ACTIVITY 2D: BODY RATIOS AND PROPORTIONS TEACHER SHEET

FEARSOME FEMURS AND FOURTHS

In this activity, students will use their height and femur length to examine the concept of proportion. The femur is approximately 1/4 of a person's adult height. The students will discover if this is true, and decide how much growth may yet occur for them.

Instruct the students to look at their "Measuring Up" unit and lesson worksheet. Have students write down the length of their femur and their height on a piece of paper. Ask the students if they can figure out if their height is one-fourth the length of their femur. They should respond by dividing their height by 4 or by multiplying the femur length by 4. After they have decided on the process to use, instruct them to perform this operation with their two measurements.

Discuss their findings. Did their results indicate that their femur is 1/4 of their height? If it did not, why do they think so? Could this mean there is more growth in store for them? Perhaps they will want to remeasure their height and femur length again later on in the year to see if more growth does occur and to see if the proportion changes. What if their femur was 1/4 their total height? Does this mean that they have finished growing? Again, they may wish to take these measurements again to test this proportion study.

HOW DOES YOUR "WING SPAN" MEASURE UP?

Discuss with the class the observation that a person's reach, fingertip to fingertip, or arm span ("wing span"), is about the same as their height. Instruct the students to look at these two measurements on their worksheet. Are their measurements the same? Why or why not? What do they think would be a good explanation for this? What if their span is longer than their height? Could this mean that they have more growth in store for them?

Have the students complete a type of graph. On a piece of poster board draw a large square, a tall rectangle, and a wide rectangle. Instruct the students to write their name in the shape that best depicts their span/height comparison. Before instructing the students to do this, ask them the following questions: How would they know if their height fits the square, tall rectangle, or wide rectangle? If their span/height is the same, then they would write their name in the square. A tall rectangle would indicate that their height is taller than their reach. A wide rectangle would indicate that their reach is longer than their height. After the students have written their name in the correct shapes, discuss the findings and create a bar graph to illustrate the results. You may discover that your class is in for a major growth spurt! Ask students how they would know this. Redo this exercise later on in the year and compare the results.

UNIT 12

ACTIVITY 2D: BODY RATIOS AND PROPORTIONS
TEACHER SHEET

HEADS UP

Another interesting body proportion is that of the circumference of the head compared to height. Instruct the students to measure a piece of string that is the same length as their height. By looking at this have the students predict how many times this string will wrap around their head. Question them to see why they made this prediction. Record some of the predictions on the board or overhead.

Now, instruct the class to wrap their string around their heads as many times as possible. Using the board or overhead, record the answers. The majority of the class should have a ratio of 1 to 3. Discuss this proportion with the students. Was this at all close to what they predicted?

SEVEN UP

The Greeks and Romans had high ideals about what the "perfect" man was like and exhibited their best in competitions and art. They believed that the "perfect" man's body was 7 heads tall. Have the students write down the "height" of their heads as they found in their "Measuring Up" activity in Unit 1. Have the students divide the height of their heads into their body height. (Remind students to change all factors to the same unit — feet to inches, meters to centimeters.) Are they 7 heads tall? Does this make them the "Olympic Ideal" or just "normal" for them? Study more about Greek and Roman art and mathematics. There are fascinating discoveries to be made, such as the "Golden Triangle," that make interesting studies on their own.