

# Adding with Cubes

## Math Focus Points

- ◆ Using cubes in tens and ones to represent a two-digit number
- ◆ Adding a one-digit number or 10 to a two-digit number
- ◆ Adding a multiple of 10 to a two-digit number

Today's Plan		Materials
<p><b>1</b> <small>ACTIVITY</small> <b>Introducing Adding with Cubes</b></p> <p> </p>		<ul style="list-style-type: none"> <li>• <i>Roll Tens</i> 30, 50, and 100 mats (1 set per student; from Investigation 3)</li> <li>• Number cube; connecting cubes (in towers of 10, sorted by color)</li> </ul>
<p><b>2</b> <small>MATH WORKSHOP</small> <b>Adding with Cubes</b></p> <p><b>2A</b> Adding One to Ten Cubes</p> <p><b>2B</b> Adding Tens</p> <p></p>		<p><b>2A</b></p> <ul style="list-style-type: none"> <li>• <i>Student Activity Book</i>, p. 53 or <b>C83, Addition Recording Sheet</b> Make copies. (as needed)</li> <li>• <b>M15, 100 Chart</b> Make copies. (1 per pair)</li> <li>• <i>Start With/Get To Cards</i> 10–120 (1 deck of 10–90 per pair, decks of 10–100 as needed; from Session 1.1)</li> <li>• Primary Number Cards (1 deck per pair; from Session 3.1)</li> <li>• Connecting cubes (in rows of 10: 90 of one color, 10 of another)</li> </ul> <p><b>2B</b></p> <ul style="list-style-type: none"> <li>• <b>C83, Addition Recording Sheet</b> Make copies. (1 per student)</li> <li>• <b>C84, Multiple of 10 Cards: Set A</b> Make copies. (1 deck per pair)</li> <li>• <b>C85, Multiple of 10 Cards: Set B</b> Make copies. (1 deck per pair; as needed)</li> <li>• <b>M15, 100 Chart</b> Make copies. (1 per pair)</li> <li>• <i>Start With/Get To Cards</i> 1–120 (1 deck of 1–50 per pair, decks of 1–120, as needed; from Session 1.1)</li> <li>• Connecting cubes (in towers of 10: 50 in one color, 50 in another)</li> </ul>
<p><b>3</b> <small>SESSION FOLLOW-UP</small> <b>Daily Practice</b></p>		<ul style="list-style-type: none"> <li>• <i>Student Activity Book</i>, p. 54 or <b>C86, Practice Adding with Cubes</b> Make copies. (as needed)</li> </ul>

## Classroom Routines

**Start With/Get To: Forward or Backward?** Choose both the *start with* and *get to* numbers from a basket holding the numbers 80 to 120. Ask students to find and mark both numbers on the number line. Decide as a class if you will be counting forward or backward (up or down). Count together as a class from the *start with* to the *get to* number. Do this 2–3 times, choosing new numbers each time. You can vary the activity by having students work in pairs. They can count together or say every other number.

## 1

## ACTIVITY



15 MIN



CLASS

## Introducing Adding with Cubes

Present a few problems that involve adding a one-digit number to a two-digit number. Set up 14 cubes of one color on a 30 mat. Ask students how many cubes are on the mat. Then ask them to imagine that you are playing *Roll Tens* and rolled a five.

**We have 14 cubes. I rolled a 5. How could we write an equation to show the problem? [Write  $14 + 5 = \underline{\quad}$  on the board.]**

Add 5 cubes of another color to the 30 mat and ask students to find the new total.

**Students might say:**

“I counted the cubes. There are 10. And then there’s almost another 10, but there are 9, so it’s 19.”



“I counted from 14: 15, 16, 17, 18, 19.”

Repeat this process with the following problems. Record an equation for each problem, and discuss students’ strategies for adding a single-digit number to a two-digit number.

- Set up 34 cubes on a 50 mat, and ask what the total number of cubes would be if you added 5.
- Set up 64 cubes on a 100 mat, and ask what the total number of cubes would be if you added 5.

Next, present a few problems that involve adding a multiple of 10 to a two-digit number.

**Let’s try another problem. Try to imagine what the problem looks like as I explain. I had 28 cubes, arranged in 10s and 1s, just like in *Roll Tens*. Then, [Carol] gave me two more rows of 10.**

Have volunteers retell the story, use cubes in two colors to represent the situation, and write an equation that represents the problem ( $28 + 10 + 10$  or  $28 + 20$ ).

Pairs discuss how many cubes you have now and how they know.

Repeat this process with the following problems:

- Add 3 rows of 10 to 48 cubes.
- Add 2 rows of 10 to 78 cubes.

Record an equation for each problem, and discuss students' strategies for adding a multiple of 10 to a two-digit number.

## 2 MATH WORKSHOP Adding with Cubes



45 MIN

Students practice adding the numbers 0–10 to two-digit numbers and adding a multiple of 10 to two-digit numbers during Math Workshop. Briefly introduce each activity to students.

### 2A Adding One to Ten Cubes



PAIRS

Pairs will need a deck of *Start With/Get To* Cards 10–90, a deck of Primary Number Cards, connecting cubes in towers of 10 (90 in one color, 10 in another color), and a 100 chart (M15) for reference. Each student needs a copy of the Addition Recording Sheet (*Student Activity Book* page 53 or C83).

Players turn over one of the *Start With/Get To* Cards and work together to build that number with cubes of one color. Players then turn over a Primary Number Card and build that number in another color. Finally, partners figure out how many cubes they have altogether. Both students record an equation that shows the problem they solved (e.g.,  $72 + 6 = 78$ ) on *Student Activity Book* page 53 or C83.

### ONGOING ASSESSMENT: Observing Students at Work



Students use cubes to represent and solve problems about adding the numbers 0–10 to two-digit numbers.

- **Can students represent a given number with cubes?**
- **Can students write an equation that represents the problem?**
- **How do students add a one-digit number to a two-digit number?** Do they count from the larger number? Do they count by 10s? By 1s?
- **How do students solve problems that involve more than 9 in the ones place?** Do they count all the 10s, then the 1s? Do they combine ten ones into 10 and then count by 10s?

Name \_\_\_\_\_ Date \_\_\_\_\_  
Tens, Fives, and Ones

### Addition Recording Sheet

Write the equation.

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

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\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

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▲ **Student Activity Book, Unit 8, p. 53; Resource Masters, C83**



## DIFFERENTIATION: Supporting the Range of Learners

Name \_\_\_\_\_ Date \_\_\_\_\_  
Tens, Fives, and Ones

**Multiple of 10 Cards: Set A**

10	10	10	20
20	20	30	30
30	40	40	40
50	50	50	

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▲ Resource Masters, C84

**Intervention** Spend time with students who are struggling to accurately build numbers to assess what they do (and do not) understand about the composition of two-digit numbers. Show them a tower of 10 and ask how many cubes there are. Repeat with 11 and 12 cubes to see if students view them as one ten plus one and one ten plus two. Repeat this with numbers in the 20s and 30s to assess the point at which students revert to counting by 1s. Together, work on problems in that range, working in both directions. Give students a set of cubes and ask how many, and give the students a number and ask them to show it with cubes.

**Intervention** Some students can build numbers accurately, thinking “32 is 3 tens and 2 ones” but then count from 1 when presented with a number to add to 32. Work with these students to count the first number by 10s and 1s. Then, model counting on by 1s to find the total. *We built 32 and 4 more. [Show students the cubes.] We need to add 32 and 4. If this [point to the 32 cubes] is 32, then how many cubes would we have if we added one of these extra cubes [point to one of the single cubes]? (33) What if we added another cube? How many cubes would there be now? (34) Continue until you’ve found the sum, 36.*

**Extension** Students who are ready for a challenge can play with the *Start With/Get To Cards* to 120.

## 2B Adding Tens



PAIRS

Pairs will need a deck of *Start With/Get To Cards* 1–50, a deck of Multiple of 10 Cards: Set A (C84), connecting cubes in towers of 10 (50 in one color, 50 in another color), and a 100 chart (M15) for reference. Each student needs an Addition Recording Sheet (C83).

Player 1 turns over one of the *Start With/Get To Cards*. Partners use one color of cubes to build that number using an arrangement of 10s (either rows or towers) and 1s. Then, Player 2 turns over a Multiple of 10 Card. He or she builds that number in another color with a partner. Finally, partners figure out how many cubes they have altogether. Both students record an equation that shows the problem they solved (e.g.,  $47 + 30 = 77$ ) on C83.

## ONGOING ASSESSMENT: Observing Students at Work

Students use cubes to represent and solve problems about adding a multiple of 10 to a two-digit number.

- **Can students accurately use cubes to represent a given number?**
- **Can students write an equation that represents the problem?**
- **What strategies do students use to add?** Do they group the towers (or rows) of 10 together and then count by 10s or 1s? Do they count up from the first number by 10s (e.g., “47; 57, 67, 77”) or by 1s?

## DIFFERENTIATION: Supporting the Range of Learners

**Intervention** Spend time with students who are struggling to accurately build numbers to assess what they do (and do not) understand about the composition of two-digit numbers. Show them a tower of 10 and ask how many cubes there are. Repeat with 11 and 12 cubes to see if students are seeing them as one ten plus one and one ten plus two. Repeat this with numbers in the 20s and 30s to assess the point at which students revert to counting by 1s. Together, work on problems in that range, working in both directions. Give students a set of cubes and ask how many they have, and give students a number and ask them to show you the number of cubes.

**Intervention** Work with students who need support in counting by 10s. Encourage them to group the towers of 10 together, *and then* to count the cubes together by 10s. (Counting by 10s from a number that is not a multiple of 10 is more challenging than counting all the 10s and then those that are left.)

**Extension** Students who are ready for a challenge can add the *Start With/Get To Cards* to 120 and/or *Multiple of 10 Cards: Set B (C85)* to their decks.

Name \_\_\_\_\_ Date \_\_\_\_\_  
Tens, Fives, and Ones

**Multiple of 10 Cards: Set B**

60	60	60	70
70	70	80	80
80	90	90	90

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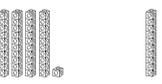
### ▲ Resource Masters, C85

Name \_\_\_\_\_ Date \_\_\_\_\_  
Tens, Fives, and Ones

**Practice Adding with Cubes**

Write the number of cubes. Add.

1.  + \_\_\_\_\_ = \_\_\_\_\_

2.  + \_\_\_\_\_ = \_\_\_\_\_

3.  + \_\_\_\_\_ = \_\_\_\_\_

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### ▲ Student Activity Book, Unit 8, p. 54; Resource Masters, C86

## 3 SESSION FOLLOW-UP Daily Practice



**Daily Practice:** For reinforcement this unit's content, have students complete *Student Activity Book* page 54 or C86.

# Addition Recording Sheet

Write the equation.

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

$_____ + _____ = _____$

Name \_\_\_\_\_

Date \_\_\_\_\_

Twos, Fives, and Tens

# Multiple of 10 Cards: Set A



10	10	10	20
20	20	30	30
30	40	40	40
50	50	50	

Name \_\_\_\_\_

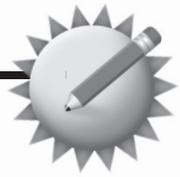
Date \_\_\_\_\_

Twos, Fives, and Tens

# Multiple of 10 Cards: Set B



60	60	60	70
70	70	80	80
80	90	90	90

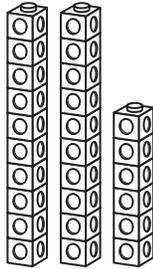


# Practice Adding with Cubes

**NOTE** Students add a one-digit number or a multiple of 10 to a two-digit number.

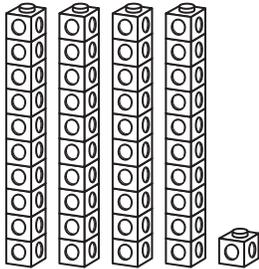
Write the number of cubes. Add.

1.



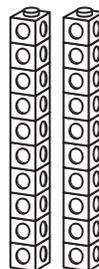
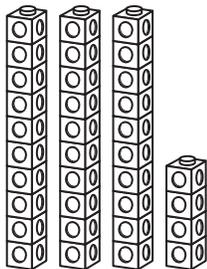
$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

2.



$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

3.



$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$