CONSTRUCTING TASK: Field Day Blunder

STANDARDS FOR MATHEMATICAL CONTENT

MCC.3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

MCC. 3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

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.

BACKGROUND KNOWLEDGE

Multiplication and division are usually taught separately. However, multiplication and division should be combined in order for students to see how they are related. "Experiences with making and counting groups, especially in contextual situations, are extremely useful. Products or quotients are not affected by the size of numbers as long as the numbers are within the grasp of the students" (Teaching Student-Centered Mathematics, 2006, John A. Van de Walle and LouAnn H. Lovin).

ESSENTIAL QUESTIONS

- What are the strategies for learning multiplication?
- How can we practice multiplication facts in a meaningful way that will help us remember them?

MATERIALS

- drawing paper, blocks, any other materials that will help students visualize the problem
- "Field Day Blunder" student recording sheet

GROUPING

Partners

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Students will follow the directions below from the "Field Day Blunder" recording sheet.

> Mrs. Nelson's third grade class was very excited about the upcoming field day events. Each third grade class was given a helmet and a sack for the upcoming sack race. Once the sack race was complete, Mrs. Nelson's class moved on to the next race. As the students rushed to the next event, they left all of their helmets and sacks in a big pile. Christopher and Megan were left to match the helmets with the sacks. Some of the sacks were for 2 people, and some were for 3 people. There were 24 helmets in all. Christopher and Megan were able to match all of the helmets to their sacks. How many 2- and 3-person sacks could there be?

FORMATIVE ASSESSMENT QUESTIONS

- What combinations of blocks have you tried so far?
- How will you know when you find the right combination?
- Do you think there is more than one right solution for this task? Why do you think so? How can you find out?

DIFFERENTIATION

Extension

- Using 24, or another appropriate number. Ask students to develop a strategy to solve the problem. Then allow students to share their strategies.
- Replace 24 chairs with 30, 36 or 72 for students who can work with larger numbers.

Intervention

- Replace 24 with a smaller number such as 12, 18 or 20. Model this task or a similar one in a small group setting.

Name _____ Date _____

Field Day Blunder

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1. Draw pictures to show all the ways you can arrange the sacks and helmets.
2. Label and write matching number sentences for each arrangement.
3. Choose your favorite arrangement and explain why you think it would be the best arrangement so that every student has a helmet and a sack.