

Regrouping in Addition

Grade 2

Lesson 213

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

Book II: Unit 3-3 Exploring Addition with the Larger Blocks, pp.64-70

Unit 3-4 Finding Sums, pp.71-75

Book III: Unit 2-2, Adding with Base Ten Representation, pp.49-53

Unit 2-3, Finding Sums, pp.54-58

Lesson Overview

Students build two or three addends with blocks. They combine their blocks and "pack as much as possible" to model addition.

Objectives

Thinking Skills: Students discover and describe patterns in regrouping. They predict when and how to regroup.

Mastery Skills: Students learn to combine packed blocks to add. They learn to distinguish addition problems that require regrouping from those that do not.

Materials

- 1 overhead transparency of the activity sheet (optional)

Each group of 3 students needs:

- 3 blocks-of-100
- 1 place value mat with digit cards

- 2 long pieces of string (approx. 18 inches)
- Activity Sheet 1 (two addends) or Activity Sheet 2 (three addends)

Class Introduction

(10 - 15 minutes)

Have students sit in groups of 2 or 3 depending on the number of addends on their activity sheet. Pass out the materials.

Show students how to set up the Place mat with the digit cards at the bottom and two long pieces of string dividing the mat into a top, middle, and bottom portion. (For just two addends, use one piece of string to divide the place value mat into two sections.) Students will put one addend in each of these positions.

Ask one student in each group to:

- Build the first number (57) with blocks in the top section of the Place mat.
- Make sure they use 5 blocks-of-10 in the tens place and 7 single blocks in the ones place. (Note: If they are unsure, have a student or students model how to count the blocks to prove there are 57 blocks altogether.)

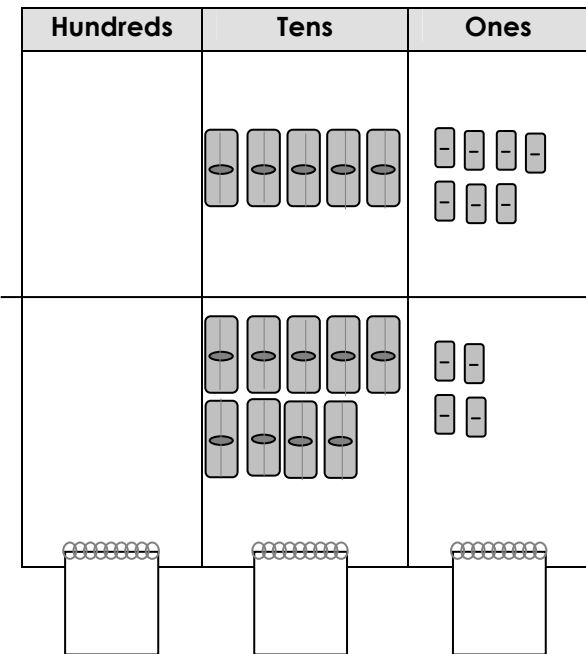
Ask the second student in each group to:

- Build the second number (26 or 94) with blocks in the next section of the Place mat.
- Make sure they use blocks-of-10 and single blocks.

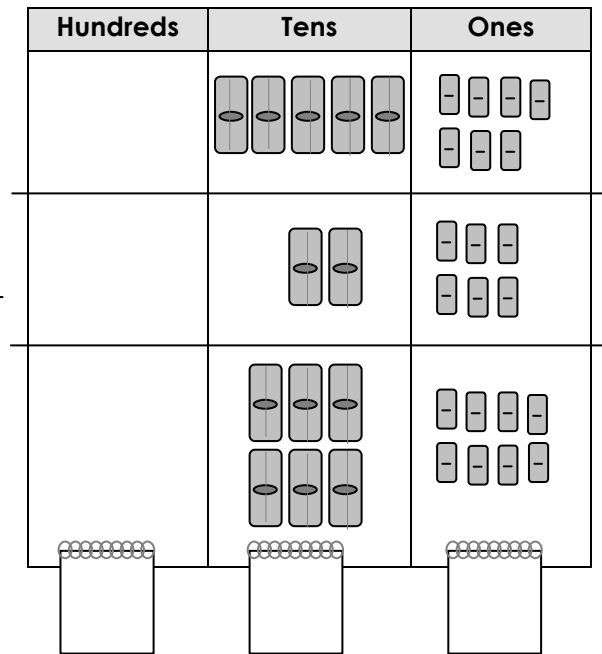
If students are building three addends, ask the third student in each group to:

- Build the third number (68) with blocks in the bottom section of the Place mat.
- Make sure they use 6 blocks-of-10 and 8 single blocks.

$57+94 = ?$



$57+26+98 = ?$



Ask students to think silently and then confer with their group about what they think will happen when they combine all the blocks (i.e., when they remove the string and pack all the blocks as much as possible). After students have had some thinking time, ask students to volunteer their predictions. Ask:

- How many blocks-of-10 do you think you will have altogether?
- Does anyone think we have enough single blocks to pack another block-of-10?
- How many single blocks do you think you will have altogether?
- Does anyone think we have enough tens to pack a block-of-100?

Have students use the digit cards to show their predictions. Then ask them to turn the cards over so their predictions are hidden.

Have students combine their blocks by removing the string and packing as much as possible. Note the following:

- Students will need to pack 1 or 2 blocks-of-10 (regrouping has "occurred").
- They should place the block(s)-of-10 in the tens place.
- Students will need to pack 1 block-of-100 (regrouping has "occurred" again).

- They should place this block-of-100 in the hundreds place.
- Students will have 1 block-of-100, 5 blocks-of-10, and 1 single block.

Ask students to reflect on and record what happened:

- **How many blocks-of-10 do you have altogether?**
- **How many single blocks do you have altogether?**
- **What happened when you had ten blocks in the ones place? You had enough ones to make two new blocks-of-10. This is called regrouping.**
- **What happened when you had ten blocks in the tens place?**
- **Write the total number of blocks on your activity sheet.**

Have students look at their predictions by turning over their digit cards. Explain to students that it is okay to have a prediction different from the answer. Tell students that it is more important to know what they are thinking than to get the same answer. Ask:

- **Did you predict that you would have to pack 1 block-of-100? Why or why not?**
- **Did you predict that you would have to pack 1 or 2 blocks-of-10? Why or why not?**
- **Did you predict that there would be one single block in the ones place when all the blocks were combined? How did you know?**

Have students try the next problem where regrouping is slightly different. Ask students to compare the two examples.

Continue with more examples until all students are confident using packed blocks to model addition.

(Note: Once students understand how to do this activity, they can go to a math center alone or in groups and use the materials to solve the addition problems.)

Activity

(20 - 25 minutes)

Students work in groups of two or three to solve the addition problems. Make sure students record their work on the activity sheet.

Closure

(10 minutes)

Put several addition problems with two or three addends on the board. Ask students to predict the sums and to indicate when they think they will need to regroup (pack one or more blocks-of-100 and/or blocks-of-10).

Assessment

As students use blocks to model addition problems, observe and note the following. Do they -

- Readily build 2-digit numbers with packed blocks or do they need help counting or matching blocks with digits?
- Have a strategy for predicting?
- Predict accurately?
- Do they know when a problem requires regrouping?
- Know how to use the Place mat to model addition?
- Record their work neatly and accurately?

Extensions

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- When students are confident that they can model addition problems with blocks and can make accurate predictions, have them predict several sums and just use the blocks for checking their accuracy. When students are predicting, explain that it is okay to write notes on the problem to help them with their prediction. (Note: This activity helps students connect the blocks to written algorithms.)
 - Have students write or tell a story to match the problems they modeled with blocks.

Regrouping in Addition

Predict the sum. Then use blocks to model the problems.

$$\begin{array}{r} 57 \\ 26 \\ + 68 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 36 \\ 49 \\ + 25 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 72 \\ 77 \\ + 51 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 56 \\ 91 \\ + 62 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 92 \\ 92 \\ + 92 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 35 \\ 80 \\ + 85 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 28 \\ 89 \\ + 78 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 22 \\ 34 \\ + 13 \\ \hline \end{array}$$

Prediction:

Regrouping in Addition

Predict the sum. Then use blocks to model the problems.

$$\begin{array}{r} 57 \\ + 94 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 56 \\ + 25 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 72 \\ + 84 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 38 \\ + 62 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 78 \\ + 78 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 45 \\ + 75 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 46 \\ + 33 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 28 \\ + 64 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 46 \\ + 33 \\ \hline \end{array}$$

Prediction:

$$\begin{array}{r} 28 \\ + 64 \\ \hline \end{array}$$

Prediction: