Objective: To find the relationship between wind speed and the angle measured on a ping-pong ball anemometer.

Materials:
- 2 Protractors
- String
- Straws
- Ping-pong ball
- Fan
- Digital Anemometer

Investigative Question: How does the angle of the ping-pong ball anemometer change as the speed of the wind changes.

Hypothesis:

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<th>Wind Speed (mph)</th>
<th>Angle of Ping-Pong Ball (°)</th>
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Create a Scatter Plot of Power vs. Angle below:
**Analysis:**

1) Draw a line of best fit.

2) Find the \( y \)-intercept. 

3) Pick two points on the line. \((__,__) (__,__)\)

4) Find the rise. 

5) Find the run. 

6) Find the slope. 

7) Write the equation of the line. 

If the wind is blowing at 5 mph, how will the reading on the ping-pong ball anemometer? (Use your equation.) 

If the wind creates a reading of \(17^\circ\) on the ping-pong ball anemometer, how fast is it blowing? (Use your graph.) 

What does your \( y \)-intercept mean? 

What does your slope mean? 

Who would care about wind speed? 

Why would they care about wind speed? 

What is the angle on the ping-pong ball anemometer outside today? 

What is the wind speed outside today? 

**Extension:**

To find wind speed easily and accurately, without using the graph, create an equation that uses angle read on the ping-pong ball anemometer as the input and wind speed as the output.

1) Write the equation you created from the slope and \( y \)-intercept.

2) Solve for the independent variable.

If the wind creates a reading of \(17^\circ\) on the ping-pong ball anemometer, how fast is it blowing? (Use your new equation.) 

What wind speed will it take to get an angle of \(90^\circ\)? 

Which equation did you use, new or old? 

How could you have used the other one? 

If the wind speed is 38 mph, what will the reading be on the ping-pong ball anemometer? 

What do you know about the result? 