Finding Pi
TEACHER GUIDE

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Activity Overview

Students discover that pi is the ratio of a circle's circumference to its diameter using manipulatives and the Nspire's data capture feature.

Concepts

- Circumference
- Pi

Tennessee Standards

- Geometry
    - 3108.2.1 Analyze properties and aspects of pi (e.g. classical methods of approximating pi, irrational numbers, Buffon's needle, use of dynamic geometry software).
    - 3108.2.2 Approximate pi from a table of values for the circumference and diameter of circles using various methods (e.g. line of best fit).

Teacher Preparation

- Load or have the students load the tns file: finding pi.tns
- There is no student activity sheet for this activity
- Students may use the attached circle sheet or students may use a variety of plastic lids
    - Materials needed: a length of string (14 inches or 32 centimeters), ruler with centimeters
- The circle sheet does not include the diameter. Students should move the ruler around the circle to find the diameter or the teacher may draw the diameter for each circle before copying the sheet.

TI Nspire Applications

Graphs & Geometry

Lists & Spreadsheet

Problem 1

In problem 1, students find the circumference and diameter of a variety of different size circles using circles copied on a piece of paper or from a variety of plastic lids. Students should centimeters.

Students begin on page 1.2. Follow the instructions given on page 1.2.	Using a piece of string and ruler, find the circumference of a variety of different size circles. Enter your measurement (in cm) in the column labeled "circumference" on the next page. Next, using a ruler, find the diameter (in cm) of each circle and place your measurement in the column labeled "diameter" next to its respective circumference.

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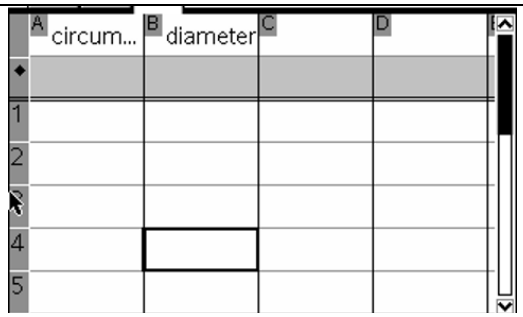
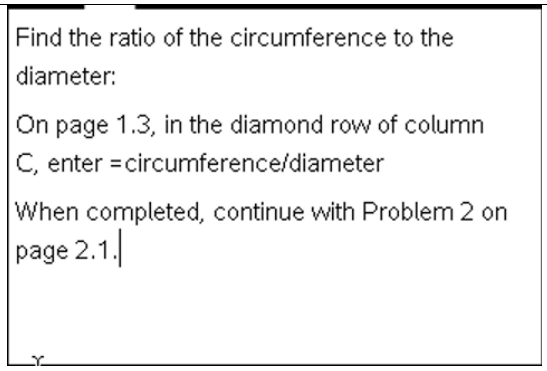
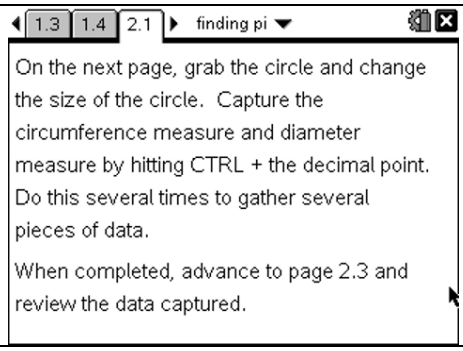
On page 1.3, students should enter the measurements they found for the circumference in Column A. The measurements that are found for the diameter are placed in Column B.	
On page 1.4, students are instructed how to enter the formula to find the ratio of the circumference to the diameter.	

Problem 2

In problem 2 students change the size of the circle and capture the circumference and diameter. After the students have captured the data, review with them the ratio of circumference to the diameter. The students should recognize that 3.14 = pi.

On page 2.1, students instructed how to use the capture data tool to find the circumference and diameter of different size circles.	

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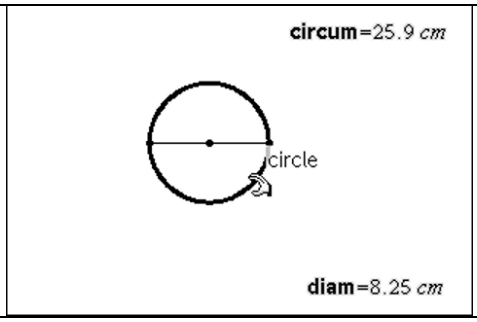
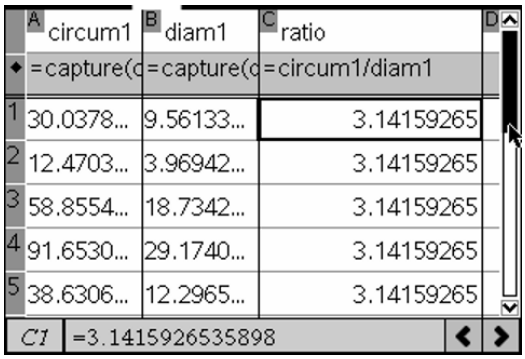
On page 2.2, students grab the point on the circle and change the size of the circle. Data is captured using CTRL + ⬡.	
On page 2.3, students see the data captured and the ratio of the circumference to the diameter.	

Problem 3

In problem 3 students compare the results on page 2.3 to the results on page 1.3. Discuss with the students how close they were to pi. If the ratio was way off, discuss why it may have happened.

On page 3.1, students are instructed to compare their results. (Some possible reasons they were way off: • Diameter was not measured correctly • String used was stretched • Measured incorrectly