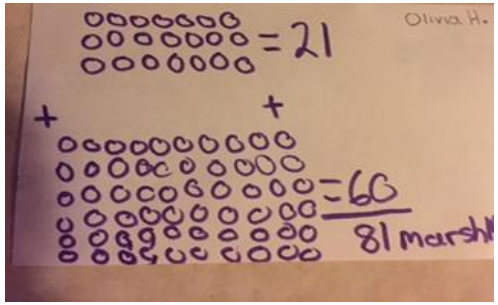
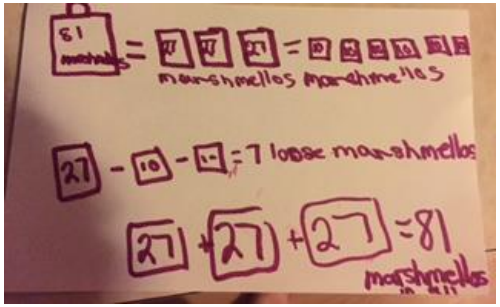
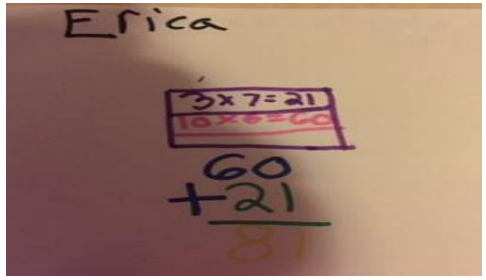
Lesson Title: Grade: 4	Marshmallow Madness Multi-digit numbers can be built-up or taken apart in a variety of ways.
Content Standard:	4. NBT.B.5 Multiply a whole number of up to two digits by a one-digit whole number.
Materials:	small marshmallows, 3 different size bags. There bags cannot be transparent for this lesson such as brown paper bags. Setting up the bags: Each large bag will contain 3 medium bags. Each medium size bag will contain 2 small bags with 10 marshmallows each. The medium size bag will also contain 7 loose marshmallows. The total marshmallows in each medium size bag will be at total of 27. The two small bags represent the value in the tens place and the seven loose marshmallows represent the value in the tens place. With 3 medium-sized bags times 27 will total 81 marshmallows. Each pair of group will need the own large bag with the contents described to solve this problem.
Shared Experience:	The teacher does a think-a-loud to help the students understand the concept of "if it looks the same, it is the same". Ex: The teacher shows a zip lock bag of color tiles. The teacher demonstrates counting the tiles. The teacher records the count on a piece of paper. Recording the count is an important part of this lesson. The teacher pulls out another zip lock bag that looks the same and his the same exact contents. The teacher repeats the statement, "If it looks the same, it is the same." Then the teacher pulls out another zip lock bag that is the same. After recording the count, the teachers will write a written note to communicate the task. Next the teacher will explain the activity: Each team will receive a large bag that is packages the same way. The company that makes the packages wants to know how many total marshmallow in each set of three bags. The challenge is to find the answer while opening ("destroying") as few packages as possible. Before giving the bags to the teams, ask each team to spend a few minutes discussing the strategy they will use once the bags are distributed. Teacher – Do you think we need to open the big bag to find out how many marshmallows are inside? Students – Yes. Students open the big bag and find three medium size bags inside. Teacher – Record what you found. Do you needs to open another bag? Students – Yes. Students open a medium-size bag and discover two small bags and 7 loose marshmallows. Teacher – Record what you found. Do you needs to open another bag? Students – Yes. The students open a small bag and record the contents. Now the students must draw a conclusion and recall the phrase, "If it looks the same, it is the same."

	Note: Some students will begin to conclude that the two small bags will have the same contents of 10 marshmallows each, plus the 7 loose. Students will begin to share and explain their thinking. The teacher will listen the students thinking out loud and will encourage the students to record their ideas. The teachers will encourage the students to explain their ideas in more than one way and request that the students ask each other questions about their thinking. Not all students will explain the task in the same way. Some students will solve the problem using repeated addition and other will use multiplication with partial products. Some students may solve the problem using double-digit by single digit multiplication. Possible Questions: How many items have you opened? Why? How many marshmallow are there in each bag? How do you know? How many medium bags are there in a big bag? How do you know? How many loose marshmallow are there in a medium size bag? How do you know? How many loose marshmallow are there in total? How do you know? How many medium bags are there in total? How do you know? How many marshmallow are there in total? How do you know?
People Talk:	After the students solve the problem and a winner is determined, students draw a picture and use numbers to explain how they solved the problem. Encourage teams to come up with a team consensus picture and description.   Teams present their findings using the Elmo projector. Students are expected to use numbers in this activity. Look for: 3 x 7 = 21, 10 + 10 = 20, 3 x 20 = 60, 6 x 10 = 60, 60 + 21 = 81, and 3 x 27. The math problem in this activity is 3 x 27 = 81. The partial products are likely to come out in the activity.

Feature Talk:	Instructor can ask questions of the presenters eliciting the following features. The size and contents of the each of the bags. Counting. Repetition. All bags are “the same” or “equal”. All medium bags are the same or equal. The number of loose marshmallow in any bag is the same or equal. Students are to answer these questions: 1. How many bags were there? (Anticipated answer: 3) 2. How many marshmallow in a popcorn bags were there? (Anticipated answer: 10) 3. How many popcorn bags were there in total? (Anticipated answer: 6 or 3 x 2) 4. How many marshmallow were there in all of the popcorn bags? (Anticipated answer: 60 or 6 x 10) 5. How many loose marshmallow in a bag? (Anticipated answer: 7) 6. How many loose marshmallow in total? (Anticipated answer: 21 or 3 x 7)
Symbolic Representation:	Students are asked to answer some questions, which by now should be obvious to them: What was the count of the bags? How many medium bags were there in a bag? How many in total? How many loose marshmallow in a bag? How many in total? Then: Can they find the answer (the overall total number of marshmallow) from this information? Students are asked to write their final answer using only numbers and symbols. Ex. 3 x 27 = 3 x 20 + 3 x 7 = 60 + 21 = 81. 
Reflections:	Through discussion students will be able to use both addition and multiplication when discussing this problem solving task. Understanding how the bags are organized helps with developing the understanding of partial products and double-digit by single digit multiplication.
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