Teacher Information
6th Grade Unit. Activity 3: “A Measure of the Heart”

Suggested time period:
Two 45-minute periods or one 90-minute block.

Concepts and skills to review with students before activity:
• Metric system

Prerequisite math skills:
• Measurement – use of measuring tapes, balance, and graduated cylinders to find length, mass, and volume
• Unit conversion

Math activities that correlate with this activity:
• Metric Scavenger Hunt – see supplemental activities
• Linear Measure – see supplemental activities

Materials:
Hearts (Pig\(^1\), Sheep\(^1\), Cow\(^1\), Chicken\(^2\)) – see below for how to obtain hearts
Volumetric containers\(^3\) – see below
Trays for holding the hearts
Metric measuring tape
Container of water
Balance (If there are not enough balances, students may need to share)

1. Fresh cow, pig, and sheep hearts can often be obtained from local slaughterhouses with advanced notice. $5 is a typical price for a fresh cow heart with aorta intact. Alternatively, preserved hearts may be ordered in advance from Carolina Biological Supply Company. Allow at least 2-3 weeks for delivery.
   • Pig Heart cat# ER-22-8560 $5.00 ea/ $4.25 ea for ten or more
   • Sheep Heart cat # ER-22-8770 $3.25 ea/ $2.40 ea for ten or more
   • Cow Heart cat # ER-22-8910 $18.50 ea/ $15.35 ea for ten or more

2. Typically, you may obtain chicken hearts from the butcher at the grocery store or use the heart in the giblets packaged with whole chickens.

3. For volumetric containers, you could use beakers with metric graduations. Alternatively you or the students could construct your own cheap volumetric containers by using gallon milk jugs or two liter bottles with the tops cut off. Fill the milk jug with 100 ml of water and mark the height of the liquid on the outside. Repeat with 100 ml additional volume each time until to get
to the top. NOTE: Cow hearts are BIG. You will probably need a gallon container to measure the volume of one.

Optional extensions and substitutions:
- Have students do a metric system scavenger hunt, where they collect measurements of items in the classroom.
- Have students construct their own volumetric containers as a preceding exercise.
- Do activities from the websites listed in the “Additional Resources” section below.
- Obtain a human heart model for students to measure.

Learning goals:
After completing this exercise students should be able to:
- Use common metric measurements for length, mass, and volume.
- Perform basic metric unit conversion.

Additional Resources:
Metric System information and lesson plans for teachers
http://lamar.colostate.edu/~hillger/#education
Metric education guide from NIST – the National Institute of Standards and Technology
The Metric System
http://www.essex1.com/people/speer/metric.html