Grade Level/Course: Grade 2

Lesson/Unit Plan Name: Appropriate and Correct Measurement

Rationale/Lesson Abstract: Students will have the opportunity to explore different measurement tools to determine what is "appropriate" for situations that call for quick, accurate measuring.

Timeframe:
3 days of about one hour each lesson

Common Core Standard(s):

2.MD.1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.2: Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Instructional Resources/Materials:
Rulers, yardsticks, meter sticks, measuring tapes

Activity/Lesson:

Day One:
Teacher reviews the concept of measurement as taught in first grade where students measured objects in same-length units
"Last year you learned that you could measure the piece of paper using paper clips." Teacher models on the docucam, placing the paper clips carefully end to end. "The paper is ___ paper clips long."
"However, do we say that Rosa is 48 paper clips tall? No, we talk about inches!!"

Teacher introduces the 4 measuring tools- rulers, yardsticks, meter sticks, and measuring tapes. All tools are shown one at a time.
Teacher connects the rules for proper use of manipulatives to the proper handling of the tools.
Teacher also introduces the correct way to measure an object.

- Where do you start your measurement?
- What do you do if it is longer than your tool?

Each table group is given all four tools. Students divide a piece of paper into 4 and label each quadrant with a measuring tool. They need to make 2-3 observations per tool in each quadrant.

Ruler	Yardstick
Meter stick	Measuring tape

Teacher collects measuring tools. Each group shares one observation per tool and teacher writes it down on chart paper that will be posted in the classroom.

Day Two:
Teacher will introduce the concept of "appropriate" methods to measure items by comparing the use of multiple methods in addition. Students will name the different methods and the teacher will write them on the board, emphasizing that they are all correct methods to get the answer.

How would **you** add 26 + 38?

In pairs, students will discuss which method they would choose and why, developing the concept of appropriate method. Teacher will pick 3 volunteers to explain to the whole class why they would choose a certain method.

Teacher will state that today's objective is to measure objects using the different tools that were worked with yesterday. All of these tools will give correct measurements. Given the reasons they just gave for choosing certain methods of addition, what might be the reasons to choose certain measuring tools? Teacher will use student ideas to fill in rubric.
"Why would you choose to use partial sums?"
Students will have different answers, but usually they focus on ease and accuracy:
"Partial sums is really easy for me to use."
"I always get the right answer when I do it this way."
"I can see how to do this in my head."
"I like that I can do it quickly."
Teacher will pull categories from their responses to develop a rubric. (see last page for suggested rubric.)

Teacher will review the four tools and the procedures for using them correctly.
Teacher will connect the thinking they just did about the multiple methods of addition to the objective of the day's lesson:
Using a rubric, I can determine which tool(s) is/are most appropriate to measure certain items.

Each table will receive the four tools and worksheet. Each student at each table will have one tool to do the measuring. The teacher will model the procedure with the students on the docucam.
"I will start measuring the math notebook using my ruler. I will start at the first mark on the ruler, lay it flat and straight on the notebook, and then see the number of inches where it ends." After the teacher has measured the notebook with the ruler, the student with the ruler will have a turn. While the student with the ruler at each table measures the math notebook, the other members of the group make sure that the measurement starts and is completed correctly. The student who just measured with the ruler will enter the measurement on the worksheet, just as the teacher is doing it on the docucam. After this is recorded, the group will discuss the tool using the rubric:

- Was the tool easy to use?
- Was I able to measure correctly?

- Is this a tool that is available to me in class?

The group will record their thinking about the ruler on the rubric. The whole class will then discuss their thinking about how appropriate this tool is to measure the notebook.

Then the teacher will model the exact same procedure with a yardstick, using the same internal dialogue.
"I will start measuring the math notebook using my yardstick. I will start at the first mark on the yardstick, lay it flat and straight on the notebook, and then see the number of inches where it ends. Wow- I have to be careful of my group with this long tool!" After the teacher has measured the notebook with the yardstick, the student who has the yardstick will measure the notebook while the other members of the group make sure it is done correctly. This measurement will be entered on the worksheet, just as the teacher will do on the docucam.
The class will then think about the rubric for measuring the notebook with a yardstick. The group will discuss the tool using the rubric:

- Was the tool easy to use?
- Was I able to measure correctly?
- Is this a tool that is available to me in class?

The group will record their thinking about the ruler on the rubric. Again, the whole class will discuss their thinking about how appropriate this tool is to measure the notebook.

This procedure will be repeated with the meter stick and the measuring tape so that each student has a chance to measure the notebook and record results. Always, after they measure, they will think about what makes each tool appropriate to use. After all four measurements have been made, each table group will choose one tool that they think was the best choice for measuring this object.
The class will discuss together:

- What made measuring with your tool successful?

"I was successful at measuring the notebook with ____ because ____."

- What made measuring with your tool complicated?

"One problem I had using ___ was ____."

- Why do you feel that your tool is/is not the most appropriate tool to use?

"My tool is the most appropriate to use because ____."

Students will be expected to explain their thinking and encouraged to build on each other's thinking:
"I would like to add to what ___ said…."
"I disagree with ___ because ____"

Teacher collects the tools and worksheets to complete tomorrow.

Day Three:
Teacher will review the work from yesterday with a focus on the choice of an appropriate tool. Teacher will also direct students to the actual measurements they made.
"What do you notice about the measurements you made?"
Students should be able to see that the ruler, yardstick, and measuring tape are all in inches so the measurement should be the same.
"What does it mean if the measurement is the same even though you used different tools?"

Teacher will pass out tools again to the table groups. Table groups will be assigned to measure the objects on the worksheet with all four tools. They will determine which tool is the most appropriate using the class rubric. Students will be expected to measure accurately and state the reason they chose their tool.
Each table group will present their findings about one object to the class, including their reasons for choosing a specific tool.

After the entire class has presented, the teacher will go back to the rubric and make any additions or deletions with the class to inform how they decide the appropriateness of a tool.

The teacher will close the class with an exit ticket.

Name _____

Object	Ruler Measurement	Yardstick Measurement	Meter Stick Measurement	Measuring Tape Measurement
Math notebook				
Length of desk				
Pencil				
Height of door knob				
Journal				
Height of desk				

Which tool worked best for you? Why?

Rubric for Measuring:

Easy to Use Tool	Accuracy with Tool	Availability of Tool
The tool can be moved around easily. 3	The tool worked well to get an accurate result. 3	These tools are always around in my classroom. 3
It is hard to use the tool in small or large places. 2	The tool was hard to see clearly to determine the measurement. 2	I think there are some of these tools around my classroom. 2
The tool did not work out well at all. 1	The tool did not work out well. 1	I don't have these tools. 1

Exit Ticket:
What tool would you use to measure the width of the classroom window?
Why?

Assessment:

Exit ticket:
Teacher will choose an item and ask students which tool is best to use to measure it and why.