

Pi Graph

Use a straight line to learn about circles.

Materials

cylindrical objects of different sizes
string
ruler
graph paper
(optional) large piece of graph paper to collect group data

To do and notice

1. Measure and record the diameter of each object. Use a piece of string wrapped around the cylinder to measure and record the circumference.

object	diameter (cm)	circumference (cm)

2. Plot the points that represent each object on a graph where the x-coordinate is the diameter and the y-coordinate is the circumference. If you are doing this with other people, combine all of your data points on a large graph.

3. Draw the best straight line that goes through the points. Calculate the slope of the line.

What's going on?

The points that you plot for different circles should line up in a straight line, indicating that there is a linear relationship between the diameter and the circumference of any circle. The slope of the line represents the constant of proportionality between the two properties. You should have gotten something close to π , one of the most important mathematical constants. π is defined by the ratio of a circle's circumference to its diameter and is approximately 3.14. This relationship is often represented as the formula for a circle's circumference: $c = \pi*d$.