Name: _____

1. Please use a picture or words to define the diameter of a circle. Do the same for the circumference of a circle.

2. Do you suspect that there is a relationship between the diameter of a circle and its circumference? In other words, do you suspect that knowing the diameter of a circle can help you determine its circumference? If so, do you think the relationship is linear? quadratic? something else? Explain.

3. Gather some data. Carefully measure the diameter and circumference of six circles. You may use circles you find, or circles on the sheet provided. Use string! Measure in cm to 1 decimal place. Record your measurements in the table below.

circle	1	2	3	4	5	6
diameter (x)						
circumference (y)						

4. Plot the above pairs of points (diameter,circumference) on the following chart.
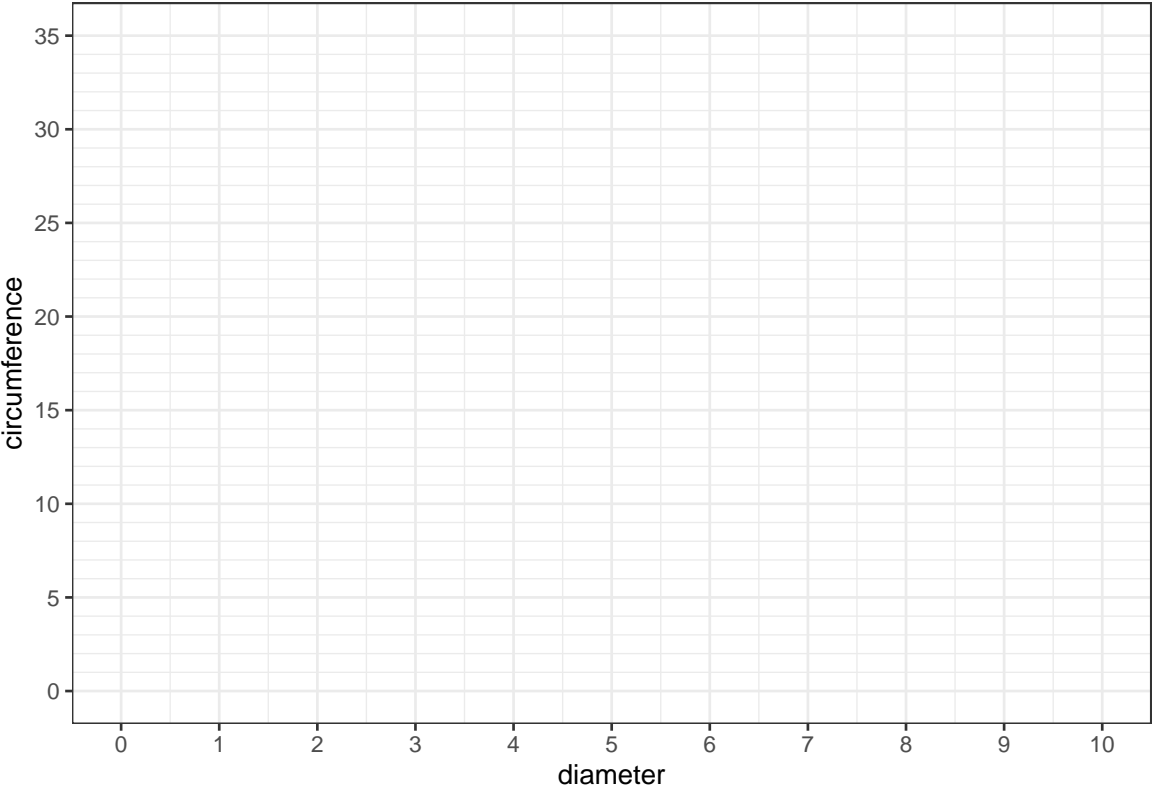
5. Evaluate your response to number 2. Based on your plot, what appears to be the relationship between circumference and diameter? Is it linear, quadratic, or something else?

6. Carefully draw a straight line on your plot that "fits" the data as well as possible.

7. Mark two spots on the line you drew with "x"s, and then use these two spots to compute the slope of your "best fit" line. Record the slope here.

8. What is the y-intercept of the line? What "should" the y-intercept be?

9. Use the previous two responses to state a function whose input is a circle's diameter, and whose output is the circle's circumference.

10. Use your function to predict the circumference of a circle whose diameter is 1 meter (100 cm). Do you think this prediction is reliable? Feel free to share any concerns you might have about this prediction.

11. If you had measured these circles in inches instead of centimeters, would the functional relationship (i.e., your answer to the previous question) have been the same? Explain.

12. Do you recognize the value of the slope of the line? A famous number, perhaps? If so, what is it?