

Making Castles

Grade 3

Lesson 304

Lesson Overview

Students choose collections of blocks equivalent to a specified number to build sections of a castle. They work in groups to build the castle, and then they predict and pack to find the total number of blocks.

Objectives

Thinking Skills: Students use pattern and observation skills to recognize and create equivalent representations of a number. They also use group cooperation skills, spatial reasoning skills and group organizational skills to build a castle.

Mastery Skills: Students will learn to recognize equivalent representations of a number given in various collections of blocks.

Materials

Each group of four to five students needs at least:

- 6 blocks-of-100 unpacked (with holders)
- 1 "Making Castles" activity sheet
- Camera* (optional)

(Teacher note: It may be difficult for students to be willing to "tear down" their castles. You may want to take photos*, or if possible, allow castles to remain standing for a prescribed period of time. Then finish the activity by packing each castle and recording the total number of blocks.)

Class Demonstration

(10 - 15 minutes)

Ask each group of students to choose blocks representing the number 87 and build an object of any kind. Students may choose to build with blocks-of-10 and single blocks or just single blocks. However, the total number represented by the collection must equal 87.

Have students describe what they built with their blocks, including the number of each kind of block used. As a class list all the ways that students created the number 87 with blocks-of-10 and single blocks:

8 blocks-of-10 and 7 single blocks
7 blocks-of-10 and 17 single blocks
6 blocks-of-10 and 27 single blocks
5 blocks-of-10 and 37 single blocks
4 blocks-of-10 and 47 single blocks
3 blocks-of-10 and 57 single blocks
2 blocks-of-10 and 67 single blocks
1 block-of-10 and 77 single blocks
87 single blocks

Ask students to find, from the list, the representation that shows the amount 87 packed as much as possible. (Solution: 8 blocks-of-10 and 7 single blocks.)

- Ask students to tell what the digits are in this number. (Note: Students should be able to describe the 8 as 8 blocks-of-10 and the 7 as 7 single blocks.)

Student Activity

(20 - 30 minutes)

Explain to students that they will continue to build using a specified number of blocks. Again, they can choose to build with packed blocks and single blocks, as long as the total number is equivalent.

Describe the following castle building activity to students:

- From the list on the "Making Castles" activity sheet, students will choose sections of a castle to build with blocks.
- Each section must be built with a collection of blocks equivalent to the number specified.
- Depending upon the number of students in the group, they may be asked to contribute 2 or 3 sections to the castle.
- After building, students must record the exact blocks they used in their individual sections.

- Upon completion of the castle, the group will predict the total number of blocks altogether in the castle.
- Finally, when students are ready to “tear down” their castle, they pack the castle *as much as possible* and record the total number of blocks they used.

Give each group of 4 - 5 students all materials needed and ask them to begin their group work.

Closure

(5 - 10 minutes)

Students may wish to share their castles with the rest of the class. Ask them to:

- Describe various parts of the castle.
- Show how they represented a section of the castle with the specified number of blocks.

For discussion, ask, “**How could you be sure that you used the correct number of blocks?**”

- Have students compare notes on the collections of blocks that they used for various sections of their castles.
- Have students share methods for calculating the total number represented by a collection of blocks. Students can:
 - Pack the blocks as much as possible to see the total number represented.
 - Count by tens and ones (i.e., 10, 20, 30, 31...47)
 - Take the holders off the blocks and count all the singles by ones.

Assessment

As the class works, walk around the room observing student behavior.

- Are the students working collaboratively?
- Are they following the directions correctly?

As the students choose equivalent collections of blocks, make the following observations:

- Do students recognize the two most basic representations: 1) all single blocks and 2) blocks packed as much as possible.
- Are students flexible in their ability to find various representations of the same number? Or, are they only able to find one or two ways?

As the students count the blocks in their collection, observe how they count.

- Do they pack as much as possible?
- Do they count by ones? (If so, they should be encouraged to find other ways to count the blocks.)
- Do they count by tens and ones? Do they have a definite pattern of counting that is easy for them? (i.e., count all the tens first, then all the ones.)

Extensions

- Students may discover methods for predicting the total number of blocks in their collections. Have students share their methods for predicting.
- For a writing extension, have students write a story to describe what is happening within their castles. This activity would tie in nicely with a unit on medieval times.