

Session Eight Overview

BST Session Eight

Agenda

Sharing Exit Card Comments		10 minutes
Math Activity: Counting and Calculating in a Base Five System or Terminating and Repeating Decimals	Small groups Whole group	45 minutes
Research Essay Discussion	Small groups	40 minutes
Break		15 minutes
Implications for My Classroom	Small groups Whole Group	55 minutes
Closing and Homework	Whole group	15 minutes

Mathematical Themes

- Fractions in lowest terms that have only prime factors of 2 and 5 in the denominators produce decimal expansions that terminate: $1/5 = 0.2$ and $3/100 = 0.03$.
- Fractions that do not terminate result in decimal expansions that repeat infinitely: $1/3 = 0.33333\dots = \overline{.3}$ and $1/7 = 0.142857142857\dots = 0.\overline{142857}$

Connections to the Common Core: Content Standards

Grade 7: The Number System 2.

7. NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

BST Session Eight Agenda Changes linked to Common Core

There are four modifications to the agenda in Session Eight.

1. Use a few minutes at the beginning of the session to share exit card comments. You might want to focus on comments about the Standards for Mathematical Practice. Look for common threads or misconceptions to be addressed.
2. Distribute the session overview.
3. If you choose to do the optional activity, Counting and Calculating with a Base Five System, replace it with the revised activity of the same name. Page 1 of this activity is unchanged. See below for the handout, Counting and Calculating with a Base Five System (Revised).
4. Replace the whole group discussion, “Implications for the classroom” and the individual work “Reviewing examples of student work” with the following small and whole group discussion:

Implications for my classroom

(55 minutes)

Small Groups (30 minutes)

Whole group (25 minutes)

Ask the small groups to consider their work in this seminar to discuss what it is they want to do differently in their classroom as a result of this experience. When there are ten minutes left, announce that each group should create a poster listing the specific suggestions of group members.

Begin the whole group discussion by asking each group to post and share their list. Once the lists have been shared, open the floor to general comments by asking, “What supports are there in your system to help you work on these suggestions?”

SESSION 8

Alternative Math Activity: Counting and Calculating in a Base Five System (Revised)

Counting in Base Five

Consider counting in a system that uses only the symbols 0, 1, 2, 3, and 4. For any number larger than 4, you need to use the next place to represent one group of five. That is, in this place value system, five is used as the base instead of ten.

0		0
1 (one)	<input type="checkbox"/>	1
2 (ones)	<input type="checkbox"/> <input type="checkbox"/>	2
3 (ones)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	3
4 (ones)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	4
1 (five) and 0 (ones)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	10
1 (five) and 1 (one)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	11
1 (five) and 2 (ones)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	12

1. Continue counting up to 44 in base five. Draw a representation of 44 in base five.
2. What number comes after 44? Why does that make sense?
3. What are the values of the first, second, third, and fourth places in base five?

SESSION 8**Calculating in Base Five**

Work on the following computations by building the numbers with the cubes.

1. $24 + 13 = \underline{\quad}$

2. $132 + 341 = \underline{\quad}$

3. $32 - 14 = \underline{\quad}$

4. $320 - 14 = \underline{\quad}$

5. What is your answer to this addition problem and why does that make sense?

$$13 + 13 + 13 + 13 + 13 = \underline{\quad}$$

6. $24 \times 3 = \underline{\quad}$

7. $24 \times 10 = \underline{\quad}$

8. $24 \times 30 = \underline{\quad}$

9. $24 \times 13 = \underline{\quad}$

10. Make up some computation problems of your own to try.