

**Mathematics Governor's Institute 2003
Problem-in-a-Bag Template**

Title of Project: *Magical Measurement Mats*

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Grade Level: Pre-K and K

Concepts used:

Introduction to measurement using non-standard and standard units of measure
Review greater than, less than and equal to; and how they relate to measurement

**PA Standards Addressed through activity and enrichment activities:
2.3.3 Measurement Estimation**

- B. Determine the measurement of objects using non-standard and standard units.
- G. Estimate and verify measurements

2.1.3 Numbers, Number Systems and Number Relationships

- H. Demonstrate an understanding of one-to-one correspondence

**NCTM Standards Addressed through activity and enrichment activities:
Measurement:**

- Understand measurable attributes of objects, the units and processes of measurement-specifically length
- Understand how to measure using non-standard and standard units

Numeration

- One to One correspondence

Introduction / applications:

“The firefighters will be visiting us tomorrow.
We’d like to all sit on our carpet rectangles when they visit us.”

Question:

“How can we find out if this space on the floor is big enough for all of us to sit with our carpet rectangles?”

Will there also be enough room for the firefighters to join us?”

Model: Students will use carpet rectangles to measure a space predetermined by the teachers.

The teachers will guide students to begin in the top left corner of the predetermined space, and place their carpet rectangle on the floor until the space is completely and evenly covered with one layer of carpet rectangles.

Resources and Materials (estimated cost):

Colored masking tape

-\$2.69

Carpet rectangles

-enough to fill the space predetermined by the teachers

-donated by local flooring supply store

Procedures / Activities:

Each student will estimate the number of carpet rectangles required to fill the designated space.

Each student will place their carpet rectangle end to end to fill in the first row of the space. Then teachers will guide students through the process of beginning subsequent rows until the entire space has been filled with carpet rectangles.

Then students and teachers will each take a seat on a carpet rectangle.

Students will demonstrate an understanding of one-to-one correspondence, by seating themselves on a mat within the designated space.

Students will then determine if all of the teachers and classmates are now seated.

Students will determine if there are additional carpet rectangles remaining.

- How many carpet rectangles are left over?

-Will there be enough seats if the firefighters want to sit?

Assessment:

Observation of each student

-Teachers will observe each student’s proper placement of mats in the designated space demonstrating an understanding of non-standard units of measure.

-Teachers will observe each student as they demonstrate an understanding of one-to-one correspondence- one child – one mat.

Answers / Rubric:

Students who demonstrate two of the above behaviors will receive +

Students who demonstrate one of the above behaviors will receive Emerging

Students who demonstrate zero of the above behaviors will receive -

Adaptations:

Teachers will reinforce activity by providing one on one instruction to any student who received (-).

Reinforcement of Concept

- Students will use firefighter boots to measure
“How many Firefighter boots/ footprints will fit in the area left for the firefighters?”.

Enrichment:

- Teachers will introduce standard units of measure
students will create a 6 “ worm.
- Students will use the 6" worm to measure the length of the carpet rectangle.
- Students will use the 6 “ worm to measure the length of a “Big Book”
- Teachers will make a chart while reviewing concepts of $>$ $<$ $=$.
 - a. Students will use the 6 “ worm to indicate to the teachers 2 items in the classroom that are $>$ the 6” worm
and indicate the proper placement on the chart.
 - b. Students will use the 6 “ worm to indicate to the teachers 2 items in the classroom that are $<$ the 6 “ worm
and indicate the proper placement on the chart
 - c. Students will use the 6 “ worm to indicate to the teachers 2 items in the classroom that are $=$ the 6 “ worm
and indicate the proper placement on the chart.
- Students will use the 6“ worm to measure foods provided at snack time.
Ex. “Use your 6 ‘ worm measure your pretzel rod. If it is $<$ the length of your 6” worm you may eat it. You must show one of the teachers before you can eat.”
- Students will take home the 6 “ worm and use it to measure items in their homes.
Students must find 1 item that is $>$ the 6“ worm. Students must find 1 item that is $<$ the 6“ worm.
Students must find 1 item that is $=$ the 6 “ worm

Students will record the measurement data in their journal

Parents will help as the students draw the item on the pages labeled with the appropriate symbols ($>$ $<$ $=$) demonstrating an understanding of the $>$ $<$ $=$ concepts as they apply to measurement.

Assessment of Enrichment Activities:

Teachers will observe the students using the 6” worm in the classroom and check the students journal entries.

Teachers will observe each student’s proper use of the 6“ worm demonstrating an understanding of standard units of measure.
Teachers will observe as each student demonstrates an understanding of the > < = concepts as they apply to measurement.

Rubric for Enrichment Activities:

Students will demonstrate an understanding of standard units of measure;

With 80%-100% accuracy	Students will receive	+
With 60%-70% accuracy	Students will receive	emerging
With 0%- 59 % accuracy	Students will receive	-

Students demonstrate an understanding of > concept as when using the 6” worm;

With 80%-100% accuracy	Students will receive	+
With 60%-70% accuracy	Students will receive	emerging
With 0%- 59 % accuracy	Students will receive	-

Students demonstrate an understanding of < concept when using the 6” worm;

With 80%-100% accuracy	Students will receive	+
With 60%-70% accuracy	Students will receive	emerging
With 0%- 59 % accuracy	Students will receive	-

Students demonstrate an understanding of = concept when using the 6” worm;

With 80%-100% accuracy	Students will receive	+
With 60%-70% accuracy	Students will receive	emerging
With 0%- 59 % accuracy	Students will receive	-