CONSTRUCTING TASK: READ ALL ABOUT IT

STANDARDS FOR MATHEMATICAL CONTENT

MCC.3.OA.8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MCC.3.MD.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

MCC.3.MD.7 Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.
d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

STANDARDS FOR MATHEMATCAL 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

"Problem solving focuses students' attention on ideas and sense making. It allows students to make sense of mathematics, while providing an ongoing assessment for the teacher. It is important that students explain and defend their solutions. The information gained from this will allow teachers to clear up misconceptions and plan for future instruction. A good problem solving task allows for multiple paths to a solution." (Van de Walle, Teaching Student-Centered Mathematics, p. 15)

ESSENTIAL QUESTIONS

- How can we use patterns to solve problems?
- How do estimation, multiplication, and division help us solve problems in everyday life?
- How do rectangle dimensions impact the area of the rectangle?

MATERIALS

- "Read All About it" task sheet
- 1 inch color tiles
- 8 ½ x 11 inch paper

GROUPING

Small group/partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

The teacher will present the students with the following problem solving task:

The 3rd grade class at Georgia Elementary School wanted to go on a field trip to a soda factory. The trip will cost $100. The students decided to write a class newspaper and sell it to the kids at their school. Each of the 20 students will be given a 16 inch square for his/her article in the newspaper. How many pages long will the newspaper be if they used paper that was 8 ½ x 11 inches? Will there be enough room for additional graphics on the pages once the articles have been written? How did you determine this?

Students should be allowed to use 1 inch color tiles as well as sheets of paper to complete the task. They should show their solution using pictures, numbers and words.

FORMATIVE ASSESSMENT QUESTIONS

- How did you determine the number of pages needed?
- Is there another way you could have solved this?
- Did you find a pattern when you were solving this?
- How does your knowledge of area help you solve this problem?

DIFFERENTIATION

Extension

- The students could determine the cost of producing the paper, and how many copies should be sold and at what price, in order to reach their goal.

Intervention

- Decrease the number of students that are writing articles.
- Use this task in a guided small group.

Name_____Date _____

READ ALL ABOUT IT

The 3rd grade class at Georgia Elementary School wanted to go on a field trip to a soda factory. The trip will cost $100. The students decided to write a class newspaper and sell it to the kids at their school. Each of the 20 students will be given a 16 inch square for his/her article in the newspaper. How many pages will the newspaper be if they used paper that was 8 $\frac{1}{2}$ x 11 inches? Will there be enough room for additional graphics on the pages once the articles have been written? How did you determine this? Use pictures, numbers, and words to show your solution and your mathematical thinking.