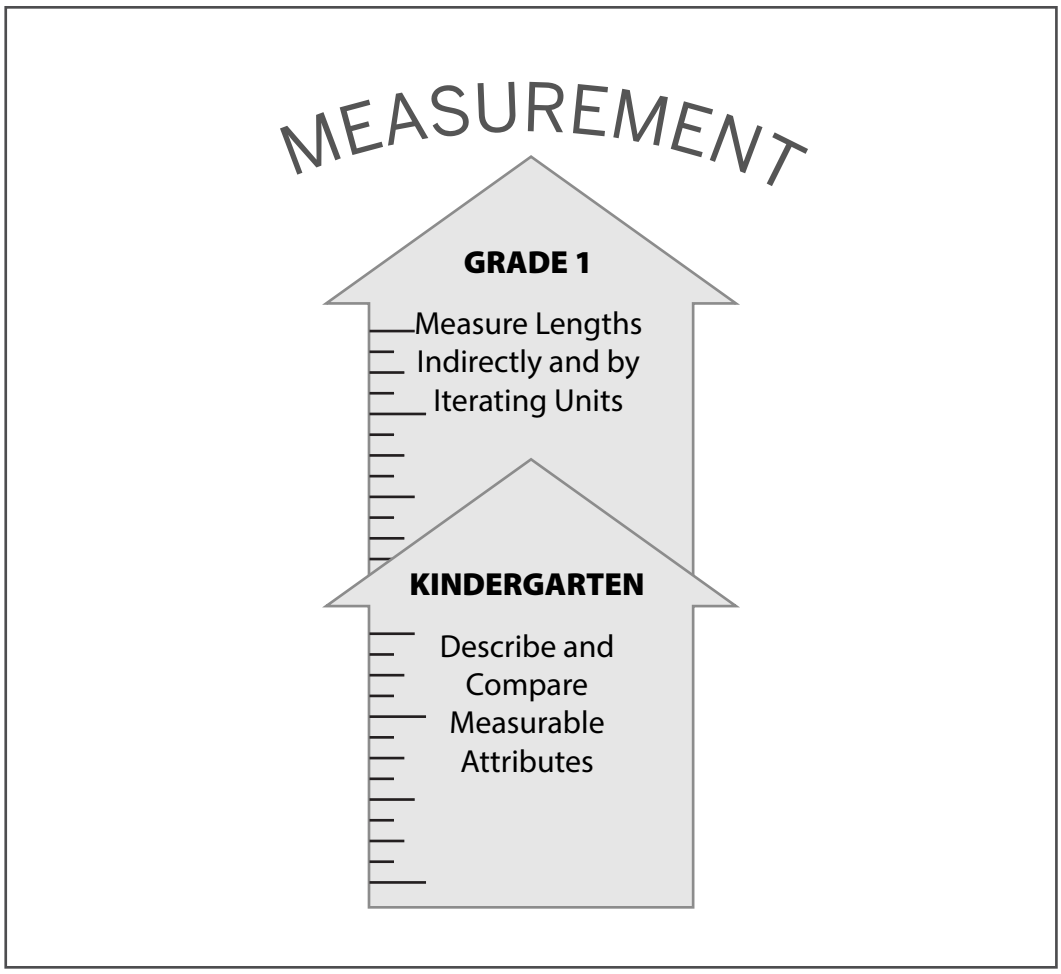
MATH K-1 Common Core Assessments

Kindergarten/Grade 1

INTRODUCTION



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Introduction to Measurement

The assessments associated with the measurement progression are designed to help you assess student understanding of early measurement concepts. Length is the focus through the end of grade two, but it is appropriate to introduce kindergarten students to a variety of measureable attributes including weight, area, and volume or capacity.

Measuring length involves two aspects:

1. Identifying a unit
2. Subdividing an object by the unit

Students in kindergarten and first grade develop foundational concepts that support their ability to understand units and standard measurement. The important foundational concepts are:

- Lengths span fixed distances
- Moving an object does not change its length
- The concept of transitivity (i.e., if A is longer than B and B is longer than C, then A is longer than C)
- Any length can be divided in to smaller, equal-sized lengths
- Lengths can be put together
- There are standard lengths we use as units
- The concept of origin (i.e., where to start measuring)
- The relationship between size and number of units (Clement and Sarama)

Note that there is a fundamental difference between counting and measuring length. When counting, the size of the objects does not matter; counting is concerned only with the number of objects. A group of three large objects is equal to a group of three small objects in terms of number of objects. When measuring, the size of the objects is important and the number of objects may not be important. For example, if students make a row of small blocks and a row of larger blocks that are the same length, we want them to see that the rows are the same length even though one row has more blocks. Students who argue that the row with more blocks is longer may be confusing number with length.

The principles of measurement are subtle and take time to learn. Some common errors or misconceptions are listed below.

- Students leave gaps or overlap when measuring using a unit.
- Students may make a ruler without paying attention to the spacing between the numbers.
- Students begin measuring at 1 instead of 0.
- Students think of counting points instead of adding space covered.
- Students may combine units of different sizes (e.g., adding feet and inches).

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The learning progression below shows the basic stages students go through when developing the ability to measure length. All of the tasks in the measurement assessments are tied to the learning progression below.

The assessments include:

- a blueprint (showing the specific common core standards targeted);
- directions for administration;
- a scoring sheet/interpretation guide;
- a copy of the learning progression;
- a guide to creating instructional groups.

The scoring sheet/interpretation guide makes it easy to record student responses and interpret students' approximate developmental levels with respect to the learning progression. You can use the instructional grouping guide to create groups of students at approximately the same level who need experience working on the same or similar activities.

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Learning Progression: Measurement

Developmental Level	Description
Understands the concept of length and other measureable attributes	Describes the length of an object and differentiates it from other attributes such as weight or area (K.MD.1).
Directly compares length and other measureable attributes	Aligns two objects next to each other to see if one is longer. Holds one object in each hand and tells which is heavier (K.MD.2).
Indirectly compares length	Compares the length of two objects by comparing each object to a third object. For example, compares the lengths of two books by comparing each book to a stick (1.MD.1).
Orders objects by length	Orders objects by length (1.MD.1).
Measures by placing units end to end	May not recognize the need for equal length units. Begins to apply resulting measures to compare the lengths of objects.
Measures by repeated use of a unit	Uses one unit to measure objects by repeating the unit along the edge of an object. Works on increasing accuracy in the use of the unit. Relates the size of the unit to the number of units (i.e. if the unit is shorter you need more of them to cover the same length) (1.MD.2).
Measures using a ruler	Uses a ruler with minimal guidance (2.MD.1).

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References

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