

MY OWN QUESTIONS AND TASKS

Lesson Goals:

Grade Band: 3rd Grade

*Students will investigate and understand the importance of multiplication in real world situations.

*Students will investigate and understand that multiplication is a faster way of counting or adding when there are equal groups of objects.

Standard(s) Addressed:

SOL 3.19 – The student will recognize and describe a variety of patterns formed using numbers, tables, and pictures, and extend the patterns using the same or different forms.

SOL 3.5 – The student will recall multiplication facts through the twelves table and the corresponding division facts.

SOL 3.6 – The student will represent multiplication and division, using area, set, and number line models, and create and solve problems that involve multiplication of two whole numbers, one factor 99 or less and the second factor 5 or less.

Underlying Big Idea(s): counting, skip counting, patterns, groups, sets, connections between addition and multiplication, arrays

Open Question(s):

*If you have a lot of pennies you want to count, describe what you would do to count them. (Several answers from my students: in groups of tens, fives, twos, make tallies for each penny)

*What about counting the tiles in this jar? (Several answers included same answers as pennies, but one student said in piles of 50.)

Parallel Tasks:

Option 1:

Read and discuss *Amanda Bean's Amazing Dream* by Cindy Neuschwander. (Students suggested how Amanda could count things more easily/quickly, such as when there were 8 bikes with sheep whizzing by, would there be a better way to count their bicycle wheels or the sheep's legs than by counting one-by-one? They had suggestions such as above with the pennies and the tiles.)

Option 2:

What other real world objects come in groups that we could count? (tricycle wheels, number of shoes in our class, number of hands in our class, number of fingers in our class)

Option 3:

Draw an array on 1 cm graph paper that represents the wheels on the 6 bikes from *Amanda*

Bean's Amazing Dream. Beside it, write the addition sentence. Also, write the multiplication sentence that would go with it. Do other examples from the book (cookies on cookie trays) and from our own real world experiences. Then, with a partner, come up with other arrays you can draw from what you see around the classroom or from other things you may think of in the real world. (Some drew an array using a rocks and minerals poster, some used a small group reading chart hanging on the side of the room, some used another poster that showed two rows of testing strategies, and some drew other real world objects they remembered from their own house like shoe holders.) Each set of partners described what they drew to the rest of the class.

Option 4:

(This was done on the next day.)

Play "Cube Arrays." Partners roll dice to draw arrays on centimeter graph paper. One person rolls to see how many rows they will draw. The other rolls to see how many columns they will make. Once they roll their dice, they help each other draw their arrays and write a repeated addition sentence and a multiplication sentence. The partners repeat this activity of rolling dice and drawing arrays on their graph paper until time is up (about 10 minutes). Each set of partners tells the class about one or two arrays they have drawn.

Reflection:

It was enlightening to hear the students' comments throughout these activities. They enthusiastically shared answers for the open questions, enjoyed and discovered great reasons to learn to multiply from *Amanda Bean's Amazing Dream*, and discovered examples of arrays through the book, around the classroom and in the real world. The creativity of some of my students was exciting. One had counted the 4 students in each team as stars and added the star above the teams as the 5th star making 4 groups of 5 stars as an array on their paper, with a product of 20 stars in our class! They enjoyed sharing their discoveries with their partners and with their classmates. It was hard to stop when it was time for social studies!

For the cube array activity, many of the students did not know what to do when they rolled a one as one of the two factors. It also threw them when they rolled a one with another one. There was much discussion and learning throughout all these activities.

The students became able to explain reasons to multiply and some ways to solve multiplication problems prior to committing facts to memory. I plan to use this activity each year during our study of multiplication.

Principles to Keep in Mind:

- All open questions must allow for correct responses at a variety of levels.
- Parallel tasks need to be created with variations that allow struggling students to be successful and proficient students to be challenged.
- Questions and tasks should be constructed in such a way that allows all students to participate together in follow-up discussions.

This worksheet accompanies "Good Questions" (Teachers College Press: 2009).

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