

# Measuring for the Art Show

*Addition on the Open Number Line*

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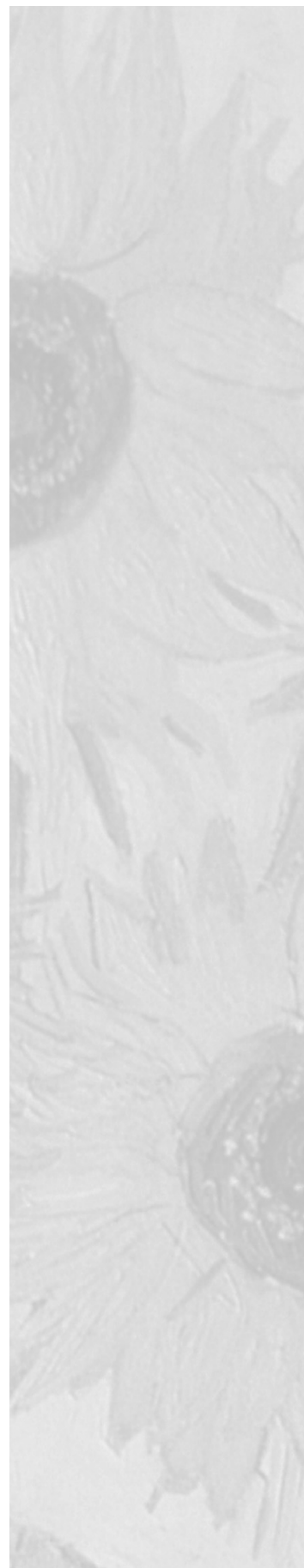
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### *Schools featured in photographs:*

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Read-aloud story, recording sheets, strips of ten, and game materials	



# DAY SIX

## Exploring Addition

### Materials Needed

**Class measuring strip hung across the chalkboard** (this strip now needs to be at least 11 ten-strips long)

**Chart with list of measurements from Day Five**

**Student recording sheet for the two pieces investigation (Appendix E)**—one per pair of children

**Children's measuring strips from Day Five**

**Large chart pad and easel**

**Markers**

**Sets of paper from Day One:**

Blue:

14 cubes by 10 cubes

Purple:

22 cubes by 20 cubes

White:

35 cubes by 40 cubes

Chart paper:

46 cubes by 54 cubes

*Before class, tape two sheets of blue paper together to make a sheet 20 cubes by 14 cubes. Do not overlap the edges when taping.*

**D**ouble-digit addition becomes the focus in this second week. Today's minilesson reviews taking leaps of ten, but in the context of measurement. The minilesson paves the way for the introduction of an addition context: measuring the total length of art pieces that are created on *two* sheets of paper put together. This context encourages children to make use of landmarks and to take leaps of ten as they add. In a subsequent math congress they will share their addition strategies, which will then be recorded on the class measuring strip.

### Day Six Outline

#### Minilesson: Around the Circle, with Measurements

- ☀ Have children add ten to the measurements from the chart created on Day Five and discuss the place value pattern in the results.

#### Developing the Context

- ☀ Explain how new signs are needed for larger pieces of art.
- ☀ Use the class measuring strip to record some of these new measurements and create a chart to keep track of them.
- ☀ Represent the addition as jumps on the measuring strip.

#### Supporting the Investigation

- ☀ Note children's strategies as they work on Appendix E, using the measurement strips as a tool.

#### Preparing for the Math Congress

- ☀ As children make posters of their work, plan for a math congress discussion that will highlight important computation strategies for addition.

#### Facilitating the Math Congress

- ☀ Represent children's strategies as jumps on the class measuring strip.
- ☀ Highlight the use of landmark numbers as a helpful strategy.

## Minilesson: Around the Circle, with Measurements

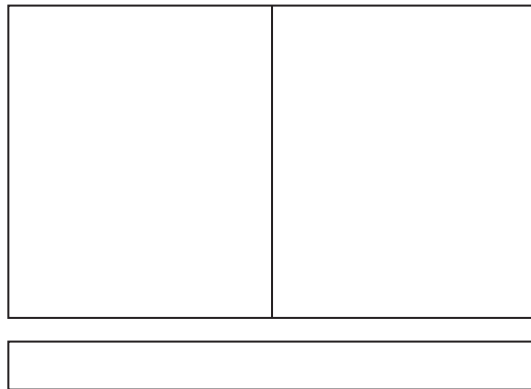
(10–15 minutes)

Gather the children in the meeting area and have them sit in a circle. Have one child choose one of the measurements from the chart, such as 22. Write it on top of a large sheet of chart paper. Go around the circle having each child add 10. Record the results on the chart. For example, if a child chooses 22, you would be recording 32, 42, 52, 62, etc. Continue with a different measurement. Discuss the pattern.

- ☀ Have children add ten to the measurements from the chart created on Day Five and discuss the place value pattern in the results.

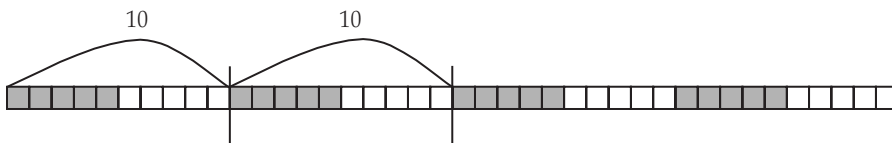
## Developing the Context

Tell the children that you realized that it might be helpful to tape two papers together, because sometimes artists want to make really large pieces of art. Demonstrate with two sheets of the blue paper. Explain that new signs now have to be cut for these situations.



- ☀ Explain how new signs are needed for larger pieces of art.
- ☀ Use the class measuring strip to record some of these new measurements and create a chart to keep track of them.
- ☀ Represent the addition as jumps on the measuring strip.

Above the measuring strip draw the jumps of 10 to represent the two groups of 10:



Start a new chart labeled “Two Pieces Together.” Fill in the chart like this:

Paper	Measurement	Total
2 blue, short side	$10 + 10$	20
2 blue, long side	$14 + 14$	

It is important to draw the leaps above the measuring strip. Although the chart will have a representation of the result of the addition—the answer—the leaps represent the action to derive the answer. Here the measuring strip is beginning to emerge as a number line to record addition strategies. Over time it will become a tool to think with.

## Supporting the Investigation

☀ Note children’s strategies as they work on Appendix E, using the measurement strips as a tool.

**Appendix E** Student recording sheet for the two pieces investigation

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Paper	Measurement	Total
2 blue, short side	$10 + 10$	20
2 blue, long side	$14 + 14$	
2 purple, short side	$20 + 20$	
2 purple, long side	$22 + 22$	
2 white, short side	$35 + 35$	
2 white, long side	$40 + 40$	
2 chart paper, short side	$46 + 46$	
2 chart paper, long side	$54 + 54$	

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Assign math partners and provide each pair with a recording sheet (Appendix E). Have the children move to tables to complete the sheet.

As you observe and confer, take note of which children are reliant on their measuring strip and still need to count by ones, and which are making use of the strategies of adding tens that you have been working on in the minilessons. Remind the children of the minilesson Around the Circle, and encourage them to try adding tens. Remind them of the pattern on the measuring chart from Day Five, i.e., how 32 was 3 ten-strips, plus 2. Suggest that they make the addition friendly either by using some of the extras to get to a full ten-strip and then adding tens or by adding tens first, then the extras. For example,  $46 + 46$  might be solved as  $46 + 4 + 10 + 10 + 10 + 10 + 2$ , as  $40 + 40 + 6 + 6$ , or as  $46 + 40 + 4 + 2$ , etc. Keeping one number whole and taking leaps of ten, moving to a landmark decade, and splitting are important strategies for mental arithmetic.

### Differentiating Instruction

As you observe the children at work, take note of the different strategies they are using. For children who are struggling to count, help them use the measuring strip as a manipulative and encourage them either to count on with it or to make leaps to landmark numbers, using the five- or ten-structure. Encourage those who are already taking leaps to landmark numbers to take even bigger leaps.

## Preparing for the Math Congress

☀ As children make posters of their work, plan for a math congress discussion that will highlight important computation strategies for addition.

Have children make posters of a couple of the strategies they want to share. As they do so, think about how you will structure the math congress discussion so as to focus on computation strategies for addition.

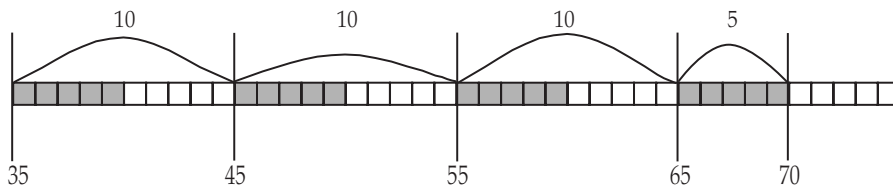
### ■ Tips for Structuring the Math Congress

Consider starting the math congress with a child who is still counting on by ones. Then scaffold the discussion in a way that supports the development of more efficient strategies for addition—for example, by highlighting the work of children who are taking leaps of ten and using landmarks.

## Facilitating the Math Congress

Convene the children in the meeting area to discuss some of the strategies they used. As the children share, record their strategies on the class measuring strip. This representation of the action of the addition serves as an image for discussion of the various strategies. Using the number line model this way is stage two in the development of modeling (see description on pages 8–9).

The figure below is a representation of  $35 + 35$  if a child's strategy was to take leaps of ten and add the remainder of five at the end. Encourage a discussion on how long it takes to count by ones and how it is helpful to use friendly numbers, like tens.



### ■ Assessment Tips

After the math congress, jot down on sticky notes your observations regarding the big ideas you heard individual children express clearly and the strategies they used. Place these on the child's recording sheet along with any other anecdotal notes and put in the child's portfolio. You may also want to photocopy the landscape of learning graphic (page 11) and, for each student, shade in the landmarks as you find evidence in their work. Note the children you are not sure of, for whom you have no evidence. Over the next few days you will want to be sure to observe them at work.

## Reflections on the Day

Today, children were introduced to double-digit addition and encouraged to use several strategies, such as treating one number as a whole and taking leaps of ten, using landmarks, and decomposing using partial sums. These strategies became the focus of a subsequent math congress. The strategies were modeled on the class measuring strip as leaps on a number line.

- ☀ Represent children's strategies as jumps on the class measuring strip.
- ☀ Highlight the use of landmark numbers as a helpful strategy.

