

IMPROVING TEACHER QUALITY PROGRAM
Mathematics Within: Algebraic Processes and Its Connections to Geometry

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Broad Topic: Place Value – Grade 3

Subtopic: Base 5

Grade level-3

Time: 30 minutes

Aim: Student understanding of the relationship between base 5 and base 10.

Specific Objective(s):

- To understand zero as a place holder.
- To understand how to read and write base 5 numbers.
- To reinforce previously observed patterns in base 5 pieces.

Materials/Supplies:

- Base 5 pieces
- Individual student charts and teacher transparency
- Large sheet of chart paper
- 1 cm graph paper

References: (text/handouts, etc)

- [Opening Eyes to Math](#)

Lesson:

- **Introduction**
 1. Five-minute quick write in learning log
 - Think about the base 5 pieces you have been exploring the past few days. What do you know about base 5?
 2. Five students share their writing aloud. Discuss their writing.
- **Body**
 1. Look at the chart from the previous lessons. Introduce the last two columns by telling students we will be learning how to write numbers in base 5. Label the last two columns as follows: Base 5 and Words. (See attached chart p. 3)
 2. Discuss minimal collection (how to make a number with the least amount of pieces).
 3. Distribute Base 5 pieces. Ask students to make the first number on the chart, which is 11. Using the numbers already on the chart and the base 5 pieces, lead students to see that the number 11 is 2 strips and 1 unit in base 5 pieces. Record this in the Base 5 column on the chart as 21_5 . Change the digits to words in the next column by writing “two, one, base five.”

4. Follow this same procedure with the other numbers on the chart. Discussion should focus on noticing where and why zero is used.
 5. Complete the chart with additional numbers provided by the teacher and/or students.
- **Close:** Discussion and informal assessment:
 1. What does Base 5 mean? What digits are used to make base 5 numbers?
 2. What does Base 10 mean? What digits are used to make base 10 numbers?
 3. Teacher records student responses on chart to be displayed in classroom.
 - **Application/assessment:** Follow-up enrichment activity:
 - Apply the base 5 pattern to other bases. Students choose another base and use graph paper to cut mats, strips, and units.
 - Then have students choose numbers to make and write in their chosen base.

See attached overhead for this lesson—p.3

