Cultivating Conceptual Understanding of Decimals in Grades 4 and 5 Students

Carol Mohn (cmohn@wcpss.net)
Wake County Public School System
Elementary Math Summit 2013
Welcome and Introductions

Facilitator: Carol Mohn –
- Instructional Resource Teacher
- Baileywick Elementary School (WCPSS)
- cmohn@wcpss.net

Participants:
- *Who are we as a group?*
- Introductions to tablemates
  - Name
  - School/District
  - Grade Level/Role
Activity: Digging into Decimal Learning Trajectories in Grades 4 and 5
Self-Reflection: What does it mean to cultivate conceptual understanding in mathematics?
Activity: Exploring Decimals
Activity: Adding Decimals Using Models
Activity: Dividing Decimals by Whole Numbers
Group-Reflection: How do we cultivate conceptual understanding in our students?
Activity: Digging into Decimal Learning Trajectories in Grades 4 and 5

Materials Needed

- Modified Unpacked Standards (1-2 per table)
- Activity Handout (1 per participant)

Instructions

- Work with the members of your table group to “unpack” the standards relating to decimals in grades 4 and 5.
- Use the provided handout to record your findings and thoughts.
Self-Reflection:

Individually reflect on the following question:

What does it mean to *cultivate conceptual understanding* in mathematics?
Activity: Exploring Decimals

Materials Needed

- Base ten blocks (one set per table)
- Blackline Master: Blank Base Ten Grids A
- Blackline Master: Blank Base Ten Grids B

Instructions

- Participate as a student and ask clarifying questions.
Base Ten Grids A
Base Ten Grids A – 0.24
Base Ten Grids B
Base Ten Grids B – 0.289
Activity: Adding Decimals Using Models

Materials Needed

- Base ten blocks (one set per table)

Instructions

- Participate as a student and ask clarifying questions.
Adding Decimals Using Models

Scenario 1

Andy is training for a 2-mile road race. To help him prepare, he decided to run twice a week. This week, he ran 0.75 miles on Tuesday and 1.3 miles on Thursday. How many miles did Andy run this week?

\[0.75 + 1.3\]
Vivian enjoys riding her bike on the weekends. On Saturday, she rode 1.4 miles to the park, 0.75 miles to the store, and 1.14 miles home. How many miles did Vivian ride on Saturday?

Remember to:
- Estimate the answer.
- Write a horizontal problem to represent the scenario.
- Use base ten blocks to find a solution.
- Compare your estimate with your actual answer.
Scenario 3

Oscar is baking a cake for his sister’s birthday. The recipe requires 1.5 cups of flour, 0.75 cups of sugar, and 0.1 cups of baking powder. What is the total amount of dry ingredients Oscar needs for this recipe?

1.5 + 0.75 + 0.1
Adding Decimals Using Models

$1.5 + 0.75 + 0.1 = 2.35$
Connecting Addition Models to the Vertical Algorithm

0.22 + 0.39 = 0.61
**Activity:** Dividing Decimals by Whole Numbers

**Materials Needed**
- Base ten blocks (one set per table)
- Blackline Master: Dividing Decimals Using Base Ten Grids

**Instructions**
- Participate as a student and ask clarifying questions.
Scenario 1

A relay race lasts 4.65 miles. The relay team has 3 runners. If each runner goes the same distance, how far does each team member run?

\[4.65 \div 3\]
Scenario 2

A store owner has 6.9 pounds of candy to place on the shelves. If she divides the candy evenly into 6 jars, how much candy will each jar contain?

Remember to:

- Estimate the answer.
- Write a horizontal problem to represent the scenario.
- Use base ten blocks to find a solution.
- Compare your estimate with your actual answer.
Dividing Decimals by Whole Numbers

Scenario 3

Landon bought 7 apples from the market for $3.71. How much did each apple cost?

$3.71 \div 7$
Dividing Decimals by Whole Numbers

$3.71 \div 7 = 0.53$
Group-Reflection: How do we cultivate conceptual understanding in our students?

Be strategic about **planning**.

1. “Unpack” all of the skills and strategies students should know and be able to do according to the CCSS.

2. **Ask yourself key questions:**
   - What strategies should students be able to use to solve problems (i.e. number lines, concrete models, area models, etc.)?
   - Does the standard expect that students will be able to use the standard algorithm by the end of this grade?
   - If so, how will I strategically build students’ understanding conceptually, so they can make connections between the strategies they have learned and the standard algorithm?

*Remember that meaning making is vital!*
Reflection: How do we cultivate conceptual understanding in our students?

Be strategic about implementation of classroom lessons.

1. Always present problems in context when introducing a new strategy or skill.
2. Be sure students are working with manipulatives, grid paper, colored pencils, white boards, number lines, etc. that support their learning of the standard.
3. Ask intentional and strategic questions that connect learned strategies.
4. Less really is MORE!
Thanks for coming!

Please feel free to contact me:

Carol Mohn

cmohn@wcpss.net