Two Ways To Take Away

Grade 2

Activity 212

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

Overview

Student pairs solve subtraction problems in two different ways – using the number line and unpacking/removing blocks. They compare answers and determine that they get the same results.

Objectives

Thinking Skills: Students reflect on the process of subtraction as they model problems in two different ways. They explore the connection between the two views of number (counting and place value).

Mastery Skills: Students learn to subtract blocks from numbers < 50. Students compare models for subtraction and determine that they will result in the same answer.

Each group of 4 students needs:
- 1 "Two Ways to Take Away" Activity Sheet 1
- 1 "Spinner" with a paper clip and a pencil *(Note: Spinners need to be cut out ahead of time.)*
- 100 single blocks
- 10 small holders
- 1 Place mat with digit cards
- 1 Number line (0-50)
- Have counter(s) and counter mat(s) available for student use

For closure, each students needs:
- 1 "Two Ways to Take Away" Activity Sheet 2

Class Introduction   (15 minutes)

Have blocks, holders, a counter, and number lines displayed. Read the problem:

> **Margo has 46 blocks. She gave 32 blocks to Sam. How many blocks does Margo have now?**

- Have the students express the problem with numbers:

46 – 32

- Have the students share their thoughts about whether Margo will have more or less than 40 blocks. Say, **It seems that most of us agree that Margo will have fewer than 40 blocks. But there are lots of numbers that are less than 40! Does anyone have an idea about exactly how many blocks Margo will have? We call this a *prediction*.**
- Students may have been exposed to the term, prediction. Explain that it may be helpful for them to picture the blocks in their minds and imagine what they think will happen to help them name the exact answer. (Note: See the Teacher's Guide - Book II, page 87, or Book III, page 68 - for more details. Although predicting is an integral part of the Digi-Block Program, it is not the emphasis of this lesson.)

Students need to have ample experience with the blocks, as in this lesson, prior to being asked to make predictions.)

Ask, **How can we use these materials to solve this problem?** Have students discuss materials they would use and how they would use them. Have volunteers describe and demonstrate their strategies for the class to observe.

- Be sure to include using the number line, or two number lines to show the counting view of subtraction. Children might choose to:
  - o Place 46 blocks on the number line, then remove and count back 32 blocks to show the remaining 14 blocks.
  - o Place 46 blocks on the number line, remove the blocks from 0 to 32, then slide the remaining blocks to the left to show 14 remaining.
- Have students model the problem in the place value view (that is, using packed blocks) using the Counter and Counter mat or Place mats.
  - o Students make 43 with 4 blocks-of-10 and 3 single blocks. Next, they remove 3 blocks-of-10 and 2 single blocks to show 1 block-of-10 and 4 singles remaining.

Ask, **What do you notice about our answers? Are they the same even though we used different strategies? Is this a coincidence? Were we just lucky? Why are they the same? If we show a different take-away problem do you think we'll get matching answers again?** Explain that mathematicians often solve problems in different ways to check their answers.

Refer to students' prediction(s) and ask, **How does our prediction compare with the actual answer?**

Repeat the activity presenting a problem that requires regrouping, such as:

Shani counted 42 blocks on her desk. 26 of her blocks fell on the floor. How many blocks are on her desk now?

- Have students model the problem in two ways, and draw attention to the renaming of 42 as 3 blocks-of-10 and 12 ones. Explain that there are still 42 blocks, but they are just not packed as much as possible.

Organize the students in teams of 4. Within each team, children work in pairs. Pairs write their names on their recording sheet. Explain the activity, "Two Ways to Take Away:"

- One team member spins the spinner two times to determine the minuend and subtrahend. Be sure to remind students to compare the numbers and take the smaller number from the larger. (If they are unsure of this, it will be quite evident once students are using the blocks.) Pairs record the numbers on their activity sheets.
- One pair of students solves the problem using a number line while the second pair of students solves the same problem by using packed blocks. Agree ahead of time which partners will use the number line, and which will unpack blocks. Have them check the appropriate box on their sheet.
- After modeling the problem, pairs of students within each team compare answers and discuss any differences that may have occurred.
- Repeat the activity 3 more times, allowing each team member to be the "spinner."

Have pairs switch materials and model the remaining 4 problems. Again, have pairs within each team compare answers after each problem is modeled.

 Have students study their activity sheets. Ask questions, such as:

- **Which way of modeling a problem worked better for you? Why?**
- **Did both pairs on the team get the same answer? Why? Did any team get different answers to the same problem?**
- **Which problem was hardest? Easiest? Why?**

Have students answer the questions on the "Two Ways to Take Away" Activity Sheet 2 independently.

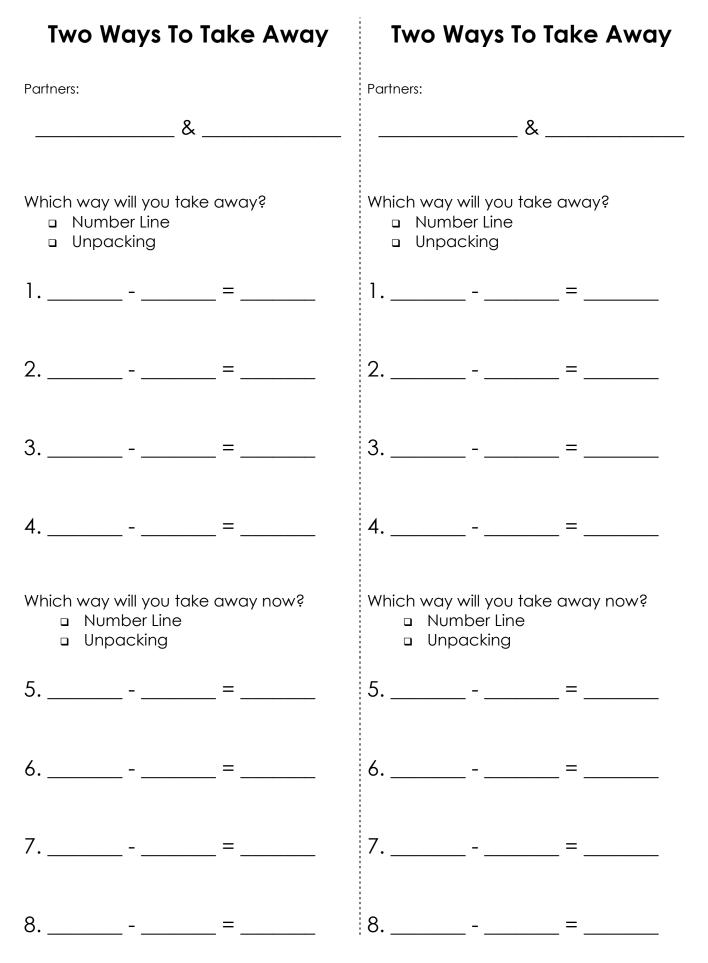As students are working, observe and note:
Do they-

- Arrange the two numbers in a number sentence so that the larger is the minuend and the smaller is subtracted from it?
- Know how to represent the minuend (larger number) using the number line or packed blocks?
- Take away the correct number of blocks, unpacking a block-of-10 when needed?
- Name the final answer with accuracy?
- Shift from model to model with ease and understanding?
- Explain how and why they get the same answers using different models for subtraction?

For those students who are ready, ask them to make predictions before they actually take away the blocks. Note their strategies and reasoning for making predictions.
- How accurate are their predictions? Do they show understanding of the regrouping concept?
- Do they rely more on the number line model (counting back) or the place value model (unpacking) to make predictions?

Extension

❑ Repeat the activity, adjusting the numbers on the spinner so they are more challenging. Be sure to provide more blocks as well! Use the 0-100 number line by connecting the 0-50 and 51-100 lines with a paper clips.

Two Ways To Take Away

Partners:

_____ & _____

Which way will you take away?
- ❑ Number Line
- ❑ Unpacking

1. _____ - _____ = _____

2. _____ - _____ = _____

3. _____ - _____ = _____

4. _____ - _____ = _____

Which way will you take away now?
- ❑ Number Line
- ❑ Unpacking

5. _____ - _____ = _____

6. _____ - _____ = _____

7. _____ - _____ = _____

8. _____ - _____ = _____

211 Activity Sheet 1

After Two Ways to Take Away

1. Which way works better for you?
   - ❑ Number Line
   - ❑ Packed Blocks

2. Why do you like that way better? _____

_____

3. Write a problem that your team solved: _____ - _____ = _____

   Draw a picture to show **two ways** that your team solved it:
   Number Line:

   Packing :

   Did you get the same answer both ways?