

The Pasta Paradigm or.....Using Your Noodle

This activity focuses on the age old question: How hard is it to break spaghetti noodles? Students will design their own experiment that involves hanging a cup of pennies from a piece of spaghetti by a paper clip. They investigate how many pennies the noodle can support before it breaks.

Start up: Don't answer questions about how to hang the cups or whether or not to hold the spaghetti in place. Also - don't mention that there are two different kinds of noodle out there, #8 and #10.

- Instructions -
1. Bend a paper clip to make a hanger for the cup.
 2. Hang the cup from the clip
 3. Hook the clip over one piece of spaghetti
 4. Put pennies in the cup one by one until the spaghetti breaks.
 5. Compare the groups results with others.
 6. Now test two, three, four, and five pieces of spaghetti. Find out how many pennies it will take to break each group.
 7. Record the data
 8. Graph the data

Questions -

1. What could explain the differences between your group's results and the data other groups collected?
2. Which size spaghetti is the strongest? Explain how to conduct a fair test.
3. How is strength of spaghetti related to its size or shape?

Materials-

- Styrofoam or small plastic cups
- three paper clips
- spaghetti (#8 & #10)
- pennies
- data sheet
- graph paper

What to look for - Some students hold the ends down while others don't. Some leave wide gaps between desks, some leave narrow gaps. Some groups close a book on the spaghetti, while others let it rest loosely. Some may even hold it by one end.

Students will realize through discussion that they need a standardized procedure if they want to make meaningful comparisons.

Identify the variables - number of pieces broken, and the number of pennies needed to break the spaghetti. There are two variables - the number of noodles is the independent variable and the number of pennies is the dependent variable.

Hints - don't let the cups be wedged between the desks. Put the pasta through a paper clip on each side of the gap to prevent the noodles from moving around. Station a Noodle Technician to catch the cup when the pasta breaks, or position a container below to catch it.

For the graph - the x axis shows the number of pieces of spaghetti, the y-axis shows the number of pennies need to break that many pieces.