Unit Title: MEAP Preparation by Practice with Data, Measurement, and Calculators

Grade Level: 5th

Subject Areas Addressed: measurement in the metric and U.S. system, personal measurement references, collecting and organizing data, and calculator practice with fractions and percentages

Time Frame: 5 days (Five 45 minute class periods)

Designed By: **Lisa J. Mele**

School District: Pontiac

School: LeBaron Academy for Reading and Technology

Unit Summary:

  The 5th grade unit that I taught served as a way to review major concepts that could be covered on the MEAP test. The lessons varied in their topics and concepts covered from day to day, because the mentor teachers that I work with wanted these topics covered before the MEAP test. The students did a lesson about measuring using both the U.S. system and the metric system of measurement with rulers. They worked on converting between the measurement systems and identifying what different units would be used to measure. Then, students worked with personal measurement references to help them gain an idea of ways to measure without rulers and the size or distance that various units measured. The next day the students did a lesson about collecting and analyzing data using mean, median, and mode and graphed there data in two different ways. To end the unit there was a two day lesson in which students gained practice operating the necessary functions of the calculator by participating in a shopping spree which utilized finding prices by doing addition, subtraction, multiplication, division, and using fractions and percentages. The culminating performance activity enabled students to continue working with data, measurement, graphing, and calculators to help assess their knowledge of each main topic covered.

  Many of the lessons were hands-on activities to give students a chance to interact with the concepts being taught and gain practice using the math tools before the MEAP. The students needed to work on their concepts of measurement and recognizing measurement unit terms. By measuring with rulers and focusing on personal references that can take the place of a certain unit, students were developing concepts about real world measurements to refer to when needing to know different unit sizes for the MEAP test. The ability to analyze data using mean, median, mode, and range also gave the students the opportunity to understand data collection and how averages are found. Finally, the shopping spree enabled students to practice all of the functions of a calculator that they need to know for a testing situation. It also provided them with a chance to use math in an authentic activity. The culminating activity was one that allowed them to utilize many of the skills learned throughout the unit and provide them with a final review of the various concepts before the state testing began.

Stage 1: Desired Results

    A. Mathematics GLCEs

Content Standards- Used 4th grade GLCE's because the lessons are focused on MEAP preparation and the MEAP test for 5th graders is on 4th grade math content. I was instructed to use both 4th and 5th grade GLCE's to create these lessons.

        i.) D.RE.04.01 Construct tables and bar graphs from given data

        ii.) M.UN.04.01-Measure using common tools and select appropriate units of measure.

        iii.) M.TE.04.05 Carry out the following conversions from one unit of measure to a larger or smaller unit of measure: meters to centimeters, kilograms to grams, liters to milliliters, hours to minutes, minutes to seconds, years to months, weeks to days, feet to inches, ounces to pounds (using numbers that involve only simple calculations).

        iv.) N.MR.04.14 Solve contextual problems involving whole number multiplication and division.

        v.) D.AN.05.03- Given a set of data, find and interpret the mean (using the concept of fair share) and mode

        vi.) M.UN.05.04-Convert measurements of length, weight, area, volume, and time within a given system using easily manipulated numbers.

        vii.) N.MR.05.01-Understand the meaning of division of whole numbers with and without remainders; relate division to fractions and to repeated subtraction.

        viii.) N.FL.05.04-Multiply a multi-digit number by a two-digit number; recognize and be able to explain common computational errors such as not accounting for place value.

    B. Understandings*:*

    Students will understand that…

- Graphs can be created from a set of data
- Mean, median, and mode can be found from a set of data
- Data and graphs can be used to present real world information
- There are differences between units used for measuring distance, weight, and liquids for the metric system and the U.S. system
- Personal measurement references are a way to estimate distances when traditional measurement tools, like rulers, are not available.
- Various objects or body parts can be used as personal measurement references to determine distances and understand metric and U.S. units
- Calculators can be used to assist mathematic performance when finding percentages and fractions of amounts and when using decimals
- Calculator functions require an order of operation

    C. Essential Questions:

- What can an understanding of the averages of data collection tell us about the data?
- What can bar graphs based on data tell us about the data?
- How will understanding the U.S. and the metric systems of measurement and how to convert between them serve in the real world?
- Why are personal reference measurements helpful to us in math and in everyday activities?
- Why is it important to be able to understand percentages of amounts in the real world?
- What are the purposes of mathematical tools such as calculators and how can they benefit us?

D. Students will know…
- The difference between various graphs and which types are used for various types of data
- That mean, median, and mode function as a means of describing data
- What units of measurement are and why we use units of measurement
- There are ways to measure different units without a standard measuring tool such as a ruler
- Calculators can be used to assist in performing mathematical operations

Students will be able to…
- Collect and analyze data to find the mean, median, and mode
- Create a graph to display data
- Measure objects in centimeters, inches, millimeters, meters, and yards
- Identify and demonstrate knowledge of real world situations when different types of measurement systems would be used
- Decide on personal measurement references to accurately replace measurement tools
- Use a calculator to add, subtract, multiply, divide, and use decimals, fractions, parentheses, and percentages

E. Prior Knowledge:
- Why and how graphs are made
- How to organize numbers from least to greatest
- Experience with measurement tools (rulers)
- Students will have knowledge of the metric system
- Experience with measurement terms (inches, feet, meters, etc.)
- Experience converting within the metric system
- Experience using calculators to perform mathematical operations
- Students should understand the purpose of calculators

F. Misconceptions:
- No more than one set of data can be put on a graph
- Median and mean can be found the same way
- Which units of measurement are used for U.S. system versus which units of measurement are used for the metric system
- Units used for measuring distances, liquids, and weight are the same
- Rulers do not measure millimeters because they do not specifically have the letters mm to represent millimeters as they do for centimeters and inches

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- The same objects could be the personal measurement reference for a centimeter and a millimeter because they are both small
- The order that numbers, especially fractions, are entered into a calculator does not matter
- Multiplying the price of an item times the percentage discounted will give you the new price of the item
- The decimal point that separates dollars from cents does not need to be put into the calculator

Stage 2: Assessment Evidence

A. Culminating Performance Task:

What understandings and goals will be assessed through this task?

This culminating performance task will assess many of the skills learned throughout the unit. Students' ability to independently measure in both the metric system and the U.S. system accurately will be the first understanding that will be assessed. The activity meets the goals of allowing students to work with measurement, collecting, organizing, and analyzing data, and using calculators in an authentic task to assist with mathematical computations. The goal of this task is to give the students an opportunity to combine all of the skills learned throughout the unit to better prepare them for problems and tasks they may encounter on the MEAP test. Students' levels of understanding of each of these skills and elements of the performance task will be assessed.

Through what authentic performance task will students demonstrate understanding?

Students will demonstrate an understanding of the many tasks we did through a culminating performance task. Students will be put into groups of 4 and each group will be given a ruler per person. The students in the group will be instructed to each measure the length of their own foot in centimeters and in inches using the ruler. They will record their measurements in their math notebooks. Students within a group are allowed to help each other measure and will be encouraged to check each other's measurements. They will each write down the group's measurements in centimeters and in inches. They will then be instructed to organize the data so that they can find the mean, median, and mode of the data. Students will be reminded that they have two sets of data, their foot length in centimeters and inches. Students will be given calculators and instructed to use them when calculating the mean, so they can gain more practice using calculators when doing mathematical operations. After finding the mean, median, and mode of the data, students will graph their group's data on a bar graph or a line graph. They will be shown how they can put both sets of data onto a line graph or told they can make two different graphs. Students will present their graphs to the class. As an extension, if there is time after the students have presented their graphs, we will list the whole classes shoe sizes in centimeters and use the calculators to figure out what percentage of the class has the same shoe size.

B. Culminating performance task rubric:

(See Attached Rubric)

C. Other evidence:

- Students will be assessed in the first lesson with homework that focuses on their understanding of metric conversions. They will fill in blanks using a word bank of metric units to assess their understanding of the metric units and what they are used to measure. They will do the same task with

U.S. units of measurement, so that they can understand the similarities between the two systems. Next they will perform metric conversions that are one-step problems and multi-step problems to assess their understanding of converting between metric units. This assessment will show if students know what metric units and U.S. units measure, if students can perform metric conversions, and if students understand the similarities between the two systems of measurements in the items that they measure.

GLCE's: **M.UN.05.04, M.TE.04.05**

· For the second lesson, students will be assessed on both the chart they fill in during class and the homework sheet that assesses their knowledge of distances and lengths using personal measurement references. The chart has students measure an object or distance using a personal measurement reference, estimation, and actual measurement. The homework has students choose which measurement unit would best fit various distances or objects, some of which were discussed as personal measurement references in class. Students' understanding of estimation, personal measurement references, and the metric and U.S. measurement system are assessed. The skill of accurately measuring is also assessed with the in-class chart.

GLCE: **M.UN.04.01**

· During the third lesson, students will be assessed by the graphs that they create using data and their identification of mean, median, and mode of their data. Groups will turn in the graphs they have made, which will have the data numbers, mean, median, and mode written on it. They will also create a graph on the computer, which they will receive verbal feedback right away. The graphs and correctness of mean, median, and mode will show students knowledge of how to create a graph given data, understanding of how data can be presented using different types of graphs, and their skill calculating mean, median, and mode.

GLCE's: **D.AN.05.03, D.RE.04.01**

· In the fourth and fifth lessons, students will be assessed by the in-class worksheets they fill out using the shopping catalogs and calculators. The worksheets have students practice their skills using calculators with the operations of addition, subtraction, multiplication, division, decimals, fractions, and percentages. This assessment shows students' understanding of using calculators to solve math story problems and find percentages of amounts. It assesses their knowledge of the order of operations within a calculator to solve mathematical problems and their skill at using a calculator to perform multiple mathematical operations.

GLCE: **N.MR.04.14**

· Throughout the unit, students will be observed for their understanding of the content. If all or some of the students are struggling with the lessons, than it will be important to review the lesson the next day and present the information in a different way. Another option would be to provide a simplification or more one-on-one help with specific students who are struggling. On the other hand, if students are finishing the work much quicker than I anticipated, than the extensions will be necessary and I may need to change portions of future lessons. Observation provides an on-going assessment of the students' understanding and knowledge of the material being presented. I also will be able to analyze their skill level by observing their participation in the lessons and level of ease with which they accomplish tasks.

GLCE's: **M.UN.04.01, M.UN.05.04, D.RE.04.01**

Stage 3: Learning Plan

- Welcome the students and tell them: "We will be doing lots of activities throughout the year where you will get to interact and move around if you can show that you know how to act responsibly during lessons."
- Remind students about the community agreements and that they are expected to follow the community agreements and use their attentive listening skills during our lessons together
- Inform students: "We will be starting off the lesson using rulers. It can be a lot of fun to do hands-on activities and I hope you all can prove to me today that we can keep doing hands-on activities be using the rulers appropriately."
- Ask: "What are some of the ways you can show me that you know how to use a ruler?"
- Tell the students we will be working on measurement today and that to start things off, each pair of students will get a ruler (Students sitting across from each other will be partners)
- Pass out the rulers and ask
    - "Raise your hand if you can tell me which side of the ruler measures centimeters?
    - How do you know?
    - What about inches?
    - Can everyone point to the centimeter side on their rulers? Now try inches"
- Tell the class that without telling other groups, one partner should measure the distance with the ruler to the other partner in inches and the other partner should measure the distance back to the first person in centimeters. Each partner should record the distance between them in both centimeters and inches
- Ask a few different groups their distances in cm and in, write them on the board, and discuss their results
- Ask:
    - "Who can tell me why it took many more centimeters than inches to measure the same distance across your desks?"
    - "Centimeters are measurements used in the metric system and inches are measurements used in the U.S. system, both are used to measure short distances. What does this tell us about the two systems?"
- Write units of metric measurements on one side of the board and units of U.S. measurements on the other side while the students are measuring
- Ask the students if they can identify which side has the metric measurements and which side has the U.S. measurements, write the names
- Ask:
    - "Why would we have two systems of measurement?
    - "Can anyone think of a time they have seen the metric system used in the U.S.
        - Some road signs, pop bottles, water bottles, car speedometers, rulers, Science, etc.
- Discuss that some of the units can be used for measuring distance, some for weight, and some for liquids
- Ask students to look at the lists and
    - "Identify which units are used to measure distance, weight, and liquids?" Group them on the board as the students answer
- Talk about things in the room and things they use that we could measure each with and have students write examples in their math notebook

- o Distance to the door we could measure in yards or meters, length of a finger measured in inches or cm, weight of a paperback book measured in grams or ounces, amount of water in a water bottle measured in milliliters or fluid ounces, ask for their examples
- · Ask students
  - o "What if I only had a ruler like the ones you have so I could only measure centimeters, but I wanted to know how many meters, not centimeters, it was across your desks, do you think there is a way that I could figure that out?" Ask for ideas
- · Next to each metric unit on the board, write the amount it is worth (mm 1/1000, cm 1/100, decimeter 1/10, m 1, decameter 10, hectometer 100, kilometer 1000) discuss how these amounts work- "There is 10 mm in one cm (count it on the ruler as a class), there are 10 cm in one decimeter, and 100 centimeters in 1 meter"
- · "You have found out amounts between meters and centimeters in 4th grade, but it was a long time ago, so we are going to review how to do it"
- · Show students how to set up metric conversions and do an example using the desk activity
  - o If it was 25 cm across the desk,
    - ▪ 25 cm* $\underline{1 \text{ m}}$
        100cm
    - ▪ Explain that we want to cancel units so you always put the units that are the same (cm in this case) with one in the numerator and one in the denominator
    - ▪ Show more examples
- · Write 3 or 4 metric conversions (in m, L, and g some with multiple steps (from smaller than a meter to larger than a meter), some without) on the board and have students do them with me in their math journals
- · Ask for answers and have students come write them on the board
- · Go over how they solved the conversions

Closure
- · Tell students that they will be doing conversions just like those for their homework, pass out the homework and do the first problem as a class
- · Inform the students that tomorrow we will be working with rulers and measuring again and let them know how well they used the rulers today

Extension
- · Ask students to come up with their own conversion problems using something in the room and let them use a ruler and meter stick to measure it after they have done the conversion math

Day 2:
- · Tell the class "On Monday we talked about two systems that we use to measure. One was the U.S. system of measurement and the other was the metric system of measurement. Today we are going to keep talking about those two measuring systems and figure out what we can use to measure different distances."
- · Remind students that they are expected to follow the community agreements and raise their hand to talk.
- · Ask the students about the two measurement systems, U.S. and metric. Ask:

- o "Which units we use to measure small objects and what we would use to measure large objects?"
- Tell students: "Without measuring, stay at your seats and look around the room to find something that you think is about 5 cm. Be ready to explain how you made your choice."
- Ask students
  - o "Which objects did you choose and how did you make your choice?"
  - o List their objects on the board, point out if students chose the same objects or not
  - o Give students a ruler and say "I would like you to measure the object that you estimated to be 5 cm and find out the actual length of the object."
- Discuss results and tell the class that what they just did was used a **personal measurement reference**, which we will be doing more of after they read about it in their Student Reference books.
- Have the students open the Student Reference books to page 106 and read pages 106-107
- Discuss what natural measures are from the book. Ask students "What were some of the natural measures that our class used or you think we could have use to find 5 cm (finger, thumb, etc.)?"
- Discuss what natural measures they could use to find one meter or yard (arm span/adults from middle of the body to tips of fingers)
- Talk about **personal measurement references** (using your body or other objects as a way to measure) and ask
  - o "Why might is be useful to use personal measurement references?"
    - ▪ Hard to remember how long a cm or ft is so relating measures to common objects makes it easier to remember
    - ▪ Sometimes we need to measure something but don't have a ruler or meter stick, so we can estimate with personal references
- Tell students: "Today we will look for personal references for the metric system and the U.S. system"
- Discuss personal reference items we would use to measure about 1 millimeter, then 1 centimeter
  - o 1mm= fingernails, edge of paper, thickness of a thumbtack, pencil tips
  - o 1 cm= width of the head of a thumbtack, height of metal part of a pencil, width of the screw on their chairs
- Have students measure the width of their pencils in millimeters and the width of their fingers in centimeters
- Ask students: "What could we measure that would be about 1 inch?"
  - o length of fingernail, letters on book cover- Check these with the ruler
- Hold up the meter stick and yard stick and ask students what types of things we could measure with the meter stick
  - o length of bulletin board (1 m), height of the window, distance to the door, length of the table
- Ask students what kilometers (1,000 meter sticks) or miles could be used to measure
  - o distance driving, a very long distance, distance across many football fields
- Pass out and explain the worksheet, which has the following items under 'Object or Distance': (1) 100-block/flat, (2) width of paper, (3)chalkboard length, and (4) shoe length
- Have the students estimate the length of each item using a personal reference length (body part, pencil, etc.) and put that in the 'Personal Reference' section, estimate the measurement using that personal reference in the 'Estimated Length' section, then measure the object and put it in the 'Actual Length' section. Remind students that this should be a quiet activity.
- As students are working on filling in the chart, stop them after 5 minutes and ask what different people used as their personal measurement reference for the first item on the worksheet, the base 100 block

- Record 3 or 4 students answers on the board
- Ask them about their estimates of length and the actual estimate and record all of these on the board to help struggling students see what others did
- Tell students that this is how they should be filling out the chart and if they are having trouble coming up with ideas for personal measurement references, they may want to use some of the ideas on the board
- As the class is finishing up with the chart, go over it with the class
- Get answers from many people and ask if anyone had any questions on why something was solved a certain way
- Give students a chance to look over what they did and time to change personal measurement references if they were confused

Closure

As the class is finishing up with the chart, go over it with the class. Get answers from many people and ask if anyone had any questions on why something was solved a certain way. Give students a chance to look over what they did and time to change personal measurement references if they were confused. Collect students charts and pass out the homework sheet, which has students list what unit of measurement would best fit various personal measurement references. Go over the example problem with them and ask for questions. Summarize how this sheet is like the chart they filled out and let students know how they did with the activity.

Extension

Students will choose their own objects or distances and fill out the chart on the in-class worksheet

Day 3:

- Tell students about expectations using the community agreements
- Remind students about how they each found different numbers the previous day when measuring their desks and how we recorded each groups' numbers on the board. Tell students that this is called data and we will be using different data to find mean, median, and mode, which they should have some experience doing
- Tell students
  - "Today you will explore the concepts of mean, median, and mode in a group activity."
  - "You will stay in the groups that you are sitting in right now and each person in each group will get a card with a number on it"
  - "The numbers you receive will be your group's data. It will be your group's job to decide together what your data represents, in other words, what your data is all about. For example, you could look at your numbers and decide that they could represent the number of goals in a soccer game. Whatever you choose, it has to make sense with the numbers that you have."
- Give students 5 minutes to look at their cards and decide what their data represents and figure out how they could sort it. Then ask:

- ○ What are some ways that groups came up with to sort their data? Discuss various ways. Have groups sort their data from lowest number to highest and find the middle number.
- ○ Ask: "Who remembers what mathematical term we call that middle number?" Discuss the term median and have them find the median of their data and write it down in their math journals

- · Discuss how to find the mode and mean as well, this should be a review for all of them. Ask students "who remembers what the mode is? How do we find it? Find your group's mode and write it down. Who remember what the mean of data is? How do we find that? I will give you a couple of minutes now to find the mean of your group's data and write that in your math journals."
- · On the board, record the methods that students say for how to find mean, median, and mode
- · Tell the students:
    - ○ "As a group, you will be constructing a graph on a large piece of paper that best shows the rest of the class your data. At the top of your graph you need to label what you decided the data represents and then you will draw either a bar graph, circle graph, or a line graph. We have had practice with all three of these graphs last week, so it is up to your group to decide which graph will show off your data the best. Make sure you also write your mean, median, and mode on the paper. I will be walking around to answer questions and help groups with ideas for their graphs."
    - ○ "As groups are working on their graphs I will let one group at a time come up to the computer and enter their data into a graphing program in either a bar graph or pie chart, you will choose a graph that your group is not doing and graph it on the computer"
    - ○ "When each group is done, you will show the graph you made on the chart paper and the graph you made on the computer to the class using the Smart TV.
- · Give each group a large piece of chart paper and about 15 minutes to make the graphs
- · Have groups come up one at a time to enter their numbers into the graph on the computer (this should only take a few minutes for each group)
- · Open a new graph window for each group
- · Check on each group as they are working and help them with any questions about graphs or showing the data
- · When there is about 10 minutes left, have each group show the graph they made on chart paper and on the computer using the Smart TV (which shows the computer screen to the class)

Closure

   As each group talks about their graph, ask them questions about why they chose that type of graph and how they figured out mean, mode, or median. Commend each group on their job and collect their graphs. Ask students the differences and similarities that they notice between each group's two graphs. Tell students that knowing how to find mean, median, mode, and understanding graphs is something that they will be doing on the MEAP test. Go over the homework with them, which is to fill out the mean, median, and mode of data given on a worksheet.

Add numbers to the group's original data and ask them to predict how their mean, median, and mode will change from adding data. Have them write down their predictions in their math notebooks and then test their prediction by finding the new mean, median, and mode.

Day 4:

- Begin by telling students:
    - "On the MEAP you will get to use calculators on certain sections. Last week we used calculators a little bit to figure out how to convert centimeters to inches. Today and tomorrow we will be adding, multiplying, dividing, and using fractions, decimals, and percentages on the calculators."
    - "Today and tomorrow all of you are going to get to go on your very own shopping spree! Has anyone been to the store Target?
    - Each of you will be getting catalog pages today and you get to pick out exactly what you want! There are boys' shirts, girls' shirts, scooters, and DVD's. You will answer the questions on the worksheet by going through your catalog pages and picking out what you want that the question is asking for.
    - For example, if the question tells you that you can buy a shirt and a DVD and asks how much that would cost, then you pick out the shirt you want and write down the price, then you can pick out the DVD you want and write down that price. You will use your calculator to add the two prices together and write down your answer."
- Pass out the calculators and describe the addition, subtraction, multiplication, and division buttons
- Show students how they would enter a fraction, where the parentheses are, how to enter a percentage, and where the decimal button is
- Have students practice entering fractions and percentages with me
    - ¼
    - (1/4) x 3
    - 50%
    - (50%) x 2
- Explain that they might use parentheses to put a fraction inside or to help the calculator know which parts of the problem go together
- Pass out the catalog pages and the worksheet and tell students that they should read the directions and then look up
- Explain again that they will look through the catalog to answer the questions on the worksheet using their calculators
- Tell students that they will be doing this activity silently because the 4th graders will be having their math lesson now, but I will be walking around and answering questions.

Closure

At the end of the lesson, bring the class back together and collect their worksheets so they can use them the next day. Ask the class if they have any questions.

Extension

First day: Have students begin working on writing their own shopping spree problems

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Day 5:

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- Welcome students and tell them: "We are going to keep working on our Target shopping spree worksheets so that everyone knows how to work all of the different parts of the calculator for the MEAP."
- Remind students about some of the calculator functions
- Any time you enter fractions into the calculator you need to put parentheses around it
- To get a percent use the button that looks like %
- Have students pull out their worksheets and catalog pages
- Explain that for the last problem, they will be picking any items they want, then creating and solving a math problem using multiplication or division
- Tell the students that when they finish, they need to make 3 new problems using items from the catalog and calculator operations on the back of their worksheet. They need to find a partner and have them solve their problems and solve that partner's math problems.
- Tell students that they must solve at least 3 problems and have their name next to the problems they solved that a classmate created
- Give students the rest of class to do these tasks- this also keeps the room quiet so the other teacher can teach the 4th graders
- When there is 5-10 minutes left, ask a few students to read off one of the problems that they wrote to the class and discuss how they solved the problem using the calculator.
- Collect student work as they finish

Closure

"For the MEAP you will be able to use calculators for some parts of it, and I think that this activity has really helped you to get ready for it. Does anyone have any questions about the calculator? You did a fantastic job on your shopping spree!"

Extension

Tell students that they have $50 to spend, have them figure out the most number of items they could buy using $50 and write it on the worksheet

Unit Resources/References Needed:
Teacher References and Resources
 A.) Worksheets and handouts attached
 B.) Teacher Web Site – http://www.NCTM.org
        Summary: This is the website of the National Council of Teachers of Mathematics. It is a site that includes a wealth of information for teachers. There are scholarly mathematics articles, professional development opportunities, information about lessons and resources by grade level, to an Illuminations site that has online activities, math standards, lesson ideas, and links to other useful sites. This website helps to

keep teachers updated on the latest research about mathematical education and provides fresh ideas for lessons, while helping teachers make sure they are on track with mathematical standards. I referenced this website for ideas about ways to create mathematical assessments for my lessons in this unit.

C.) Student Website: http://nlvm.usu.edu/en/nav/grade_g_2.html

       <u>Summary</u>: This site was created by the National Library of Virtual Manipulatives. The site is a fantastic resource for creating online graphs, practice with manipulatives, fractions, measurement, and more. The site has manipulatives divided into mathematical topics including number and operations, algebra, geometry, data analysis and probability, and measurement for 3rd through 5th grades. They also have a section with mainpulatives for Kindergarten through 2nd grade. Students can practice a variety of math operations and make pie charts, bar graphs, and histograms. They are able to practice labeling graphs and percentages of their data are automatically calculated so they can see how data can become percentages. I used this site with the Day 3 lesson.

D.) Everyday Mathematics, 5th Grade Volume 1, Unit 6, *Using Data; Addition and Subtraction of Fractions* (p. 356-358)

E.) Materials Needed:

- Everyday Math Student Reference Book (pgs. 166-167)
- Smart TV hooked up to computer
- 15 rulers
- 1 meter stick
- 1 yard stick
- 15 Metric Conversion worksheets
- 15 Personal Measurement Reference charts
- 15 Real World Measurement worksheets
- 5 sheets of chart paper
- Markers
- 15 cards with numbers for data
- 15 calculators
- 15 Target Shopping Catalog pages
- 15 Shopping Spree worksheets