

## ***Collaborative Math Lesson Plan***

**Names:** Carrie Adrahtas, Abbie Bucska, Courtney Gluski, Katie Kret, & Meghan McGrath

**Grade Level:** 2<sup>nd</sup> Grade

**School:** Maybury Elementary

**Date:** September 30, 2009 – 1:30 pm

**Overall lesson topic/title:** “Introduction to Measurement: *Measuring our Animal’s Bracelets*”

### **Rationale:**

#### **Second Grade Math GLCEs -**

- **M.UN.02.01** Measure lengths in meters, centimeters, inches, feet, and yards approximating to the nearest whole unit and using abbreviations: cm, m, in, ft, yd.
- **M.PS.02.02** Compare lengths; add and subtract lengths (no conversion of units).

### **Learning Goals/Objectives for today’s lesson:**

Students will be able to...

- Identify the proper end of a ruler to use while measuring
- Successfully measure and record various lengths of string
- Work cooperatively in groups and stay on task
- Explain to others the proper way to use a ruler and why

### **Materials & supplies needed:**

- 6 Red Group Folders that will contain:
  - Role Card Necklaces
  - Bags of different size/color string (2 per group)
  - Measurement Charts (3 per group) -- 2 partner & 1 group chart
  - Paper Ruler (1 for each group member)
  - List of Group Members and their roles for the day
- Final Measurement Chart Worksheet (1 per group)
- Sample Piece of String
- Pencils, Crayons

<b><i>Procedures and approximate time allocated for each event</i></b>	<b><i>Academic, Social and Linguistic Support during each event for my focus students</i></b>
<p><b>LAUNCH (“BEFORE”)</b> <i>(15 minutes)</i></p> <p>Students will be called to the carpet by table groups. <i>Boys and girls I have a very important assignment that I need your help with today. I have four animal friends that I made bracelets for. I made one for Mr. Elephant (hold up red string), Mr. Dog (hold up blue string), Mrs. Mouse (hold up yellow string) and Mrs. Horse (hold up green string). My friends loved the bracelets so</i></p>	<p><i>Role card necklaces were made for</i></p>

*much that they wanted to make their own but they didn't know how long to cut the yarn. What I need your help with today is measuring their bracelets so that we can tell my animal friends what size to cut the yarn so that they can make more bracelets. Let's go over the materials you will get in your folder along with the directions on the worksheet together. The first thing you will put on is your role cards – in each folder I have listed your group member's names and roles. You should be familiar with these roles since we have gone over them and practiced them several times. Next you will see that I have some long strips of paper cut out. Does anyone know what this is? (Hold up paper ruler and wait for responses). This is a ruler and today we are going to use these rulers to measure our animal's bracelets. Now whenever we measure something we have to have a **unit** of measurement. A **unit** of measurement tells us what we are measuring with. We will talk more about units at a later time, but for today, the unit we are measuring with is inches—Can everybody say “inches”? Have we heard that word before? Good. (Write “unit” on the board and next to it “inches”. Then hold up bags of strings that represent the bracelets, and demonstrate proper way to use a ruler using a “sample” string). We should hold up the edge that says zero to the end of our string, and then we will pull the string into a straight line against the long edge of our ruler that has the numbers along it. When your string is completely stretched out, you should record the number that the other end of the string reaches to on the worksheet I give you. Now this string reaches all the way to what number? (Have a student read the ruler for me). And what unit did we say we are using today? (Wait for response). Right, inches, so after every number, we should write the word “inches” so that we know what we measured with. So our worksheet will look like this (Show worksheet, explain how to put the data in the chart, then briefly demonstrate examples of how **NOT** to measure string, i.e. starting at 2). First you will work in pairs within your groups. Those of you working in groups of three will measure all four strings all together. But for those working in pairs, you will measure the two strings in your bag, record your answer on the half sheet chart, and then switch bags with the other two people in your group. Once both pairs have measured all four pieces of string and wrote down their answer in the chart, you will talk as a group about the answers that you have found. During the activity I will call up one group member from each group to give further directions. Does anyone have any questions? (Wait for responses). Okay when I call your group number, I would like you to grab a pencil from your desk and then go sit in the*

*those students that have a hard time remembering what is expected of them, or what was asked of them.*

*I will also make sure to ask the students to clear everything off of their desks to take away any distractions for my students that have a hard time listening or concentrating while I am is talking.*

*Writing any new terms on the board like unit also supports not only my visual learners but also ELL students who may not have heard and/or seen this word before.*

*I will also be moving around the classroom throughout the group activity. Students know that if they have any questions, the Questioner may raise his/her hand and I will assist them as much or as little as I feel necessary.*

area I have designated for you at the tables and get started. (On tables will be a card with the group's number on it as well as their red folder with their materials).

### **EXPLORE (“DURING”)**

*(20 minutes)*

As students begin working I will walk around the classroom to make sure they are doing what they are supposed to—staying on task and each group member is involved and participating. I will speak with any group who's Questioner has raised his/her hand though I may challenge students to answer their own questions rather than just give them any answers. They have also previously been instructed that before asking me any questions, they must ask their group how to solve the problem first.

Some anticipated questions are:

- Am I measuring this correctly?
- What are we supposed to do next?
- Do I have to measure all of the strings?
- Where is the starting point for the string?
- Which number tells us how long it is?
- Where do we put our answers?

I hope to see students working together to measure the strings in their bags. I want to see them using their rulers properly, starting at zero like I showed them. However, I do anticipate that some students may not start at zero and will come up with an incorrect answer. Additionally, they may not stretch out their string completely straight and will come up with an incorrect answer. I do not want to correct any of these behaviors yet because I would like to see if they can help each other within their groups correct these mistakes. If not, there will be an opportunity to understand and correct mistakes during the “After” portion of the lesson.

As most groups seem close to finishing their charts, I will call the Includers up to the front of the room. I will give them the following directions to take back to their groups.

*Now most of you are just about finished with measuring your strings. I need you all to listen carefully now because I am going to give you some directions that you need to take back and explain to your group. Once both pairs have filled out the charts I want you to compare your answers. You should make sure that everyone has the same answers for the different lengths of string. If you have different answers for some of the*

*Support for T.G. – Sometimes T.G. struggles in a group setting and gets frustrated when working with others. If this becomes the case, I will have a separate worksheet on measurement available for him to complete on his own at his desk. As he is already separated from the table groups on a daily basis, this is a likely occurrence and something that I will prepare for ahead of time. I would like for him to try to complete the group-work but if it hinders his learning (as well as his group's learning) then I will have him complete a similar worksheet on his own. T.G. has been the only student showing signs of these frustrations, however additional copies will be on hand in case this is necessary for other students in the class as well.*

*measurements then you need to work together to figure out which answer you think is correct because you will be recording your final answers on this sheet of paper. On here you will need to put all three or four group members' names. Then fill in the chart with the measurements for each string. Don't forget to write the unit of measurement, which we said was inches after each number that you come up with. Do any of you have any questions? Do you know what you're going to tell your group members? (Answer any questions then let them return to their seats and finish the assignment).*

Students will be given several more minutes to finish working. Any groups that finish early will be asked to draw a picture of any of the four animals wearing their bracelet. When they have only two minutes left, I will alert them that they have two more minutes before we will begin going over their answers together.

### **SUMMARIZE (“AFTER”)**

*(15 minutes)*

*Okay we should be just about finished with measuring our strings and writing down our measurements in our charts. I'd like whoever is writing in your group to put their pencil down. The Materials Manager should put the string back in the baggies and into the folder. The paper rulers should also be put back into our folders. The only thing sitting in front of the group should be your final measurement chart. I'm looking for groups who are ready to share their answers. I would like a volunteer group to share what length they got for the red string. (Choose a volunteer group to come up to the front of the classroom. Have a ruler and appropriate string up at the front of the classroom). Okay, I would like the Cheerleader to read what the group got for the length of the red string. (Make sure they say the units along with the number). Okay (insert student name) said that their group got (insert number) for the length of the red string. Can the Questioner and Includer hold up the string and ruler and show the rest of the class how you came up with that answer? (Allow them to demonstrate then turn to the rest of the class). Do we agree with how they measured? Did they start at zero and then pull their string straight? Did any other groups get a different answer for the red string? (If classmates agree and students are correct, record number on chart on the whiteboard. If incorrect, ask for a volunteer to come up and show them the proper way to measure the string. If a different group came up with another answer, ask them to share their solution and adapt discussion to their response).*

<p>I will then go through each color string asking a different group to volunteer each time. There are only four strings and six groups, so two groups may not be able to share their responses but I will be able to see their work when they turn in their group folders. Also, if any of the groups have discrepancies in their answers I will try to call on a different group than one who is sharing in front of the class in order to get every group involved.</p> <p><i>Okay so in your groups, you measured the string and told me that the red string was x inches, the blue string was x inches, the green string was x inches, and they yellow string was x inches. Great, now I can let Mr. Elephant, Mr. Dog, Mrs. Mouse, and Mrs. Horse know how big their wrists are! So throughout this lesson we identified some proper ways to use a ruler. If you had to explain how to use a ruler to someone else, what would you tell them? What are some key things that they should remember? Let's make a list of advice for our animal friends so that next time they will be able to measure their own bracelets. (Take volunteers). Great job, I think we all have a really good understanding of how to measure with a ruler now. Can anyone think of why it might be important to know the length of these bracelets or the length of any objects in general? (Take responses). What if the elephant tried to wear the mouse's bracelet? Or if the mouse tried to wear the dog's bracelet? It would be the wrong size right? Interesting. So let's keep that in mind because in future lessons we're going to talk about why measurement is important and get some more practice with measuring different objects.</i></p>	
<p><b>Assessment</b></p> <p>I will gauge students' learning by examining how well they seem to measure the strings in their partner groups as I walk around the room. I will be checking for starting at zero and holding the string straight. I will also be looking to see if students can explain and demonstrate how they got their answers when we come back together for whole group discussion. Depending on how students do in this activity I may either take a step back and spend time <i>only</i> talking about how to measure with a ruler OR I may move forward and begin going over the importance of measurement and moving into more complicated ways of measure (for example if they did not start at zero, how they could still figure out the length of an object using subtraction).</p>	<p><b>Academic, Social, and Linguistic Support during assessment</b></p>