into 26.*
Then Siri got a 7, and that put on some hundreds, so it's 726 now.
The numbers get bigger and bigger every time you put one on.

Activity 2 3-Digit Shuffle (cont.)

4. Have three more volunteers pick cards from your hand to build a new progression of numerals in the second row. Then repeat the steps one more time to build a third set of numerals in the third row. If a student choosing the third card for any of the sets draws a 0, ask him or her to put it back in your hand and draw a different card.
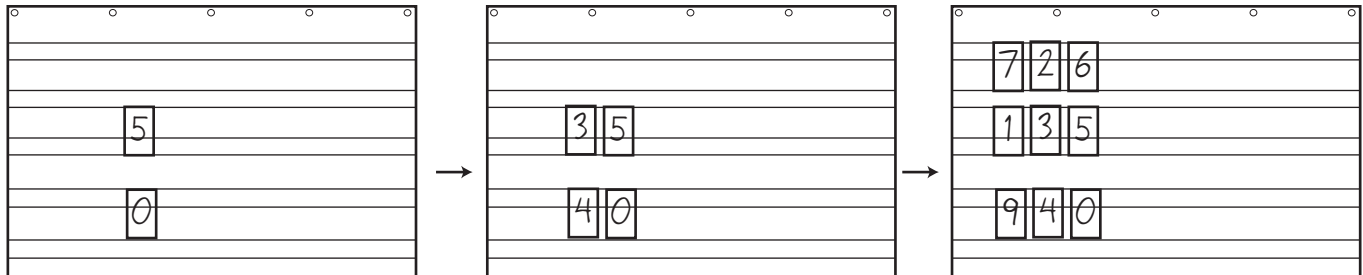
5. Read the three 3-digit numerals over again with your class. Then remove all the cards from the pocket chart, mix them up, fan them out in your hand, and play the game again.

Extensions

- Before you remove the cards from the pocket chart, ask students to compare the three 3-digit numerals. Which is greatest? Which is least? How do they know?

  Students *I think the one with the 9 in front is the most biggest, because 9 is bigger than the others.*
 *Yep, that's nine hundred forty. It's way bigger than the others.*
  The one with the 1 in front is smallest because that's for 100. The 7 is for 700, and the 9 is for 900.

  Then work with help from the class to shift the three 3-digit numerals in the pocket chart so they're positioned in order from least to greatest.
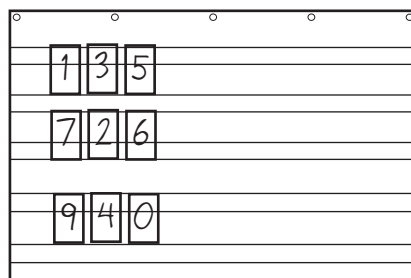
- Explore some of the other numerals that can be formed with each set of three cards in the chart. What if you switch the 1 and the 3 in the first numeral? Have a volunteer make the trade and then read the numeral that results with the class. Is it the same as it was?
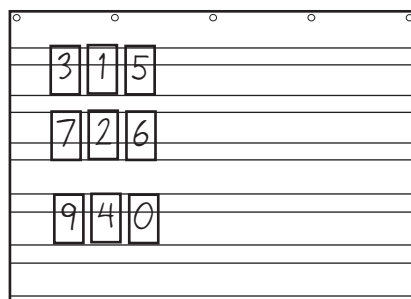
Activity 2 3-Digit Shuffle (cont.)

> **Students** *Now it's a three hundred number.*
> *I think it's the same because it's still a 1 and a 3 and a 5. They're just mixed up.*

• Ask students to determine the lowest and the highest numbers that can be made with each set of 3 cards in the pocket chart.

• Use the digit cards and 1s, 10s, and 100s cards to explore the idea of place value. It may be very intriguing to some children to consider that the value of the 2 in 762 changes to 20 in 726 and 200 in 276.

100s	10s	1s
7	6	2

→

100s	10s	1s
7	2	6

→

100s	10s	1s
2	7	6
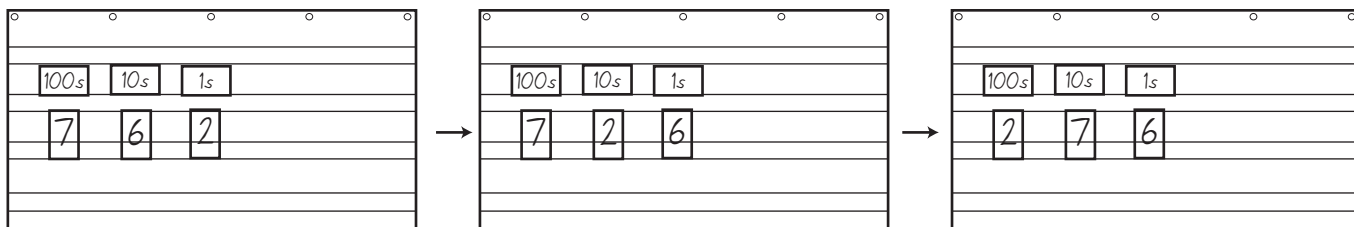
• You can also use these cards to build various 3-digit numbers and ask students to tell you what the value of each digit is.

100s	10s	1s
5	8	4
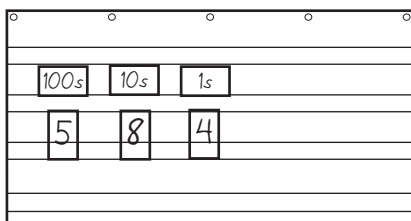
> **Teacher** *Here's a new number. Let's read it together.*

> **Students** *Five hundred eighty four.*

> **Teacher** *What does the 5 in this number mean? Does it mean the same thing as 5 cookies on a plate?*

> **Students** *No! It means 500 because it's in the hundreds place!*
> *You'd have to get 500 cookies!*
> *If you put it in the ones place it would be like 5 cookies.*

Set A2 ★ Activity 3

ACTIVITY

Numerals in the News

Overview
Students read 3-digit numerals in the context of facts about their daily lives and the world that surrounds them.

Skills & Concepts
★ read aloud numerals from 0–1,000

You'll need
★ whiteboard and markers

Advance Preparation Each time you do this activity, you'll need to record a fact on the board using a format similar to the one below.

An adult orca whale is about _____ inches long. Hint: It's greater than 300 inches and less than 400 inches

Any fact you choose should involve a 3-digit numeral, and include a hint about the range. You might write facts about your school (how many students, how many inches from your classroom to the office door, how many people can be seated in the cafeteria at one time, and so on). Other good topics include your local community, plants, animals, children around the world, and so on. There are lots of good resources on the web for finding science, history, cultural and current events facts that involve numbers, and your school librarian might serve as a good resource as well. Depending on the facts you choose, you might also gather a few simple resources to set the context. For instance, a photo or line drawing of an orca whale and a ruler marked with inches would add a little more life and interest to the above fact. (By the way, an adult orca whale is about 396 inches, according to the Enchanted Learning web site at www.enchantedlearning.com.)

Insructions for Numerals in the News
1. Read the fact with your students, and share any supporting materials you may have gathered. Call on 3–4 volunteers to guess the missing number. List the guesses on the board. If students' guesses aren't always within the range you've specified, don't worry about it. Any guesses at all will provide numeral reading opportunities.

> **Students** I think 350 inches.
> I think 100 because that's a lot.
> I guess 325.
> I think it's going to be 400.

Activity 3 Numerals in the News (cont.)

An adult orca whale is about _____inches long.

Hint: It's greater than 300 inches and less than 400 inches

Guesses:
350 inches
100 inches
325 inches
400 inches

2. Have the class read each of the guesses aloud with you. Then write the correct answer in the blank and read the entire sentence with the class.

Extension

• Assign one student each week to bring in a fact that includes a 3-digit numeral (see sample letter below). Let that student share his or her fact at the designated time and choose volunteers to supply guesses, while you do the recording and lead the class in reading the numerals.

Dear Families,

We are learning to read 3-digit numbers this year. Pleae help your child find a fact that includes a 3-digit number. You and your child can look in the newspaper, on the Internet, or in a library book to find a fact. Then have your child complete this sheet and send it back to school. Be sure to include a hint and the answer. You can also send a photo or picture about the fact if you like.

Here's an example:
The tallest tree in the world is _____ feet tall.
Hint: It's greater than 350 feet and less than 450 feet.
Answer: 367 feet (Mendocino Redwood)

My Fact: _____

Hint: It's greater than _____ and less than _____

Answer: _____