



Big Idea(s):

Extend the base-ten system to relationship among the unit.

Essential Question(s):

How is the number 10 used in our number system with ones and hundreds?

Content Standard(s):

Demonstrate that each digit of a three-digit number represents amounts of hundreds, tens, and ones (e.g., 387 is 3 hundreds, 8 tens, 7 ones).

Mathematical Practice and/or Process Standards:

Construct viable arguments and critique the reasoning of others.
Attend to precision.

Learning Intention(s):

Mathematics Learning Intentions

- Show three-digit numbers using base-ten blocks or other materials.
- Break apart three-digit numbers into the place values of hundreds, tens, and ones using manipulatives and drawings.
- Represent three-digit numbers using base-ten materials and pictures.

Social Learning Intentions

- Make sense of base-ten problems in collaboration with others.
- Productively struggle while solving them.

Language Learning Intentions

- Explain our reasoning about place value to our classmates.
- Ask and answer questions about our place value understanding to our classmates.

Success Criteria

(written in student voice):

- Explain the place value and value of each number in a one-, two-, and three-digit number.
- Explain and construct the place value and value of numbers when presented in varying orders (e.g., 3 tens, 4 hundreds, and 5 ones).
- Show the place value of three-digit numbers using base-ten blocks or pictures when presented with the number.
- Stick with a problem even when I am not sure at first how to solve it.
- Listen to my classmates' explanations about place value and ask questions that show I understand place value.

Purpose:

Conceptual Understanding

Procedural Fluency

Transfer

Task:

Bucket of Blocks!

Elaine, Roberto, and Janine all grabbed a bucket of base-ten blocks. Elaine's bucket has 2 hundreds, 9 tens, and 2 ones. Roberto's bucket has 8 ones, 6 hundreds, and 5 tens. Janine's bucket has 50 ones and 20 tens. Elaine, Roberto, and Janine each think they have the greatest value. Help them figure out who has the greatest value. Represent and explain your thinking to prove who is right!

Materials (representations, manipulatives, other):

Base-ten blocks

Misconceptions or Common Errors:

Some students will think of a three-digit number as three separate digits and not hundreds, tens, and ones.

Format:

- Four-Part Lesson Game format Small-Group Instruction
 Pairs Other _____

Formative Assessment:

Brief formative Interview

How did you decide to represent the number?

Which value is greatest? How do you know?

Launch:

This is the *before* part of the four-part lesson.

Present the following numberless word problem to the students:

Elaine, Roberto, and Janine all grabbed a bucket of base-ten blocks. Elaine's bucket has hundreds, tens, and ones. Roberto's bucket has ones, hundreds, and tens. Janine's bucket has ones and tens. Elaine, Roberto, and Janine each think they have the greatest value. Help them figure out who has the greatest value. Represent and explain your thinking to prove who is right!

Ask the students to talk with a partner about what is happening in the word problem. Next ask the students to share their ideas.

Anticipate student responses:

- Notice that Janine's bucket has only ones and tens
- Notice that Roberto's bucket information is presented in a different order
- Want to know the exact numbers
- Assume that Elaine's bucket has more
- Need manipulatives to determine the actual value

(Continued)



Facilitate:

During

1. After ideas have been shared from the launch, transition to the problem to reveal the actual problem.
2. Elaine, Roberto, and Janine all grabbed a bucket of base-ten blocks. Elaine's bucket has 2 hundreds, 9 tens, and 2 ones. Roberto's bucket has 8 ones, 6 hundreds, and 5 tens. Janine's bucket has 50 ones and 20 tens. Elaine, Roberto, and Janine each think they have the greatest value. Help them figure out who has the greatest value. Represent and explain your thinking to prove who is right!
3. Ask the students to discuss with a partner what they are noticing. Elicit ideas from the students, but make sure that they do not give any answers away!
4. Arrange the students in pairs or groups of three. Say to the students, "You will solve this problem with your partner or group of three. Each group will receive a piece of chart paper to show all of your work. You may also use, but are not required to use, base-ten blocks, hundreds charts, and blank ten frames. Your task is to determine and prove who has the greatest value. You must show all of your thinking on the chart paper. Here are your success criteria for this lesson:
 - Explain and construct the place value and value of numbers when presented in varying orders, such as 3 tens, 4 hundreds, and 5 ones.
 - Show the place value of three-digit numbers using base-ten blocks or pictures when presented with the number.
 - Stick with a problem even when I am not sure at first how to solve it.
 - Listen to my classmates' explanations about place value and ask questions that show I understand place value.
5. How can you represent the hundreds, tens, and ones on the chart paper?
 - How will you show your thinking?
 - How will you keep track of your work?
 - How will you get started?
 - What ideas did your partner have?
 - How can you use the manipulatives and tools to show your thinking?
 - How are you working with your partner?
 - What are you noticing?

After

6. Conduct a group gallery walk: Have the students hang their posters around the room. Have the students do a gallery walk to view everyone else's work. Give the students a sticky note or a sticker and ask them to post a sticker or a comment on another group's work they have a question about or on one that is different from their own.

7. Conduct a group Notice: As students finish looking at others' work, bring them back together as a group. Ask them to Turn and Talk with their partners to discuss what they noticed or had a question about.
8. Highlight strategies the students used by selecting three posters for students to share. Look for evidence of use of place value to prove the values. Note if students were able to notice the values even when the order was different. Select groups based on understanding of place value, accuracy, and explanation.

Reflect

Ask the students to work individually to determine which of these numbers has the greatest value:

9 ones, 5 hundreds, 7 tens OR 6 hundreds, 4 ones, 9 tens

Anticipating student responses:

Some students will need organizational help. Encourage them to use a place value organizer and other tools to help them keep track.

Some students will want to work independently rather than collaboratively. Give them one sheet of large chart paper to encourage them to work together. Call attention to pairs and groups that work together and remind them what working together means. Connect their struggle to the success criteria. Pairs and groups will work at different rates. Organize the pairs and small groups to reflect differing learning needs to support each other's learning.

Monitoring students' productive struggle:

Scaffold as needed by identifying mini-goals for some students.

Closure:

Text: On a phone text template, students write a text to their parents telling them what 629 means.