

How Many Cubes?

Math Focus Points

- Counting by groups of 10s
- Using a number to represent a set of objects
- Comparing two two-digit numbers and using notation ($>$, $<$) to record the results of the comparison

Today's Plan		Materials
1 <small>ACTIVITY</small> Introducing How Many Cubes?	  15 MIN CLASS	<ul style="list-style-type: none"> Roll Tens 50 and 100 mat (1 set per student; from Investigation 3) Connecting cubes (in rows of 10, sorted by color)
2 <small>ACTIVITY</small> How Many Cubes?	  30 MIN PAIRS	<ul style="list-style-type: none"> Student Activity Book, pp. 46–49 or C75–C78, How Many Cubes? Make copies. (as needed) Roll Tens 30, 50, and 100 mat (1 set per student; from Investigation 3) Connecting cubes (in rows of 10, sorted by color)
3 <small>DISCUSSION</small> Comparing Amounts of Cubes	  15 MIN CLASS	<ul style="list-style-type: none"> Students' completed copies of Student Activity Book, pp. 46–49 or C75–C78 (from Activity 2) Connecting cubes (in rows of 10, sorted by color)
4 <small>SESSION FOLLOW-UP</small> Daily Practice		<ul style="list-style-type: none"> Student Activity Book, p. 50 or C79, How Many Cubes? Make copies. (as needed)

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.

Teaching Note

1 Numerals The idea that written numbers communicate information about the value of each place (e.g., $26 = 2$ tens and 6 ones) is difficult for young students. The discussions in this session provide the opportunity to revisit these concepts and connect to, and even extend, the chart you made at the end of Session 3.4.

▲ Student Activity Book, Unit 8, p. 46; Resource Masters, C75

▲ Student Activity Book, Unit 8, p. 47; Resource Masters, C76



ACTIVITY

Introducing *How Many Cubes?*



When you play *Roll Tens*, you collect cubes and put them into rows of 10. To figure out how many cubes there are, many of you have been counting the rows of 10 by 10s, and then any cubes that are left, by ones.

Show 32 cubes on the 50 mat and model this.

We know each row has 10. There are 1, 2, 3 tens. So, to count these cubes, I'd say 10, 20, 30. [Run your finger down each row.] Then I'd count the cubes that are left by 1s: 31, 32. [Touch each single cube.] 3 tens and 2 cubes left make 32. ①

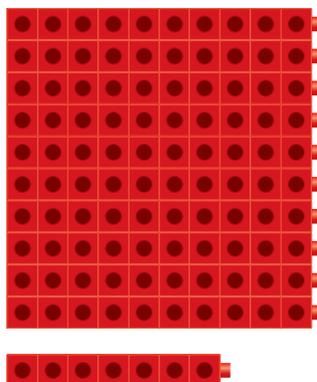
Write 32 on the board.

I'm going to show you a different number on the 50 mat. Talk to your partner about how many cubes you think there are, and how you know.

Show 45 cubes and give pairs time to talk. If you have enough cubes, provide each pair with a set of 110, in rows of 10. If there are not enough, encourage pairs who need them to use cubes to recreate your arrangement.

Record the total number on the board and discuss strategies for counting the cubes. While some students are likely to count by 1s, focus on counting by 10s and then 1s. Counting back from 50 may also come up as a strategy.

Show a few more sets of cubes to students, using numbers greater than 50 (e.g., 68, 83) and the 100 mat. Present at least one problem that involves a number greater than 100 (e.g., 107).



We can't see any of my 100 mat, because these cubes [gesture] cover the whole mat. I left a space here, to show where the mat ends. How many cubes do you think there are? How do you know?

Emphasize the strategy of counting up from 100, but also count all of the cubes by 10s together as a class. Counting as a group often gets students farther in the sequence than they could comfortably count alone. Discuss how to record the number before doing so on the board.

2 ACTIVITY

How Many Cubes?



Explain to students that they will be solving problems like these on How Many Cubes? (*Student Activity Book* pages 46–49 or C75–C78). Instead of actual cubes, students will determine how many cubes are shown in a picture. Review where in the classroom they can look for support about how to write the numbers.

ONGOING ASSESSMENT: Observing Students at Work

Students represent a quantity of cubes, arranged in 10s and 1s, with a written numeral.

- **How do students count the cubes?** Do they count by 10s? Count on or back from a known number? Count by 1s?
- **Are they able to accurately record the number?** Do they consult resources (e.g., the number line) as needed?

DIFFERENTIATION: Supporting the Range of Learners

Intervention Some students may need to replicate the images with actual cubes and *Roll Tens* mats. Work with these students in a small group to use rows of 10 cubes to “build” the problems. As you do so, and as you find the total amount, model and ask students to join you in counting the cubes by 10s and 1s. Some will also need to count the cubes by 1s to double-check or to reassure themselves of the quantity. Encourage students to count by 10s and to support each other as they do so.

Name _____ Date _____
Tens, Fives, and Ones

How Many Cubes? (page 3 of 4)

Write the number of cubes on each 100 mat.

1. 	2. 
3. 	4. 
5. 	6. 

48 Unit 8 Session 4A.1

▲ Student Activity Book, Unit 8, p. 48; Resource Masters, C77

Name _____ Date _____
Tens, Fives, and Ones

How Many Cubes? (page 4 of 4)

Write the number of cubes.

1. 	2. 
3. 	4. 
5. 	6. 

Session 4A.1 Unit 8 49

▲ Student Activity Book, Unit 8, p. 49; Resource Masters, C78

ELL Some students have more success counting in their native language. Work with these students to connect the names of the numbers in their native language to the names of the numbers in English.

Extension Students who accurately complete *Student Activity Book* pages 46–49 or C75–C78 can work with a partner to create problems to trade (e.g., each student makes a cube arrangement, and then determines the number of cubes in their partner's arrangement). They can also explore problems that ask them to work in the opposite direction. Give students or pairs a number, and challenge them to use cubes to represent that number in 10s and 1s.

3

DISCUSSION

Comparing Amounts of Cubes

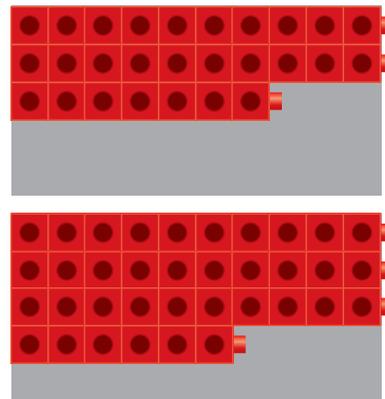


Math Focus Points for Discussion

- ◆ Counting by groups of 10s
- ◆ Using a number to represent a set of objects
- ◆ Comparing two two-digit numbers and using notation ($>$, $<$) to record the results of the comparison

Use cubes to recreate Problem 1 of *How Many Cubes?* (*Student Activity Book* page 47 or C76). Discuss how students figured out the total number of cubes. Leave the cube arrangement together and recreate Problem 2 below. Have a similar discussion.

After discussing the two problems individually, ask students to compare the two amounts.



If we look at both sets of cubes next to each other and compare them, what do you notice? Which has more? Which has fewer? How do you know?

Students might say:



“36 is more than 27. It comes later on the number line.”



“This one fills up more of the mat than the other, so it has to be more.”



“There are more rows of 10 here, so it’s more.”

Use notation to model students’ ideas, using both less than and greater than to describe the relationship between 27 and 36.

$$36 > 27 \quad 27 < 36$$

Repeat this discussion with other problems from *Student Activity Book* pages 47–48 or C76–C77, as time permits.

Wrap up the session by discussing one of the problems from *Student Activity Book* page 49 or C78, which present quantities greater than 100. Model strategies for counting the cubes, and encourage students to count along with you. Discuss how to write numbers greater than 100.

4 SESSION FOLLOW-UP Daily Practice



Daily Practice: For reinforcement of this unit’s content, have students complete *Student Activity Book* page 50 or C79.

Name _____ Date _____

Two, Five, and Ten Daily Practice

How Many Cubes?

Write the number of cubes. Circle the correct symbol to compare the groups.

NOTE: Students represent a quantity of cubes with a series of numbers and compare the quantities.

29–31, 43

1.

_____ < _____

2.

_____ < _____

50 Unit 8 Session 4A.1

▲ Student Activity Book, Unit 8, p. 50; Resource Masters, C79