

SUM IT UP!

NUMBER

- Counting
- Place value
- Addition

Getting Ready

What You'll Need

Base Ten Blocks, 1 set per group

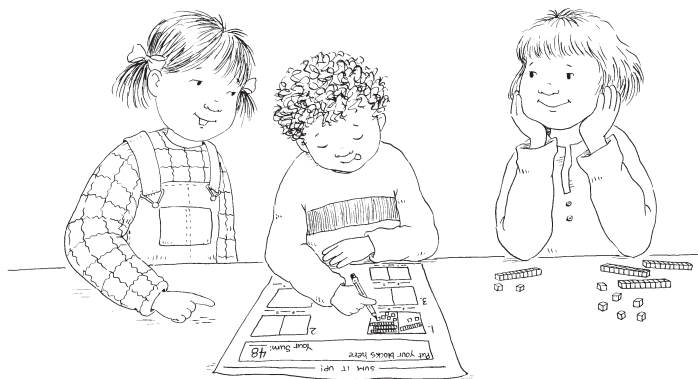
Sum It Up! worksheet, 1 or 2 per group, page 102

Overhead Base Ten Blocks and/or *Sum It Up!* worksheet transparency (optional)

Overview

Children use Base Ten Blocks to model a number as the sum of two addends. Then they find ways to model the same number with different pairs of addends. In this activity, children have the opportunity to:

- ◆ reinforce number recognition
- ◆ use counting and addition skills
- ◆ record the sum of two 2-digit numbers



The Activity

Make sure that children know the meanings of the terms addend and sum. Explain that the answer to an addition example is called the sum and that a sum is the number that results from adding two or more addends at once.

Introducing

- ◆ Display 1 long and 8 units and have children do the same.
- ◆ Count the blocks aloud with the class to establish that they model the number 18.
- ◆ Invite a volunteer to separate the blocks into two groups and name the value of each, saying, for example, "This group has 12 and that group has 6."
- ◆ Now ask the volunteer to push the two groups together. Record an addition sentence for this action on the chalkboard; for example, $12 + 6 = 18$.
- ◆ Invite another volunteer to use 18 units to make and identify two different groups.
- ◆ Ask another volunteer to push these two groups together and record an addition sentence for this action; for example, $9 + 9 = 18$. Elicit that the addition sentences on the board have the same sum, even though they have different addends.
- ◆ Push all the blocks together again. Invite other children to each make two different groups from the 18 and then put their groups together and write an addition sentence to record what they did.
- ◆ Reiterate that all children's addition sentences have the same sum, 18.

On Their Own

How many different ways can you show the same sum with Base 10 Blocks?

- Work in a group of 3. Together make up any 2-digit number.
- Build your number with longs and units. Put your blocks at the top of a worksheet in a box like this.

Put your blocks here.

Your Sum: _____
- Pretend that your number is a sum. Write your sum on the worksheet.
- Show 6 or more different ways to make your sum. Here's how:
 - ◆ Decide which of you will use your longs and units to build 2 groups of addends.
 - ◆ Talk about the value of the blocks for each addend.
 - ◆ Decide which of you will draw pictures of the blocks, 1 group in each box.
 - ◆ Decide which of you will record an addition sentence for what you did.
 - ◆ Use blocks to check your work.
- Take turns building 2 different addends. Take turns drawing and recording, too.
- Compare your addition sentences. Make sure the sums are all the same. Check that the pairs of addends are different.
- Leave your worksheet out so that others can see it.
- Be ready to talk about how you made your pairs of addends.

The Bigger Picture

Thinking and Sharing

Invite groups to exchange worksheets and then discuss among themselves how the other groups built the addends for their sum.

Use prompts like these to promote class discussion:

- ◆ How were your number sentences alike? How were they different?
- ◆ Did your group find all the possible ways to show your sum? How do you know?
- ◆ When it was your turn to build two addends for the sum, what did you think about first?
- ◆ Which job did you like better, building two addends for your sum, drawing the blocks for someone else's addends, or writing the addition sentence? Why?

Writing

Tell children to “sum up” how they decided on a particular pair of addends to build to show their group’s sum.

Teacher Talk

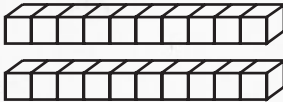
Where’s the Mathematics?

Cooperative learning is the key to successfully completing the *Sum It Up!* activity. Agreeing on a number to model will be each threesome’s first hurdle. Agreeing on who will do what for each combination of addends will be their second. The value of having children work in this way is that each of them gets an opportunity to build different pairs of addends and then draw and record them on their group’s worksheet, thus contributing to the production of a single document. (Groups that find more than six pairs of addends for their sums can use another worksheet.)

The worksheet shown here was produced by one group that “made up” the number 23.

SUM IT UP!

Put your blocks here.





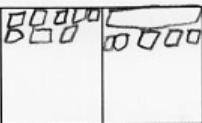
Your Sum: 23

1. 

10 + 13 = 23

2. 

9 + 14 = 23

3. 

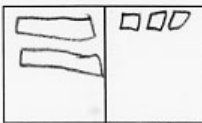
8 + 15 = 23

4. 

7 + 16 = 23

5. 

6 + 17 = 23

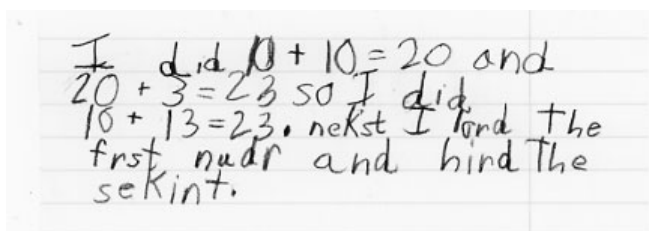
6. 

20 + 3 = 23

Extending the Activity

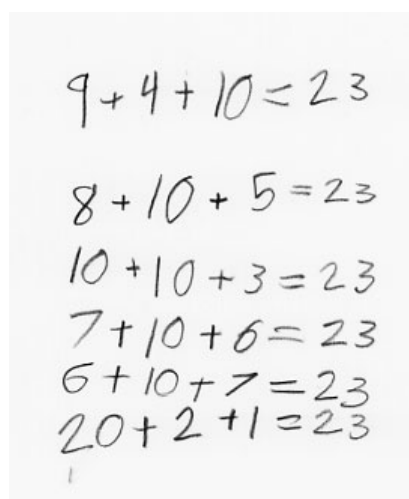
Have children repeat the activity, but this time challenge them to make *three* addends for their group's original sum. (Alternatively, you might suggest that any group whose first sum was small can now choose a sum greater than the first.)

As children try to find all possible pairs of addends for a sum, many of them will decide to start with a particular addend pair and then find another pair by raising one addend by a particular amount and then lowering the other by the same amount, thus being sure to maintain the constant sum. This was clearly the reasoning of the child who wrote the following. He explains in his last sentence: "Next, I lowered the first number and high-ered the second."



I did $10 + 10 = 20$ and
 $20 + 3 = 23$ so I did
 $10 + 13 = 23$. next I lowered the
first number and high-ered the
second.

"Twenty-three" remained a favorite of this child who went on to record trios of *three* addends for this sum.

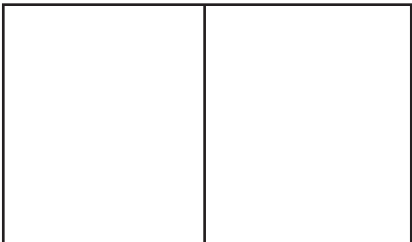


$9 + 4 + 10 = 23$
 $8 + 10 + 5 = 23$
 $10 + 10 + 3 = 23$
 $7 + 10 + 6 = 23$
 $6 + 10 + 7 = 23$
 $20 + 2 + 1 = 23$

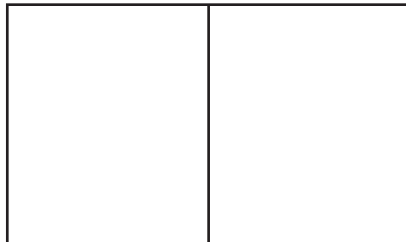
SUM IT UP!

Put your blocks here.

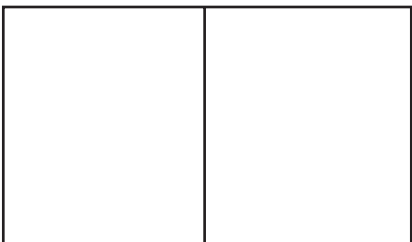
Your Sum: _____

1. 

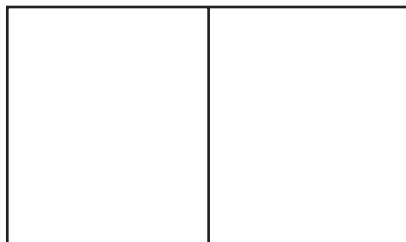
_____ + _____ = _____

2. 

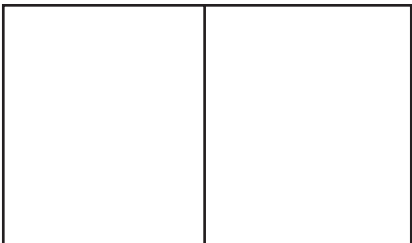
_____ + _____ = _____

3. 

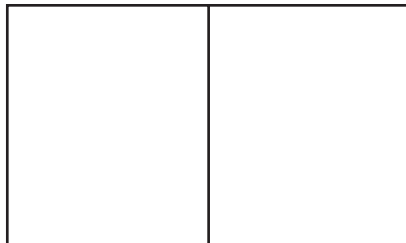
_____ + _____ = _____

4. 

_____ + _____ = _____

5. 

_____ + _____ = _____

6. 

_____ + _____ = _____