

Discover π

Objective: Find the value of π .

Materials:

- Circular cookie cutters of different diameters
- Flexible measuring tape
- Device to perform a linear regression

Procedure:

1. Measure the circumference of the first cookie cutter.
 - a. Hold one end of the tape measure with the cm side out against the cookie cutter and wrap it all the way around.
 - b. Read the circumference by the reading the where the 0 line is on the scale as it is wrapped all the way around.
 - c. Record the circumference on the table
2. Repeat for the other size cookie cutters.
3. Measure the diameter of the cookie cutters.

Measure across the thin edged side, not the side where the metal has been rolled over. Make sure you measure the longest distance across. Record the diameter in the table.

Cookie Cutter size	Diameter	Circumference
Smallest		
Small		
Middle		
Large		
Largest		

Analysis:

4. Plot the data on a graph. Let the diameter be x and the circumference be y .
5. The points should be on a straight line. Use a straight edge to draw the best fitting straight line through the points.
6. Use a calculator (or online calculator) to find the equation of the best fitting line.

On a TI-30 XS Multiview	On a NumWorks (numworks.com/simulator)	On a TI-83/84
<ol style="list-style-type: none"> 1. Press data. 2. Enter the diameters into L1. 3. Enter the circumferences into L2. 4. Press 2nd data (stat). 5. Select 2-Var Stats. 6. Make sure L1 is highlighted for xDATA and L2 is highlighted for yDATA. Select CALC. 7. Scroll down until you find a and b. 8. The equation is $C = ad + b$. Record your equation by filling in a and b. 	<ol style="list-style-type: none"> 1. Select Regression from the home screen. 2. Enter the diameters into X1. 3. Enter the circumferences into Y1. 4. Use the arrow keys to select Graph. 5. Press OK, then select Linear $m \cdot x + b$. 6. Press OK again and read the equation. Round to 2 decimal places. Record the equation. 	<ol style="list-style-type: none"> 1. Press [stat]. 2. Select Edit... 3. Enter the diameters into L1. 4. Enter the circumferences into L2. 5. Press [stat]. 6. Use the arrow key to move right and select CALC. 7. Select LinReg(ax+b). 8. Make sure XList is L1 and YList is L2. Leave FreqList and Store RegEQ blank. Select Calculate. 9. The equation is $C = ad + b$. Record your equation by filling in a and b.

7. Equation: _____
8. π is the slope of your linear equation. What is your value of π ? _____