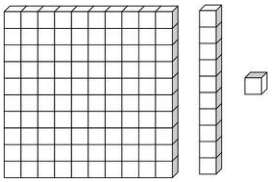


CONSTRUCTING TASK: Building Base-Ten Numbers

Approximately 2 Days

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."
b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

MCC2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

MCC2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

Students need to understand how to order digits from largest to smallest and vice versa. They also need to understand place value concepts and how they relate to the base ten pieces. Sufficient experience with pre-grouped base ten models should precede this activity. A dot, stick, and square can be used when recording ones, tens, and hundreds. (This model is shown on page 134 of Teaching Student-Centered Mathematics: Grade K-3, page 134).

Because there are several steps involved in this task, you may want to model this activity while "thinking aloud." Include a discussion about assigning a place value to the number rolled on a given die. Ask questions such as, "Will you make the 3 on this die represent 3, 30, or 300? How

will each of those numbers look if we use base ten blocks?" Some students may need extra support with this concept. It is also important to model the use of dots, sticks, and squares to represent base-ten concepts.

When using dice, base ten blocks, or any other manipulatives, students need to understand procedures and routines associated with using them. Consider reviewing your classroom norms and giving the students a few minutes to explore with the pieces and make observations before moving into the task.

ESSENTIAL QUESTIONS

- How do the value of digits change when their position in a number changes?
- How can we tell which numbers are larger or smaller than others?

MATERIALS

- Three 6-sided dice per pair
- Base ten blocks
- "Building Base Ten Numbers" recording sheet
- Place Value Charts (optional)

GROUPING

Partners or Individually

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

In this task, students will roll dice and make two three-digit numbers from the results. Students will then draw or use base ten blocks to build models of the numbers created and explain how they know which numbers are larger or smaller.

Task Directions

Gather students in the meeting area. Model with students the "Building Base Ten Numbers" recording sheet. Then allow students to work with a partner to complete the task.

Your task is to build numbers and identify them. Use dice and base ten blocks or models to complete this exercise.

1. Roll all 3 dice at once.
2. Create the smallest number possible using all three dice.
3. Create the largest number possible using all three dice.
4. Using the smallest number of base ten pieces possible, draw (or build) a model of each number you recorded. Have the flats represent hundreds, the rods represent tens, and the unit cubes represent ones. Use words to write how each of the two numbers is spoken. Write the numbers in expanded notation.
5. Repeat the same exercise two more times and record.

6. When you have completed all your rolls, put a star beside the greatest number you rolled. Then put a check beside the smallest number you rolled. Explain how you know what the largest and smallest numbers are possible when using three dice.

FORMATIVE ASSESSMENT QUESTIONS

- How did you decide in which order to place your dice?
- What would happen if you changed the order of your dice?
- What would happen to the size of your numbers if you used more or fewer dice?
- Which representation of your numbers makes the most sense to you?

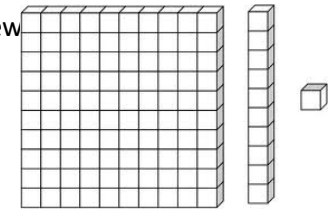
DIFFERENTIATION

Extension

- Students may use four dice instead of three (or use three dice and always have one digit be zero). If you continue to have them draw/build base ten models, you will need to provide the large cube in the base ten blocks to represent the thousands place. If students have access to base ten stamps, those may be used instead of, or in addition to, the actual manipulatives.

Intervention

- Students may need to use a place value chart to align their digits.
- Have students complete the task in small groups with direct instruction or modeling for additional support.
- For students who have difficulty counting the dots on a die, dice with numbers printed on them may be used.



Name: _____

Building Base-Ten Numbers

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Roll #1

Smallest Number	**Model with Drawings**	**Expanded Notation (ex. 200 + 30 + 5)**
Largest Number	**Model with Drawings**	**Expanded Notation**

Roll #2

Smallest Number	Model with Drawings	Expanded Notation
Largest Number	**Model with Drawings**	**Expanded Notation**

Roll #3

Smallest Number	Model with Drawings	Expanded Notation
Largest Number	**Model with Drawings**	**Expanded Notation**