# Math and Measuring the Star-Spangled Banner

**Objective:** Students will be able to measure 30 feet high by 42 feet wide and visualize the area of the Star-Spangled Banner.
**Time:** 20-45 minutes, depending on who measures and cuts string.
**Skills:** Counting, measuring, spatial understanding, teamwork.
**Content area:** Mathematics- Geometry, Mathematics- Arithmetic, Social Studies- United States history
**Materials:**

- Blue and red colored ribbon, yarn, or string
- Foot long rulers
- Scissors
- Playground, cafeteria, or gym
- Camera

**Standards**:

**NCHS History Standards**
K-4 Historical Content Standards
**4E**: The student understands national symbols through which American values and principles are expressed.

**Principles and Standards for School Mathematics**
K-2 Standards: Numbers and Operations
**Use** a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators
**Count** with understanding and recognize "how many" in sets of objects
K-2 Standards: Geometry
**Create** mental images of geometric shapes using spatial memory and spatial visualization
**Recognize** and represent shapes from different perspectives
**Relate** ideas in geometry to ideas in number and measurement
**Recognize** geometric shapes and structures in the environment and specify their location
K-2 Standards: Measurement
**Recognize** the attributes of length, volume, weight, area, and time
**Understand** how to measure using nonstandard and standard units
**Use** tools to measure
**Use** repetition of a single unit to measure something larger than the unit



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**Introduction:**
The original Star-Spangled Banner was 30 feet high and 42 feet wide. Mrs. Pickersgill sewed the original flag in 1813, with the help of her 13-year-old daughter. Why did Mrs. Pickersgill make the flag that big? How big is 30 feet by 42 feet?

**Directions:**

1. Prior to this activity, mark off each foot of the four strings with a marker so that your class can count the length and width, by ones and/or by fives. Leave a little extra string at the end so that each of the four pieces can be tied to the string representing the adjacent side.
2. Using a foot-long ruler, have students measure two pieces of blue string 42 feet long.
3. Using a foot-long ruler, have students measure two pieces of red string 30 feet long.
4. Move to a large open area.
5. Explain that the measured strings represent sides of the Star-Spangled Banner and ask them if they can put them together in the shape of a rectangle.
6. Once they have figured out how the string needs to lie, have them tie the corners together. All of the class can help support the outline of the flag they've created.
7. Take a picture of the string “flag” to display later.

**Challenge:**

1. Let your class guess how many students can fit inside your flag. You may ask them to think of some other objects and guess how many of each would be required to fill in the flag.
2. Divide your class into groups of four. With rulers or measuring tape, have them measure other things in the school, such as desks, blackboards, posters, and even areas like a basketball court in the gym. They can measure the size of your classroom, and/or measure things outside or at home. How do all these things compare in size to the Star-Spangled Banner? Create a poster showing the results of the class's findings.
3. Create a living flag. Pick students in your class to represent the stars and stripes of the Star-Spangled Banner. Based on which component they represent they should wear appropriate colors and determine where they need to stand/sit/lie down.
4. Introduce the concept of areas and perimeters. Ask students to differentiate between the perimeter and the area of the flag. This can be done for other objects as well.
5. Find out more about the flag and see pictures at http://www.americanhistory.si.edu/starspangledbanner.

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