Making Digi Patterns

Grade 1

Lesson 117

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guides:*

Book I: Unit 2-4, Relating Single Blocks to Packed Blocks, pages 43-47
Unit 2-5, Grouping by Tens to Count, pages 48-49

Book II: Unit 2-4, Relating Single Blocks to Packed Blocks, pages 37-40

Lesson Overview

Students use single blocks and blocks-of-10 to create patterns. They organize the blocks in the place value view to find the total number.

Objectives

Thinking Skills: Students make connections between the place value view of a number and the counting view of a number.

Mastery Skills: Students learn to describe and make repeating patterns. They learn to organize the blocks by: packing as possible, sorting by size, ordering left to right, and setting the digit cards.

Materials

Pairs of students need:

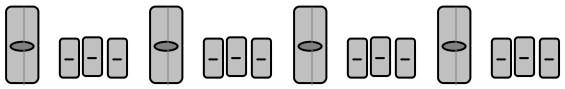
- 1 block-of-100 (Students can unpack to get the blocks they need for their pattern.)
- 1 (0-100) number line
- 2 activity sheets per student
- Digi-colored markers or Digi-Block stamps

Class Introduction (15 minutes)

Look for and identify some patterns in the classroom. Discuss as a class what it means for something to be a "pattern" and come to a consensus on a definition.

Have a student volunteer create a pattern with the blocks. Encourage him/her to describe the pattern. Repeat with one or two more student volunteers.

Set up the following pattern using blocks on the overhead or on the table or floor so all the students can see:

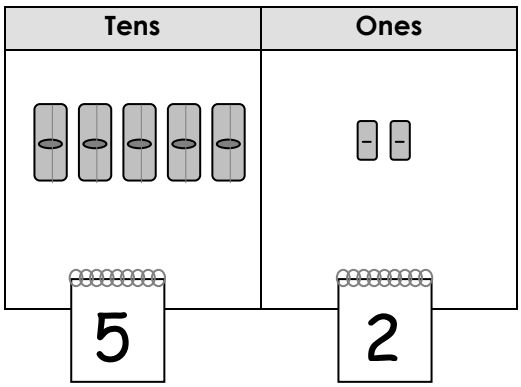


Ask, **How would you describe this pattern?** (1 block-of-10, then 3 single blocks, etc.)

Pass out the activity sheet. Have students draw or stamp the pattern on their activity sheet. Model as needed.

Tell the students that you want them to organize the blocks on a place mat. Ask a student to demonstrate the following steps. Have the student:

- Pack as much as possible.
- Sort the blocks by size.
- Put all the bigger blocks to the left of the smaller blocks.
- Set the digit cards to show how many there are of each size.



Have the students draw or stamp the blocks for this number in the blank place value mat on their activity sheet.

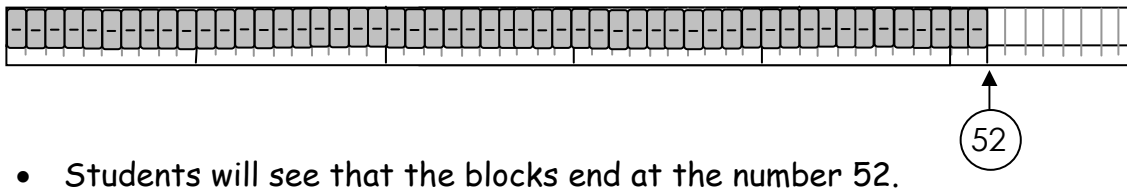
Although the total number for the collection is 52, students may not know that this number reflects the total number of single blocks in the collection. Hold up one of the single blocks and ask, **How many single blocks are in this entire collection of blocks?**

- Some students may say that there are 2 single blocks in the collection. If so, they may count the 2 single blocks showing to explain their thinking.
- Open a block-of-10 and explain that you want to know **how many single blocks are showing AND how many are hidden inside the blocks-of-10.** Explain that you want to know the total number of single blocks in the collection.

Ask students how they could count all the single blocks in the collection. Have students model different methods:

- Count by tens and ones (10,20,30,31,32,33,...39).
- Open the covers to see the single blocks inside and then count them all (1,2,3,...39) or count them by tens and ones.
- Unpack all the blocks and then count them all by ones (1,2,3,...39)

Now, have a student unpack the blocks and place them on a number line to be sure they counted correctly.



- Students will see that the blocks end at the number 52.
- Discuss how this number is the same as when the blocks are organized on the place mat.

Try other patterns. Have students describe the patterns and determine the total number of blocks by organizing them on the place value mat. They can also unpack their blocks to count and place them on a number line.

Activity (20 minutes)

Pass out materials. Have students work with a partner to:

- Create a pattern.
- Copy the pattern on their activity sheet by drawing or stamping the blocks.
- Organize the blocks on the place mat to determine the total number of blocks in their collection.
- Write the total number of single blocks used.

Closure (10 minutes)

Have students describe their patterns with the class. Ask students to explain how they determined the total number of single blocks in their pattern. Encourage other students to guess the next block in each other's patterns.

Show students an organized collection of blocks on a place value mat. For example, show 4 blocks-of-10 and 8 ones. Ask students to predict where the blocks would end if you unpacked them and placed them on a number line. Have them record their predictions in a mathematics journal or on a blank sheet of paper.

Assessment

As students work, observe and note the following. Do they:

- Use blocks to create a pattern?
- Accurately copy their pattern on the activity sheet?
- Organize their blocks on the place value mat?
- Understand that the organized collection of blocks represents the total number?
- Use other counting methods to find the total number? Do they count by tens and then by ones to find the total number? Do they unpack all the blocks and count them all to find the total number?
- Unpack all the blocks and put them on the number line to find the total number?
- Make the connection between the place value view and the counting view of a number?

Extensions

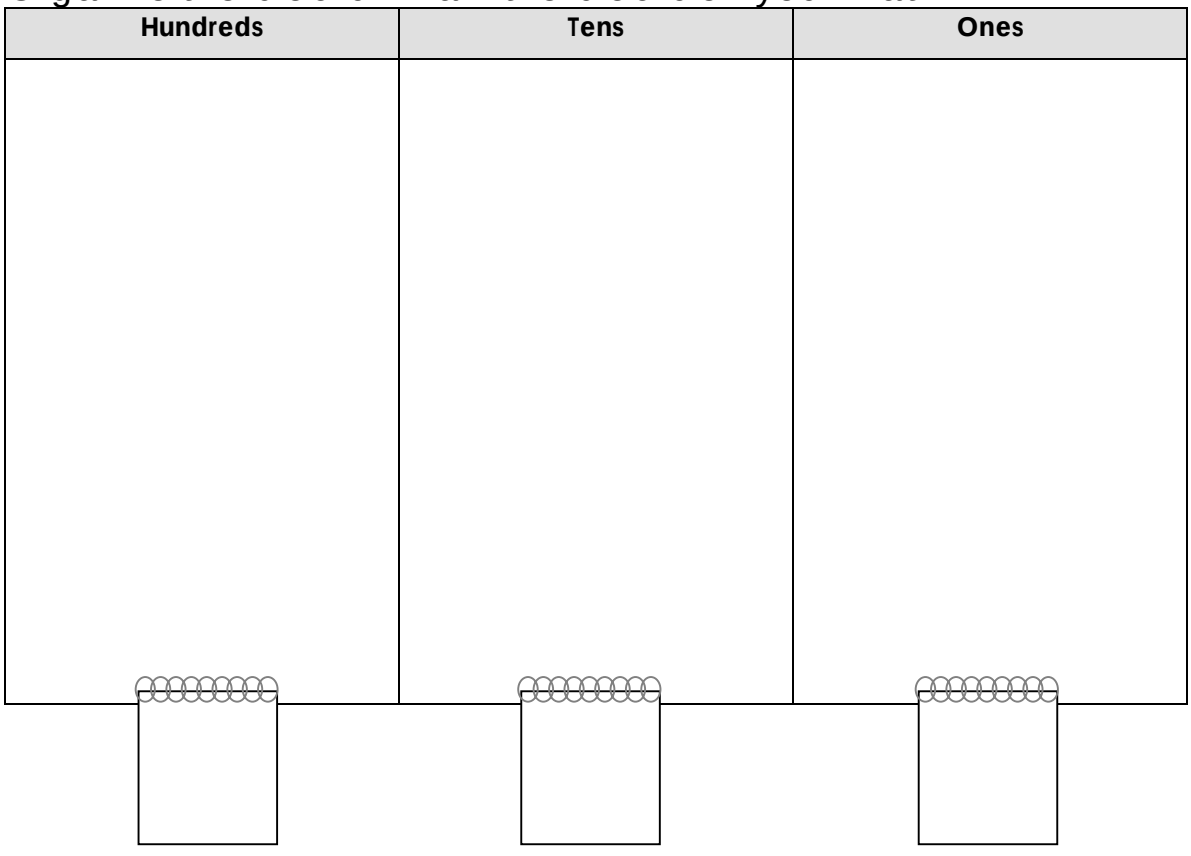
- Create a pattern bulletin board. Students can add patterns they find in magazines and patterns they create. Encourage students to use the blocks to create patterns and to copy their patterns on blank sheets of paper.
- Have students create patterns with blocks-of-100 as well as blocks-of-10 and single blocks. Discuss counting methods and place value methods for determining the total number of single blocks in these collections/patterns.
- Have students create patterns in their free time and record their patterns on blank paper. Look over student-created patterns and select appropriate ones to share with the class. Have students recreate the patterns depicted in order to determine the total number of blocks.

Names _____

Making Digi Patterns

Make a pattern with blocks. Draw or stamp your Digi pattern.

Organize the blocks. Draw the blocks on your mat.



How many single blocks are there in all? _____