MA.K.M.1.3

Overarching Standard: MA.K.M.1 *Identify and compare measurable attributes of objects.*

Benchmark of Focus

MA.K.M.1.3: Express the length of an object, up to 20 units long, as a whole number of lengths by laying non-standard objects end to end with no gaps or overlaps.

Example: A piece of paper can be measured using paper clips.

Benchmark Clarifications

Clarification 1: Non-standard units of measurement are units that are not typically used, such as paper clips or colored tiles. To measure with non-standard units, students lay multiple copies of the same objectend to end with no gaps or overlaps. The length is shown by the number of objects needed.

Related Benchmark/Horizontal Alignment

- MA.K.NSO.1.1/1.2
- MA.K.AR.1.3

Vertical Alignment

Previous Benchmarks	Next Benchmarks
VPK	MA.1.M.1.1

Purpose and Instructional Strategies

The purpose of this benchmark is to develop the foundation for measuring with given units. Though students will take measurements using non-standard units or objects, this will provide a foundation for standard units of measurement in later grades. *(MTR.5.1)*

- Instruction emphasizes the naming of units when recording or giving measurements.
  - For example, the pencil is 6 paperclips long.
- Instruction uses objects that can be measured in whole units, or close enough that there will be no misconceptions or errors related to rounding or estimating.
- Instruction includes concrete objects as well as images and context for students tomeasure. *(MTR.7.1)*
- Instruction includes students measuring an object using various non-standard units (erasers, paperclips, or candy bars), comparing the results, and seeing that when the unit is larger the number required is smaller. *(MTR.2.1)*

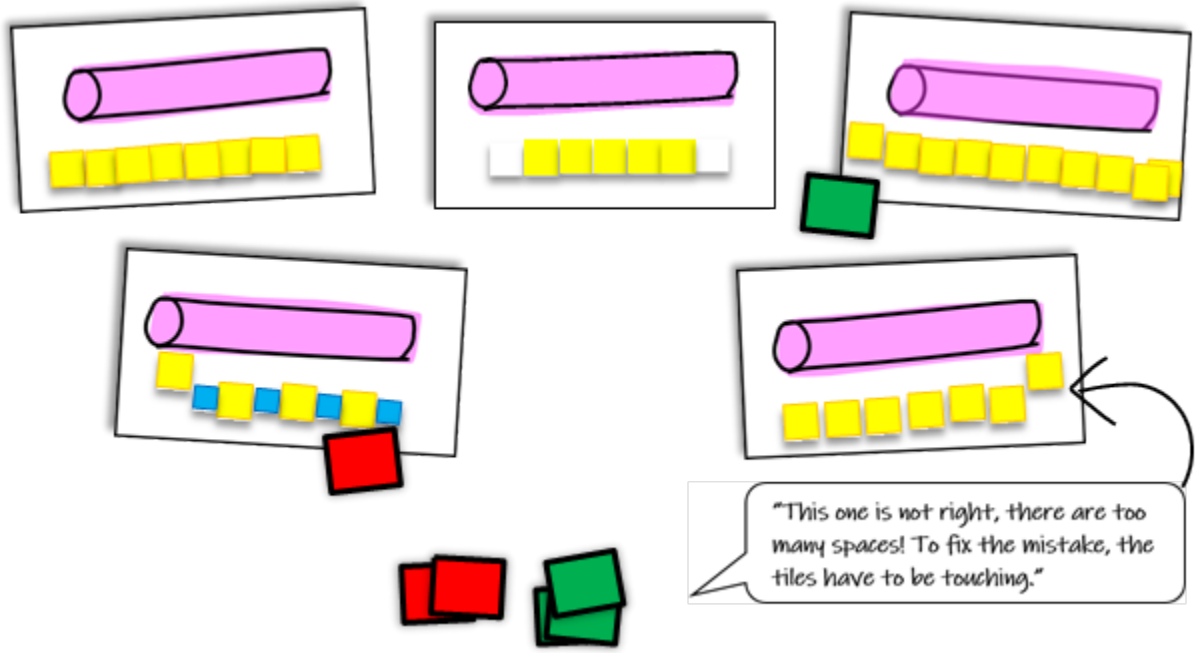
Common Misconceptions or Errors

- Students may leave gaps or overlaps between objects when measuring, leading to inaccurate results.
- Students may mix different size units in the same measurement.

Strategies to Support Tiered Instruction

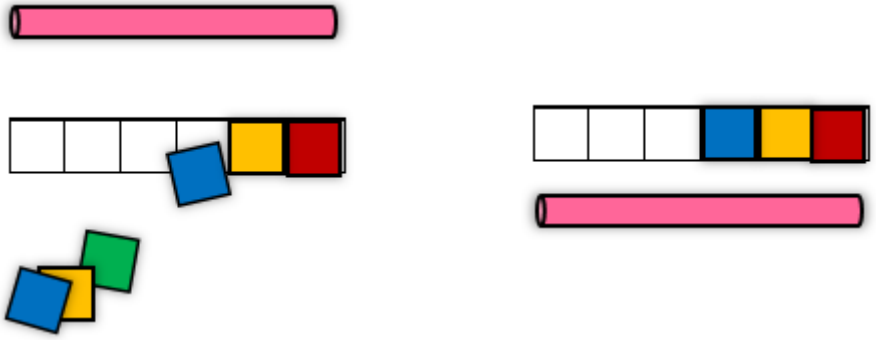
- Instruction includes discussions about measurement during activities or tasks and should emphasize to students the idea that units of measure must be equal in length and size; and that each length unit must be touching the next. Tasks can include presenting students with identical objects that show a length of measure, some of which are incorrectly measured. Encourage students to evaluate and verbalize their thinking to justify why or how each object is measured correctly or not.

  For example, images or pictures can be shown to students that include both examples and non-examples of the same object, such as a straw, that have been measured correctly. Students can justify their thinking about how the object was measured, label each image with a "yes (green)" or a "no (red)," and then tell how to fix the mistake.



- Teacher models using one-inch grid paper cut into strips to place next to or below an object when measuring. One-inch square tiles are then placed on the grid paper strip to be used as a guide to place each unit precisely, with no gaps or overlaps. As students find success with tile placement, the grid paper strip can be used next to or below the placement of the tiles, until it is no longer needed.

- Example:



Questions to ask students:

How many cubes long is the pencil?

- Sample answer that indicates understanding: *"The pencil is 10 cubes long when lined up from end to end." (Student completes tasks without gaps, overlaps or misaligned endpoints)*

Have the student then measure the same item using a paper clip. Then ask, "Did it take more paper clips or cubes to measure the length of the pencil?

- Sample answer that indicates understanding: *"It took more cubes because they are shorter than the paper clip."*

What mistake did this person make when measuring? (Student shown a picture of a common mistake such as gaps, overlaps, or misaligned endpoints)

- Sample answer that indicates understanding: *"They didn't start at the end of the pencil/line up all the cubes without gaps, etc"*

Instructional Tasks

Instructional Task 1

You will need objects to use as a unit of measurement (paperclips, tiles, or other non-standardunits) and various items to measure. In a group, have students pick which unit they will use to measure the objects with. (It is okay if students have different objects to measure with, butshould all measure the same item.) Students will measure and report their findings to the group. The teacher will lead a discussion around their findings and compare responses. The group can discuss why they had different results even though they measured the same item. (The paperclip is shorter than the tile, so more paper clips are needed than tiles.) After the discussion, repeat the task. Students can be encouraged to make predictions based on the previous discussion.

Instructional Items

Instructional Item 1

How many paper clips long is the pencil?

How many paperclips long is the flower?

Additional Resources:

CPALMS: MA.K.M.1.3

Online Video: Introduction to Nonstandard Measurement for Kids

Online Video: Brainpop JR. Nonstandard Measurement

Resources/Tasks to Support Your Child at Home:

Using non-standard objects such as paper clips, mini marshmallows, cheerios, coins or goldfish crackers to measure the length or height of objects in your household.

Have your child describe which object it took more of to cover the length or height.

Online Game: Measure Length with objects

Online Game: Measure Length with cubes