

Math Domain

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|---|--------------------------------------|-----------------------------------|
| <input checked="" type="checkbox"/> Number/Quantity | <input type="checkbox"/> Shape/Space | <input type="checkbox"/> Function |
| <input type="checkbox"/> Chance/Data | <input type="checkbox"/> Arrangement | |

Math Actions (possible weights: 0 through 4)

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|--|--|
| <input type="checkbox"/> 2 Modeling/Formulating | <input type="checkbox"/> 1 Manipulating/Transforming |
| <input type="checkbox"/> 2 Inferring/Drawing Conclusions | <input type="checkbox"/> 1 Communicating |

Math Big Ideas

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|--|---|--|
| <input type="checkbox"/> Scale | <input type="checkbox"/> Reference Frame | <input type="checkbox"/> Representation |
| <input type="checkbox"/> Continuity | <input type="checkbox"/> Boundedness | <input type="checkbox"/> Invariance/Symmetry |
| <input type="checkbox"/> Equivalence | <input type="checkbox"/> General/Particular | <input type="checkbox"/> Contradiction |
| <input type="checkbox"/> Use of Limits | <input checked="" type="checkbox"/> Approximation | <input type="checkbox"/> Other |

1. The results of predictions and measurements will vary from student to student, as body measurements will differ.
 - a. Students should make a reasonable guess of the number of candies required (between 2 and 5).
 - b. The M&M’s serve as a non-standard unit of measurement and should be used directly to get the answer. Student answers will be in the range of 3 to 6 M & M’s.
 - c. Students may need to begin to use estimation strategies, as the number of M&M’s provided may be too small to make a chain of appropriate length. Students will need anywhere from 9 to 13 M & M’s.
 - d. Estimation is the only proper strategy. The answer will be between two and three times greater than the answer to part c, or anything from 24 to 30 M & M’s.

2. The desk measurements will vary from student to student. However, most height measurements should be fairly close, since spans are relatively proportional to height.

	partial level (1 or 2)	full level (3)
Modeling/ Formulating (weight: 2)	Student demonstrates a fragile or incomplete understanding of the difference between estimation and measurement.	Student gives reasonable predictions for the measurable quantities, and correctly reflects their relative sizes.
Transforming/ Manipulating (weight: 1)	Student is only able to make some accurate measurement counts.	Student completes all measurement counts correctly.
Inferring/ Drawing Conclusions (weight: 2)	Student gives a reasonable prediction only in questions 1a .	Student gives reasonable predictions for all questions, using information from previous answers.
Communicating (weight: 1)	Student interprets only a few of the estimation and measurement questions appropriately (i.e., does not use actual counts when the question calls for an estimate.)	Student responds to each question appropriately, and provides a clear chain of reasoning in computing the estimates.