How Big Is A Foot - High School Level

Common Core Standards
Measure and estimate lengths in standard units.
2. MD.1 Measure the length if an object and using appropriate tools such as rulers, yardsticks , meter sticks, and measuring tapes.

Standards for mathematical practices

1. Make sense of problems and persevere in soling them ‘
4. model with mathematics
5. Use appropriate tools strategically ‘
6. Attend to precision.

Student Outcomes:

- I can create a ruler as a measurement tool.
- I can measure the length of an object using a standard ruler.
- Student will be able to understand or measure for a square inch garden

Materials:

- How Big is a Foot? By Rolf Myller
- One inch color tiles
- Masking tape
- One inch grid paper
- Scissors
- Crayons
- Square foot gardening book

Advance Preparation:
Material Preparation:

- Have materials ready and have a model of the ruler ready to show the students. This is made by taping 12 one inch color tiles together to form a 12inch ruler to 1 foot ruler.

Thinking preparation:

- This lesson is intended to be introduces=d after students have had opportunities to use nonstandard measurement tools to measure objects. This is then the introductory lesson to using standard measurement when students are ready to understand the need for a standard unit. This will also prepare students to measure a 12 foot garden to plant a garden.

Directions:

1> Read the book to the class as a whole group.
2> Discuss what happened with the bed so that all children understand the importance of standard measurement. Make sure the discussion is clear as most second graders will understand but few will need this discussion to

help them see why standard measurement is important. Relate this discussion to prior experiences when students have used nonstandard measurements.

3> Explain to the students that the King's foot was 12 inches long and so we will make a copy of the King's foot to use to measure. We will call it a "ruler" since he was a ruler or it can be referred to as a foot stick.

4> Ask students to tape together the one inch color tiles in an AB pattern to make it easier to count the tiles when we measure. (Share the model you have created or make your ruler with the students so they will see how to tape it together.) When students have their rulers taped together, they can begin to measure a plot on the dirt or grass while the teacher helps everyone complete the task.

5> When all rulers are completed, pull the group together and ask them to measure several plots of garden space for specific plants. Ask students, "IF you could write on your ruler, where would zero belong? Make sure students understand that they must start at the beginning of the ruler count each tile. Students measure for different vegetable varieties.

6> After students measure several plots and compare the measurements have them transfer the color tile ruler to the one inch grid paper with veggie lables attached. Combining all veggies to make a community garden plot.

7> Using this one inch garden plot students will plant their garden.

Questions to Pose:
Before:
When would we measure anything in the real world?
Why is it important to have a standard unit when measuring?

During:
How do you know the measurement of an object?
Can you show me how you measured this object?

After:
What did you learn about using a ruler?
When will you use this?
Why does "What" We measure help us decide "how" we measure?
Why is it important to have a community garden?

Possible Misconceptions:
Students will want to start on the second tile rather than the first tile therefore their measurement will be incorrect.

Suggestions:
When modeling e sure to discuss why the first tile must be counted as it is a part of the measuring tool. If necessary, take the tiles apart and have the student align them count.