

M & M Activity (Part 1)

Context:

You are workers of a major M&M factory (i.e., it produces lots and lots of candies). There are five production posts in the factory labeled A, B, C, D, and E.

Procedure:

1. Arrange a big pile of M&M candies on the side of the poster.
2. Every member of your group takes turns in rolling the die and moving the corresponding number of single M&M candies from that pile to the center of the poster (use the wooden teaspoon to avoid touching the candies). We refer to this process of rolling the die and moving the candies as “production.” You continue producing more and more (and MORE) single M&M candies, because this is a serious factory.

The Challenge:

1. At any given moment, your supervisor may approach your post to find out how many single M&M candies you have produced so far.
2. Thus, as your production progresses, you have to figure out a method that allows each worker at your post, **as well as the supervisor**, to get an instantaneous ‘read’ of how many candies have been produced.

Constraints:

1. You are not allowed to keep track of how many candies have been produced by continually adding the total in your heads, that is, the number must be apparent from briefly looking at the area where produced M&M are placed.
2. You cannot use any method of writing, that is, you must use the M&M candies to indicate the total.

Pedagogical Guide:

It is likely that your method will evolve over time. Whenever a member of the group notices that a change took place, she will ask the group to pause the production and explain what she saw as a change. The group then briefly discusses and decides if this is a noteworthy change and specifies what purpose it seemed to serve. Every member then records in her journal: (a) the essence of the change and (b) its purpose. Then, you resume the production process from the same point where it stopped (using the revised method).

M & M Activity (Part 2)

Context:

Your supervisor has just informed you that you might have to substitute workers at any other post in the factory. The factory takes a break from the production process to let each worker learn the method used at each post.

Procedure:

Draw near each post in the production room. Let the workers at each post teach you their method. Document each method in your journal for future reference (in case you are called to substitute).

The Challenge:

Make sure each 'sub' can adequately use the post's method.

Pedagogical Guide:

Jot down notes regarding difficulties you encounter during the teaching/learning process of other groups' methods.

Mathematical Reflection on the M & M Activity

The Challenge:

1. Discuss: Can your post's method be considered a base-ten, place-value numeration system? Why or why not?
2. Discuss: Hold a similar discussion about the method of the post next in the alphabetic order to yours (Post 'E' discusses the method of post 'A').

Be prepared to present and justify your responses above to the entire cohort. Make sure that each of you has a good idea because any member of the group may be called upon to present.

Notes for the M & M Activity

1. Modeling the kind of teaching we try to promote; Learning/teaching process is likely to be different than what they might have experienced and or practiced (hence, counter their expectations and subject for continual discussion)
2. Norm: an answer should be followed by a reason/explanation
3. Instructor's questions do NOT indicate incorrect (or correct) solutions; rather, they serve as a means to promote/orient mathematical reasoning (hence, learning)
4. Saying "I don't know" or "I'm not sure" is 100% acceptable and actually contributes greatly to the teaching-learning process (story about 3rd graders in Israel)
5. Norm: There are NO stupid questions
6. Practice: Sharing one's evolving understandings with others is a crucial part of one's own learning