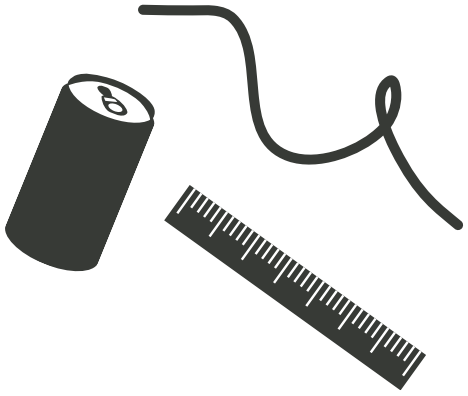
# Pi In Everyday Objects

Measure, apply, and plot pi

## Measure Objects



Use string to measure the circumference (distance around) of 5 round objects (some large and some small). Lay the string next to a ruler to measure the circumference in centimeters.

Do the same for the diameter (straight line from side to side through the center) of each object. Write the values in the table below.

| | Circumference (cm) | Diameter (cm) | Ratio |
|---|---|---|---|
| **Object #1** | | | |
| **Object #2** | | | |
| **Object #3** | | | |
| **Object #4** | | | |
| **Object #5** | | | |

**Average of ratios**

## Calculate Pi

Divide each circumference by its diameter to find the ratio for each object. Find the average of these ratios.

To how many decimal places does this average accurately approximate the value of pi (3.14)?

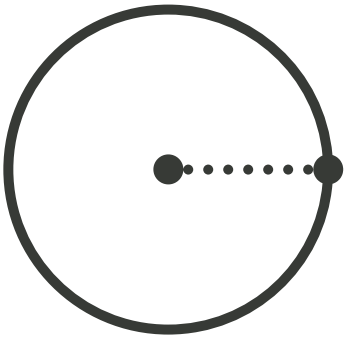
How close did you come to the value of pi?

# Pi In Everyday Objects

Measure, apply, and plot pi

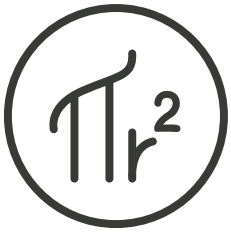
## Calculate Area

Take the diameter measurements from the previous exercise to calculate the radius (distance from center to circumference, or, half the diameter). Then use pi (3.14) to calculate the area of your objects.



| | Diameter (cm) | Radius (cm) | Area |
|---|---|---|---|
| **Object #1** | | | |
| **Object #2** | | | |
| **Object #3** | | | |
| **Object #4** | | | |
| **Object #5** | | | |

**Area =**






## Take A Pizza Break!

A store sells pizzas at the following rates. Which size pizza is the better deal? Explain your reasoning.

- Small (10″) = $5.99
- Medium (12″) = $7.99
- Large (14″) = $9.99

# Pi In Everyday Objects

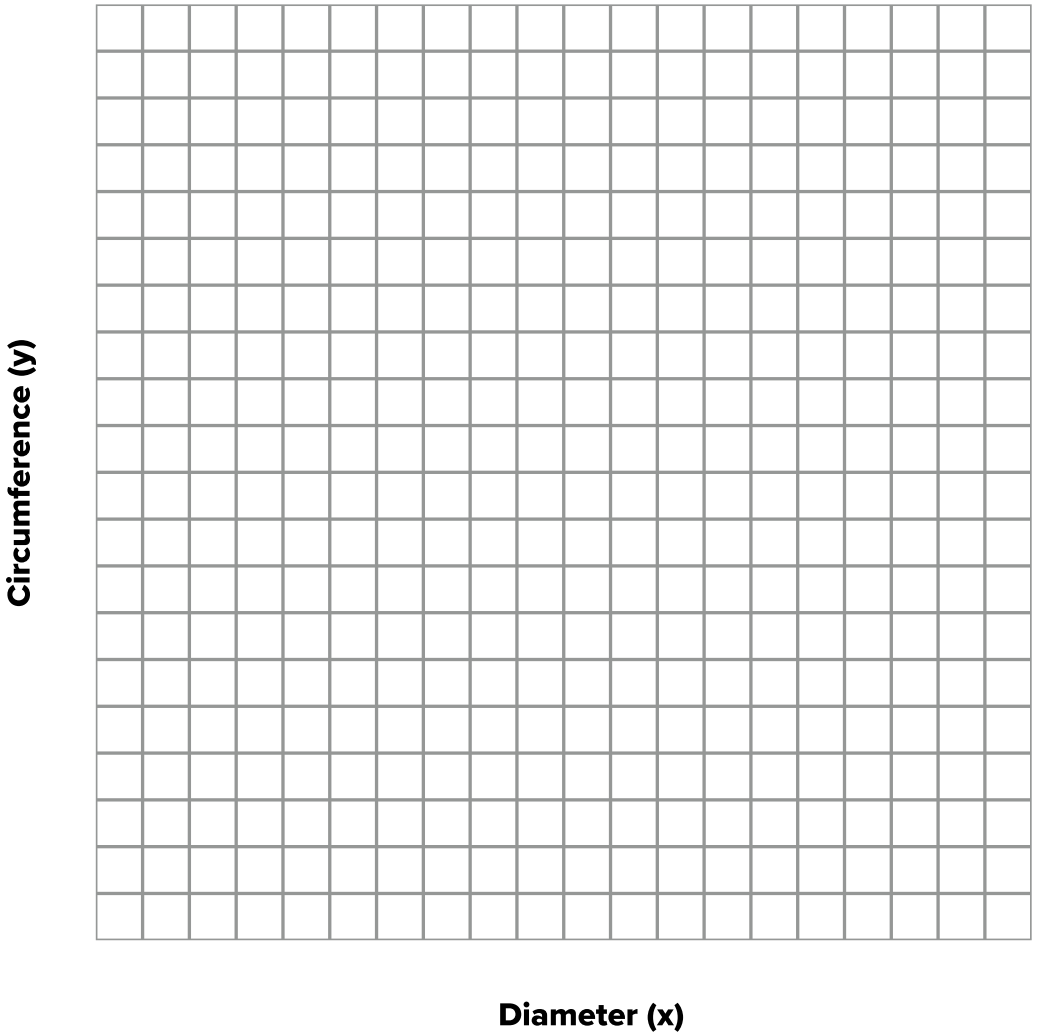
Measure, apply, and plot pi

## Plotting Pi

Complete the table using the diameter and circumference values from your 5 object measurements. Let x = diameter and y = circumference.

| | Object #1 | Object #2 | Object #3 | Object #4 | Object #5 |
|---|---|---|---|---|---|
| **Diameter (x)** | | | | | |
| **Circumference (y)** | | | | | |

**Plot the ordered pairs on a graph. Draw a line that best fits your data. What pattern do you notice?**



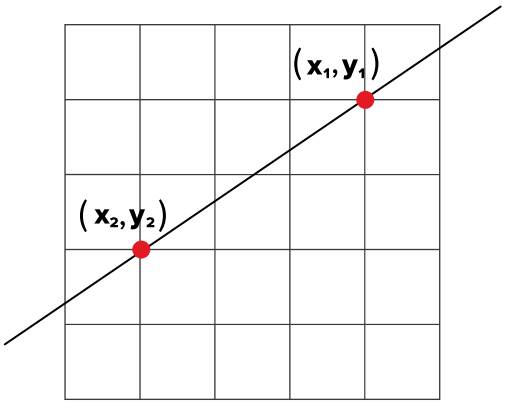
# Pi In Everyday Objects

Measure, apply, and plot pi

## Calculating Slope

Divide the difference of the y-coordinates of 2 points on the line by the difference of the x-coordinates of those same 2 points. What is the slope of the line?

$$\text{Slope } \square = \frac{y_2 \square - y_1 \square}{x_2 \square - x_1 \square}$$




## Predicting Circumference

Write the equation for your line. Use the equation to predict the circumference of a circle with a diameter of 100 cm.

Calculate this same circumference using the formula $C = \pi d$. Compare your results.

# Pi In Everyday Objects

Measure, apply, and plot pi

## Answer Key

### Plotting Pi

**Question** Plot the ordered pairs on a graph. Draw a line that best fits your data. What pattern do you notice?

**Answer** Linear relationship

### Calculating Slope

**Question** Divide the difference of the y-coordinates of 2 points on the line by the difference of the x-coordinates of those same 2 points. What is the slope of the line?

**Answer** About 3.14 or pi

### Predicting Circumference

**Question** Write the equation for your line. Use the equation to predict the circumference of a circle with a diameter of 100 cm.

**Sample Answer** y = 3.21x; Using this equation, I predict that a circle with a diameter of 100 cm would have a circumference of 3.21(100) or 321 cm.

**Question** Calculate this same circumference using the formula C = π d. Compare your results.

**Sample Answer** Using the formula, the circumference would be about 3.14(100) or 314 cm. 321 cm is close to but greater than the actual approximate circumference of 314 cm.

