**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Spaghetti Bridge Lab Academics**

**Objective: To determine the relationship between the number of spaghetti strands that form a bridge and the maximum number of marbles that can be supported.**

**Materials**: Uncooked long-strand spaghetti (thick & thin), disposable plastic cups, string, mass units (marbles, washers, nuts, pennies).

**Lab Procedure Notes**:

1. Separate two desks, but not too far apart.
2. Suspend the cup from the spaghetti and placed it between two desks as demonstrated.
3. Make sure the spaghetti strand overlaps both desks by the same amount with the majority of it between the two desks.
4. Make sure that the cup is suspended in the middle of the two desks.
5. Designate a person to catch the cup before it hits the ground.
6. Gently add marbles one at a time into the cup until the bridge fails either by breaking the spaghetti strand or slipping off the desks.
7. Record the maximum number of marbles supported before failure.
8. Repeat the process using three, five, and seven spaghetti strands.

**Data Analysis**:

Use the table below to record your data.

|  |  |
| --- | --- |
| **Spaghetti Bridge Data Table (Regular)** | |
| **# of Spaghetti Strands** | **Maximum # of Marbles Supported** |
| **1** |  |
| **3** |  |
| **5** |  |
| **7** |  |
| **9** |  |

1. Draw a graph on graphing paper. Use the entire graph paper.
2. Label the axis (The number of spaghetti strands on the x-axis and the number of marbles supported on the y-axis).
3. Determine the increments for each axis.
4. Evenly space out the numbers in equal increments (number by 1’s, 2’s, 5’s, etc.) Pick one increment and stick with it!
5. Line up the numbers on the lines, not in the spaces.
6. According to the information in the data table, plot the data points where the lines meet.
7. Draw a straight line that best fits the data points. Do not connect the points. Always start at exactly (0,0).
8. Make a smooth straight line with a ruler, drawn from left to right with as many points above the line as below the line.
9. Determine the slope of the line (y2 – y1 /x2 – x1).

**Questions:**

1. What does the straight-line graph tell you about the bridge?
2. What does the slope of the line tell you about the bridge?
3. Why do different groups have different values for their slope?