MATH Can Take You Places

LESSON 6
"Figure This Out"
by Betty Lewis

CONCEPT AREA Measurement

GRADE LEVEL 4-6

TIME ALLOTMENT 60 minutes

LESSON OVERVIEW The investigations will give the students an opportunity to apply and expand their measurement skills by taking their own measurements, as well as measuring items in the classroom. They will compare their measurements to the models presented in the classroom.

LESSON ACTIVITIES OVERVIEW The students will estimate to determine reasonable results, use logical reasoning to make sense of their world and solve problems involving proportional relationships.

LEARNING OBJECTIVES Students will be able to:

- Estimate and measure to solve problems involving length and width.
- Apply measurement concepts.
- Define measurement and investigate measurement.
- Estimate and compare the results of the measurements to the model measurements of several basketball players.

STANDARDS (TEKS) **From the Texas Essential Knowledge and Skills for Math for grades 4-6:**

Grade 4
4.1C; 4.8C
Grade 5
5.1C; 5.3A
Grade 6
6,8A, B; 6.9A, B, C, D

MEDIA COMPONENTS Video: *Math Can Take You Places* #001 "Measurement." Focus student viewing on the size of the players and what accommodations the trainer mentions the players may need because of their height.

Internet: www.nba.com for player statistics and information

MATERIALS Per group of students:

- Ruler
- Bathroom scale
- Measuring tape
- Yarn
- Pencils
- Notebook paper
- Desk, window sill, width of classroom door, length and width of textbook

travelocity

KERA UNLIMITED

- Silhouette of a basketball player (or, the teacher can make a 7-foot
- mark near the classroom doorway for student reference.)
- Construction paper
- Markers
- Scissors
- Handouts

PREP FOR TEACHERS

- Cue the videos
- Reference: Realistically, a 7-foot tall player would have a wingspan of around 7 ft., 6 inches and weigh between 200-230 pounds.
- If students are self-conscious about their weight, ask the nurse for an average weight for students in your classroom. Use that number instead of actually weighing the students.
- The teacher will inquire about measurement and about students' prior knowledge regarding their experience using measurement.

Note:
The following concepts will be covered during this lesson: **customary system of measurement**, **length**, **foot**, **inch and yard**. Students may need to review the concepts prior to beginning the activities, especially if your class includes students who are acquiring English as a second language (ESL).

INTRODUCTORY ACTIVITY: SETTING THE STAGE

1. Say: "Pretend I have forgotten how to measure the length of an item. Can you give me step-by-step instructions for how to measure the length of this table?"

2. Allow students to walk aloud through the steps of how to properly measure.

3. Show the *Math Can Take You Places* #001 "Measurement" video. Ask students to listen closely and be able to list some of the things that tall basketball players may have to adjust in order to live comfortably.

4. Refer them to the basketball silhouette (or measured mark) near the doorway. Tell them that you will be using him as a reference during today's lesson. Do not tell them how tall the cutout actually is.

LEARNING ACTIVITIES

1. Divide students into pairs to complete the activity. (Teacher hint: To avoid confusion, you may want to group them in same-sex pairings.)

2. Refer the students to the "Measuring Station" handout. Before giving students permission to begin measuring, let them fill out the "estimate" column on the worksheet. Let them have contact with the objects if needed.

3. After the students have filled in their estimates, allow them to choose the measurement tool they think they would need to take the actual measurement of the

items.

4. Allow students to work in pairs to complete the "Measuring Station" handout.

5. Monitor to ensure that the students are measuring correctly.

CULMINATING ACTIVITY

1. Bring the students back together and ask: "What strategy did you use to determine the measurement?" Say: "Now that we have our charts filled in, would anyone like to share their results?"

2. Ask students questions similar to the following: "Which estimate was the most accurate or the closest to the actual measurement? Which was the least accurate? How could we have made our estimates more accurate?"

3. Say: "Pretend this 7-foot-tall basketball player came to be a substitute teacher in your math class for a week. What items in the classroom would we need to change to accommodate him?"

CROSS-CURRICULAR EXTENSIONS

Social Studies:

Encourage the students to research the origins of the game of basketball. Let them share the most interesting facts in a class presentation.

REAL-WORLD CONNECTIONS

The world is full of differently-shaped and differently-abled people. Have the students imagine if they were in a wheelchair. Ask them to write about what things would need to be changed for them to move around easily during a normal school day. Invite a person in a wheelchair to speak to the students about the special accommodations s/he uses throughout the day.

ASSESSMENT

Give each student a set of small classroom items (for example, markers, scissors, glue bottles, glue sticks, paperclips, etc.). Be sure to measure them beforehand. Have students measure their lengths. Check their work for accuracy.

STUDENT HANDOUTS

"Measuring Station" worksheet

Measuring Station

Object	Estimate measurements	Actual measurement	Difference in measurement	Estimate measurement basketball players	Actual measurement	Difference in measurement
Hand (wrist to longest finger)						
Arm span						
Height						
Foot length						
Door height						
Window sill length						
Textbook length and width						
Chalkboard length and width						
Desk top Length and width						

MATH Can Take You Places

Te Lleva a Muchos Lugares

LESSON 6

"Resuelve Esto"

by Betty Lewis

Estación de Medidas

Objeto	Medidas Calculadas	Medidas Reales	Diferencia en la medida	Medida calculada de los jugadores de baloncesto	Medida Real	Diferencia en la medida
Mano (de la muñeca al dedo más largo)						
Alcance del brazo						
Altura						
Largo del pié						
Altura de la puerta						
Umbral de ventana						
Largo y ancho del libro						
Largo y ancho de la pizarra						
Largo y ancho del escritorio						