Lesson Plan

What are your mathematical goals for this lesson?

The students will:

1. express collected data in graphs and tables
2. make predictions from their tables an graphs
3. distinguish between linear and non-linear relationships
4. begin to identify inverse relationships

Which Principles and Standards algebraic benchmarks will you be focusing on?

1. Understand patterns, relationships and functions
2. Use mathematical models to represent and understand quantitative relationships (Students will not come up with equations, but they will do the experiment and put their information into a graph)

How does this lesson fit into the broader unit you are teaching?

We just finished a unit on linear relationships and now we need to determine if all relationships are linear. If all relationships are not linear, then what are some characteristics of non-linear relationships? We will eventually be discussing exponential equations.

What has the class done just prior to this lesson?

The students have just finished an extensive unit on linear relationships. They discussed characteristics of tables, graphs and equations of linear relationships.

What skills and knowledge are you assuming students bring to the class?

Students should know what makes a relationship linear. They should be able to look at a table, graph or equation and determine if there is a linear relationship.

What skills and knowledge are still being developed during this lesson?

Students are just beginning to learn about and graph non-linear relationships.

What tasks or activities are you planning to use?

Students will work in small groups of two or three to determine the breaking weight of paper bridges with varying lengths. Materials being used are small paper cups, pennies, 2 books of equal thickness to support the bridges, and a set of paper bridges that are 4" wide and vary in length from 4" to 11"

How do you plan to organize the students in your classroom?

Students will work at their tables in groups of 2 to 3 students per group.

How will you assess student understanding of the mathematics you are teaching?

I will assess student understanding by the graphs and tables that their group makes along with their explanations.

How will you know if the students develop the mathematical understanding you expect?

I know the students' level of understanding by their group presentation and answers to the questions I may ask them. I will also get a good idea of individual understanding by the quality of the homework for this section.

What do you expect will be easy for your students? Difficult for your students?

I expect that making the table and plotting the points on a graph will be easy. Some students may have a tough time setting up the scale for the x- and y-axis. Some students may have a hard time estimating the breaking lengths that are not specifically tested (e.g., for a bridge length of 5.5 inches.

Is there any other information that you believe observers should be aware of?

This is a large class and the space in the room is limited so the students may be a little cramped.