Title of Lesson: How I Measure Up  
Grade Level: 4th Grade  
Subject Area(s): Mathematics; Measurement & Data  
Timeframe: Multiple-day lesson  

Planning for Instruction  

Student Learning Goals/Outcomes:  

Day One  
Students will work with a partner and use appropriate tools to accurately measure the parts of their body to the whole and half unit, which they will record for use in following lesson.  

Day Two  
Students will use the measurements gathered in the previous lesson to create a life size stick figure using whole and half unit measurements. Students will demonstrate the ability to accurately read a measurement and cut a strip of paper to match.  

Standard(s) Addressed:  

Alaska Content or Performance Standard:  

4.MP.5 Use appropriate tools strategically  
4.MP.6 Attend to precision  
4.MD.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4-ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).*  
4.MD.5. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.  

Alaska Culturally Responsive Teaching Standard:  

C. Culturally-knowledgeable students are able to actively participate in various cultural environments.  
4. enter into and function effectively in a variety of cultural settings.
E. Culturally-responsive educators recognize the full educational potential of each student and provide the challenges necessary for them to achieve that potential.

2. provide learning opportunities that help students recognize the integrity of the knowledge they bring with them and use that knowledge as a springboard to new understandings;

Physical Activity, Health and the Arts:

Physical Activity
• Students will participate in movement during the measuring activity in day one and in creating their poster in day two.

Art
• Students will create a life size stick figure poster using their measurements and a colored picture of their faces. Students will pose their stick figures in various dance moves.

Technology Inclusion:

• Students will use the teacher iPad to take close up pictures of their partners. These pictures will be printed in color for use on stick figure posters.

Materials/Resources:

Day One
• Measuring tapes; class set (class math kit)
• How I Measure Up Chart; class set (Attachment 1)

Day Two
• How I Measure Up Chart from previous lesson
• Large supply of precut paper strip - 1 ½ inches wide
• Measuring tapes/rulers; class set (class math kit)
• Glue sticks, scissors
• Precut butcher paper; class set
• Student pictures (printed prior to class)

Classroom Environment:

• Students will find a place in the room to work with a partner and take their measurements.
• The voice level in the room should remain at a 2 or less – it is expected that students will be talking while working.
• While this activity will be slightly unstructured, students are responsible for gathering all the required measurements before the end of the class period.
Differentiation Strategies/Individual Modifications/Special Arrangements:

• Due to the nature of this activity and the presence of physical contact, students will be permitted to pick their own partners. Explain that if there is a problem the teacher reserves the right to switch partners mid activity.
• Adult/peer support will be prearranged for those with physical limitations that prevent them from measuring their partner.
• The How I Measure Up worksheet provides visuals to clarify language differences for ELL students.

Assessment of Student Learning:

Day One
• Students will have successfully measured and recorded the required parts of their body on the How I Measure Up chart.

Day Two
• Students will produce an accurate stick figure poster that matches their body parts measurements worksheet.

Instructional Sequence

Prior Knowledge/Experience:

• Students will recall and demonstrate their understanding of measurement to the whole and half unit.
• Students will use their prior knowledge of units of measurement to accurately record and label their worksheet.

Opening Activity:

• Concept Engagement: (whole group)
  • The class will work collaboratively to draw a large stick figure on the white board
    o Teacher will start with the head – draw a large circle high on the white board
    o Pull sticks one at a time to have students add one piece to the stick figure – 1st the back, 2nd upper right arm, 3rd lower right arm, 4th-8th fingers on the right hand, etc. (If all 21 students are present each one will contribute to the stick figure)
  • Display a copy of the How I Measure Up worksheet under the document camera and explain that students will work with a partner to measure and record each required body part.
  • Point out that our bodies are symmetrical so we are only going to measure one arm, leg, hand, etc.
    o Close enough for this project – if anyone points out we are not exactly the same on the left and right.

Learning Activity:
Day One

**Concept Exploration:** (students collect and record data, include open-ended questions)
- Demonstrate the process of measuring and labeling the units of the specific body parts – close attention to the hands (wrist to finger tip)
  - Model on a worksheet using teacher measurements (pick a stick to be teacher’s partner for demonstration)
- Instruct students they have 2 minutes to find a partner and collect their measuring tapes and worksheets from the teacher – set a timer
  - There will be one group of three if all students are present
- Partners will work together to measure all the required body parts and record them in the correct section of the chart Movement
- To avoid inappropriate physical contact partners will come to the teacher for the back measurement
  - Student will place one hand on the top vertebra at the top of their back and the other hand on their tailbone
  - The teacher will measure a piece of string from hand to hand, cut, and provide to the student to measure for the length of their back
- Circulate the room listening to conversations – prompt with questions to engage students in identifying patterns, similarities, etc.
  - Do longer legs make you taller?
  - Are the upper and lower arms the same length?
  - Is the length of our back the same as the length of our legs?
- When students have completed their measurements they will return the measuring tapes and be seated at their desks
- Call students up one at a time to take a picture using the teacher iPad – *print pictures on the color printer prior to the next lesson* Art

**Concept Explanation:** (whole group processes data, summarize results, provide vocabulary)
- When class is back together as a whole call on several students to express what they observed
  - Responses to questions – either teacher guided or self guided.
  - Who was taller and how do they know? (Visual observation vs. measurement)
  - What is the relationship between the length of their forearm and foot?
  - What is the relationship between the five fingers?
  - Do they notice any other patterns?
  - Can they find a classmate with the same size feet, back, upper arm, etc.?

Day Two

**Concept Expansion:** (new problem to extend concept, application of concept)
*Prior to class hang a piece of butcher paper on the whiteboard, have strips of paper, measuring tape, scissors, several strong magnets, and glue stick ready*
- Demonstrate how students will use the measurements gathered in the previous lesson and cut strips of paper to match each body part (use teacher measurements)
  - Label the back of each piece (right forearm, left thumb, etc.)
  - Use magnets to pose body parts prior to gluing
• Encourage students to pose their stick figure in unique ways – dancing, statues, etc.; the only requirement is that they keep their stick figure on the butcher paper background – no hanging over Movement
• Instruct students to plan out their pose before gluing any of the pieces, once they have their stick figure in place they can get their picture from the teacher and glue (depending on the class, don’t have them get their glue sticks until they have shown their work) Art
• Distribute student’s charts, measuring tapes, point out where the supply of paper strips and butcher paper poster are located, and have them gather scissors and glue sticks
• Release students to begin working on their posters

• **Closing (Evaluation):** (students review or summarize)
  • Students will clean their work area, returning all supplies and recycling scraps of paper
  • With students holding their stick figure poster, have them line up in order from largest to smallest
  • Next have them find someone that is about the same size
  • To close the lesson/unit have students gather in the hallway and hang their posters for all to enjoy