

Curious Quest Kits

LEARNING ABOUT

# Pi & Pi Day



**Homeschool Roster**

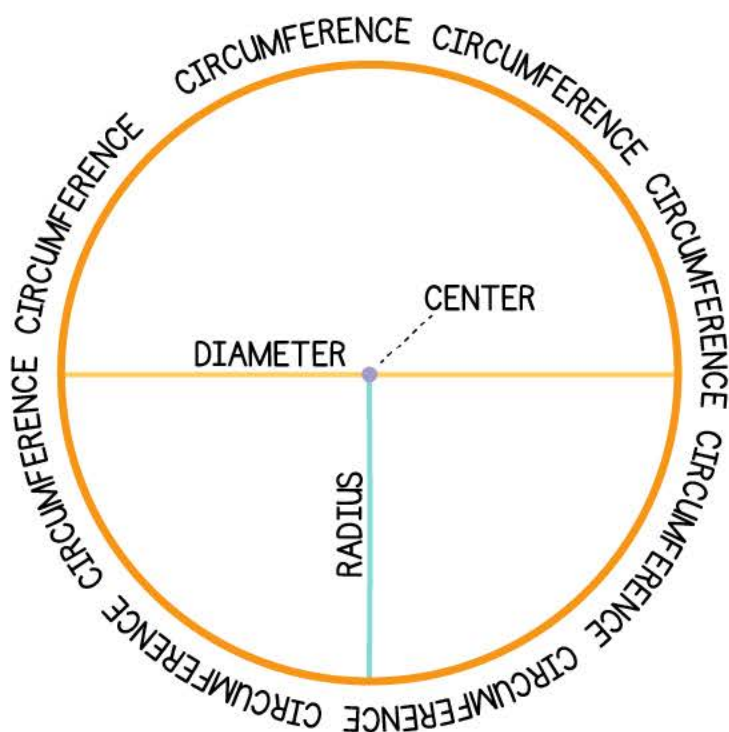
NEWS ~ FIELD TRIPS ~ EXCITEMENT ~ LEARNING ~ FUN

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## What is a Circle?

A circle is a special shape that looks like a round, flat disc or a pizza. Imagine drawing a big, round line that starts from one point, goes all the way around, and ends at the same point. That's a circle! What makes it unique is that every point on the circle is the same distance from the center, which is like the middle point. It's a bit like a hula hoop or the outside edge of a delicious pie. Next time you see a wheel, a clock, or even a donut, look for the round shape—that's a circle!

## The Parts of a Circle



**Where do we find circles in our everyday lives?**

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## How to Measure the Circumference of a Circle

The circumference of a circle is like the circle's "waistline" - it's the distance all the way around. To measure it, you can use a special formula.

First, you need to know the radius, which is the distance from the center of the circle to its edge. If you don't have the radius, you can use the diameter, which is the distance across the circle passing through the center.

Once you have the radius or diameter, use this simple formula:

$$\begin{aligned} \text{Circumference} &= \pi (\text{pi}) \times \text{Diameter} \\ &\text{or} \\ \text{Circumference} &= 2 \times \pi (\text{pi}) \times \text{Radius} \end{aligned}$$

Here,  $\pi$  (pi) is a special number that's about 3.14. So, you multiply  $\pi$  by the diameter, or you can multiply 2 by  $\pi$  and then by the radius.

Let's keep it simple with an example: If you have a circle with a diameter of 7 units, the circumference would be about 22 units because 7 times 3.14 is roughly 22.

## What is "Pi"?

Pi is a special number, approximately 3.14, that helps us figure out the size of circles in math.

## A Slice of Pi's History

### 1. Ancient Egypt and Babylon (2000-1900 BCE)

Way back in time, people in ancient Egypt and Babylon were already trying to figure out how to measure circles. They kind of knew that the distance around a circle (circumference) was a bit more than three times the length across it (diameter).

### 2. Archimedes in Ancient Greece (around 250 BCE)

Imagine an ancient Greek mathematician named Archimedes. He was like a math superhero! Archimedes did some clever thinking and started using polygons (shapes with many sides) to figure out better and better approximations for Pi.

### 3. Symbolic Beginnings (1706 CE)

Jumping ahead many years, a Welsh mathematician named William Jones first used the symbol ' $\pi$ ' to represent the ratio of a circle's circumference to its diameter. This happened around 1706.

### 4. Euler and the Symbol Stickiness (18th Century)

Another math genius, Leonard Euler, made the symbol ' $\pi$ ' super popular. It stuck around, and now whenever we talk about circles, we use this little symbol.

### 5. Computers and Pi (20th Century)

As technology advanced in the 20th century, computers helped calculate Pi to many, many decimal places. It became a bit of a challenge for

mathematicians and computer enthusiasts to see who could find the most digits of Pi.

### 6. Pi Day Celebration (1988)

In more recent times, Pi got its very own celebration! Pi Day is on March 14th (3/14), and people around the world celebrate by doing fun math activities and, of course, enjoying some pie.

### 7. Pi Records (21st Century)

Today, with supercomputers, people have calculated Pi to trillions of digits! It's a bit like a mathematical treasure hunt.

## Significance in Mathematics

Pi is like a secret superhero number in math because it helps us understand circles. When we want to know how big a circle is around the edge (that's called the circumference) or how wide it is across the middle (that's the diameter), Pi comes to the rescue.

Pi is like a superhero number for circles! Whether you're measuring the length around a hula hoop or the width across, Pi is your go-to. It's a constant number, roughly 3.14, but it goes on forever. This special number is a key tool for mathematicians, scientists, and architects, helping them create and understand all sorts of things related to circles. It's a really important and cool number in the world of math!

## Infinite and Non-Repeating

Pi is an irrational number, meaning its decimal representation goes on forever and never repeats. It has been calculated to trillions of digits without finding a repeating pattern.

## Pi Day Birthdays

Physicist Albert Einstein was born on March 14, the same day as Pi Day. In 1879, he came into the world on 3/14.

## Pi's Decimal Representation

Mathematicians have calculated Pi to trillions of digits with computers, but for most everyday purposes, using just a handful of decimal places, like 3.14, is sufficient.

## Pi in Music

In the song "Pi" by Kate Bush, the artist sings the digits of Pi up to 116 places.

## Pilish Language

A "Pilish" language is created by writing sentences where the lengths of consecutive words match the digits of Pi. For example, the first word has three letters, the second word has one letter, and so on.

## Feynman Point

The sequence of six 9s that starts at the 762nd decimal place in Pi is known as the "Feynman Point," named after physicist Richard Feynman.

## Pi in Nature

The spiral shapes found in certain shells and hurricanes often involve Pi, showcasing its presence in the natural world.

## Pi Day Celebrations

Pi Day is celebrated around the world on March 14 (3/14). Some enthusiasts take the celebration to the extreme by holding events at exactly 1:59:26 to include more digits (3.1415926).

## Pi and Ancient Egypt

The ancient Egyptians were among the first to estimate the value of Pi. The Rhind Papyrus, dating back to around 1650 BCE, shows an approximation of Pi as 3.1605.

## Pi and Squaring the Circle

For centuries, mathematicians tried to "square the circle," or create a square with the same area as a given circle, using only a compass and straightedge. The challenge involves Pi and was proven impossible in the 19th century.

## Pi in Ancient India The Indian

mathematician Aryabhata, in his work Aryabhatiya (499 CE), calculated Pi to the fourth decimal place as 3.1416.

## The Origin

Pi Day was first celebrated in 1988 at the San Francisco Exploratorium, a hands-on science museum. The idea originated with physicist Larry Shaw, who worked at the Exploratorium and enjoyed the play on words with the date March 14th (3/14).

## The First Celebration

On March 14, 1988, Larry Shaw and his colleagues marked the day by marching around a circular space and then enjoying fruit pies. This laid the foundation for what would become an annual celebration.

## Continued Innovation

Each year, Pi Day sees new and creative ways of celebrating, with individuals and organizations finding innovative approaches to make math enjoyable and accessible to a broader audience.

## Growing Popularity

Over the years, Pi Day gained popularity, particularly in educational institutions where teachers and students embraced the opportunity to make math fun and engaging.

## Pi Day Challenges

The day often includes Pi-related challenges, such as memorizing and reciting Pi digits, baking Pi-themed pies, and engaging in math and science-related games.

## Official Recognition

In 2009, the U.S. House of Representatives passed a resolution recognizing March 14th as National Pi Day. The resolution encourages teachers and students to celebrate the day with appropriate activities.

## Worldwide Celebration

Pi Day is now celebrated not only in the United States but around the world. Educational institutions, museums, and math enthusiasts organize events, activities, and competitions to mark the occasion.

## Pi Day of the Century

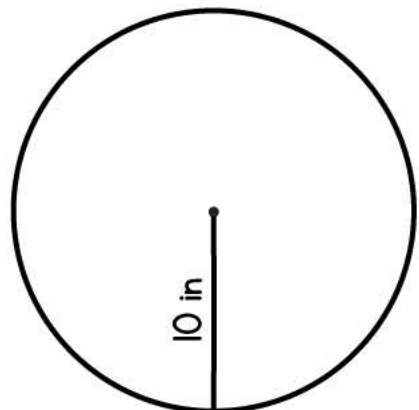
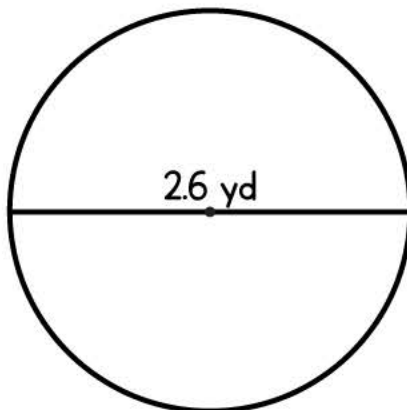
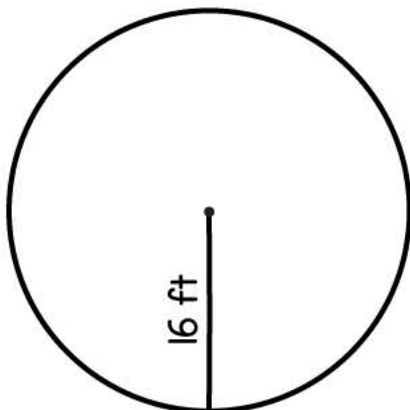
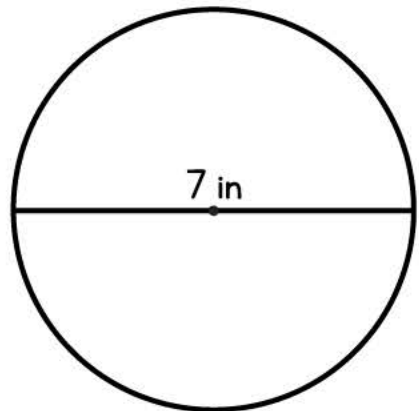
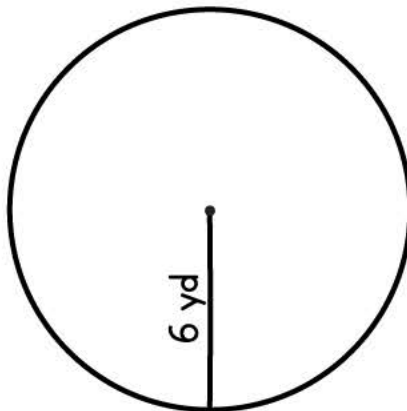
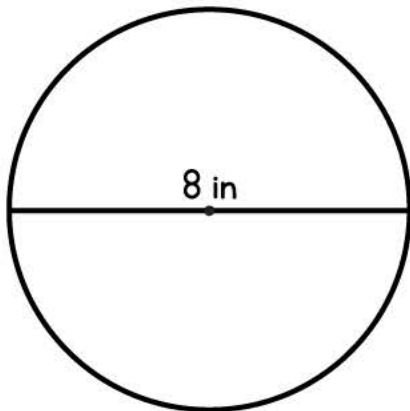
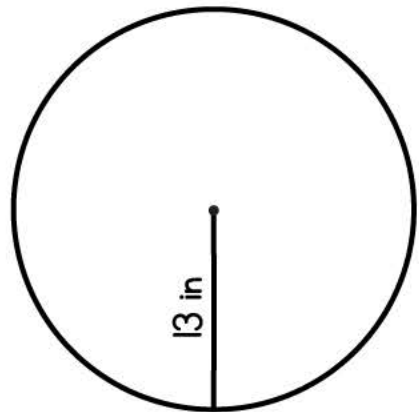
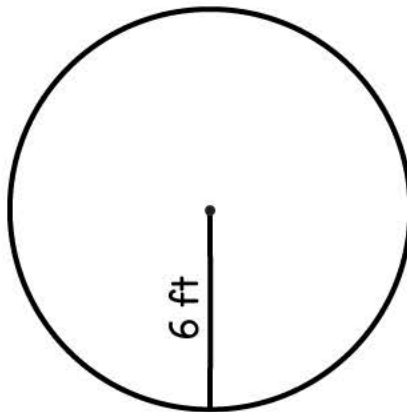
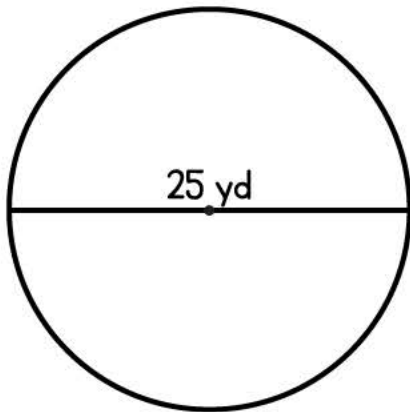
The year 2015 was particularly special for Pi Day because the date aligned with the first five digits of Pi (3/14/15). Some enthusiasts even celebrated at precisely 9:26:53 to include the next two digits, creating the sequence 3.141592653.

Find the circumference of the circle using one of the formulas

$$\text{Circumference} = \pi (\text{pi}) \times \text{Diameter}$$

or

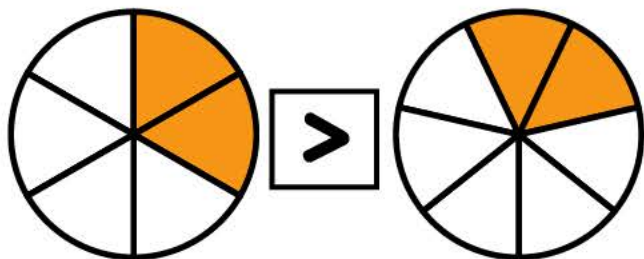
$$\text{Circumference} = 2 \times \pi (\text{pi}) \times \text{Radius}$$



# Pie Fractions

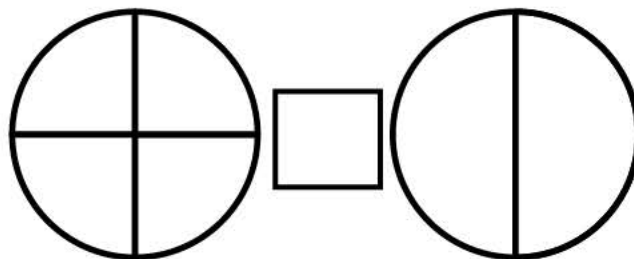
## Color and Compare

Color the fractions and instructed, then compare the value using a  $<$ ,  $>$  or  $=$  symbol.



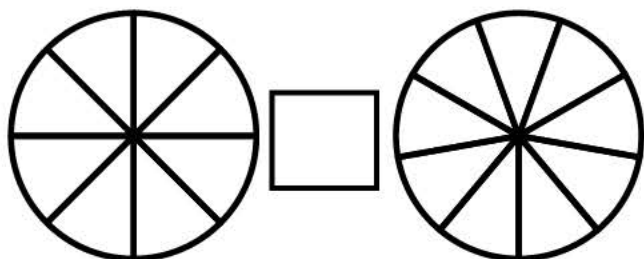
Color  $2/6$

Color  $2/7$



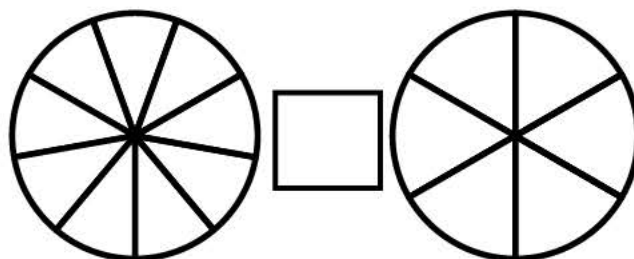
Color  $2/4$

Color  $1/2$



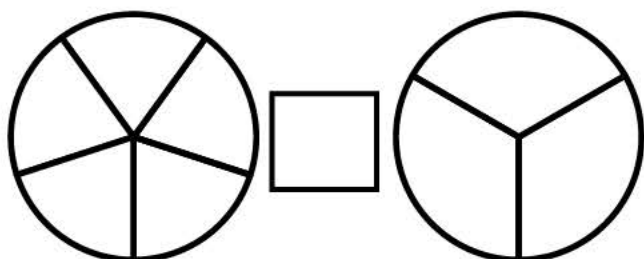
Color  $6/8$

Color  $5/9$



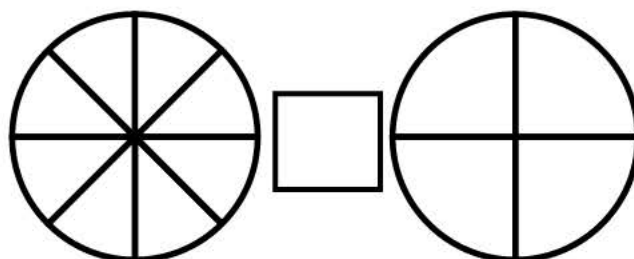
Color  $4/9$

Color  $3/6$



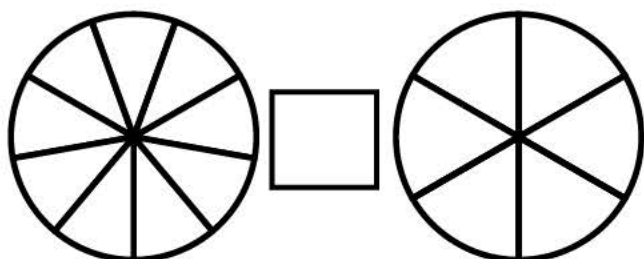
Color  $2/5$

Color  $1/3$



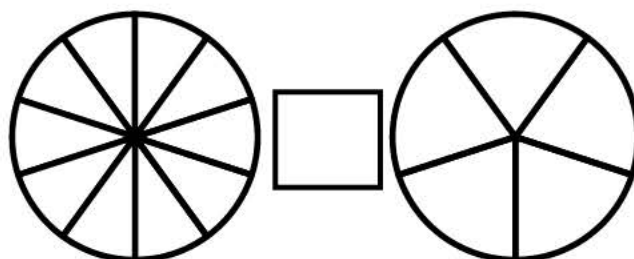
Color  $3/8$

Color  $3/4$



Color  $2/9$

Color  $2/6$

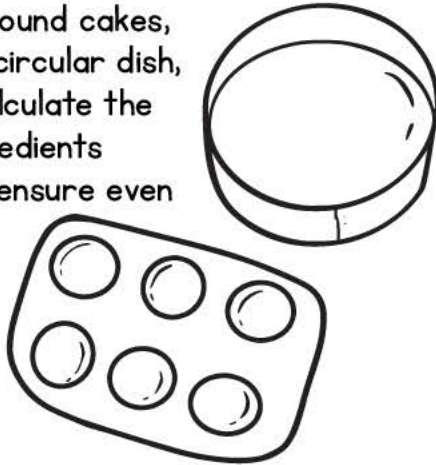


Color  $3/10$

Color  $3/5$

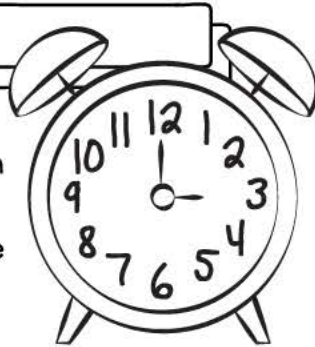
## Baking and Cooking

When making round cakes, pizzas, or any circular dish, Pi is used to calculate the amount of ingredients needed and to ensure even baking.



## Clocks

Clocks have circular faces, and Pi is used in their design and calibration to measure time accurately.



## Sports

Circles are prevalent in sports equipment such as basketballs, soccer balls, and even the circular track in sports like running.



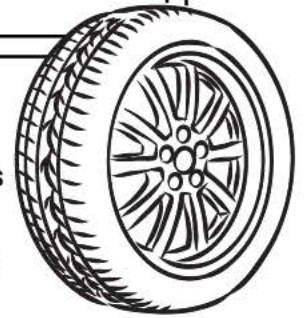
## Landscaping

Gardeners and landscapers may use Pi when planning and creating circular features in gardens or parks.



## Car Tires

Engineers and manufacturers use Pi to determine the dimensions and specifications of circular objects, including car tires.



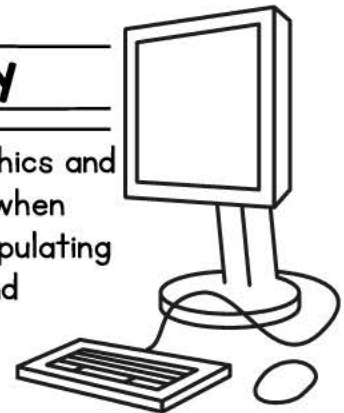
## Art and Design

Artists use Pi in creating circular patterns and designs, ensuring symmetry and proportion in various forms of art.



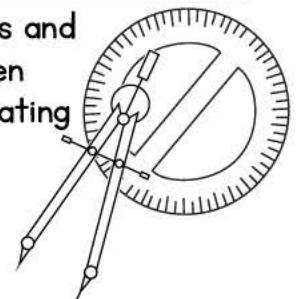
## Technology

In computer graphics and design, Pi is used when creating and manipulating circular shapes and patterns.



## Measurement Tools

In computer graphics and design, Pi is used when creating and manipulating circular shapes and patterns.





## Pi Day Bingo

Circular object in the room	A circle-shaped snack	Someone wearing <b>Pink</b>	Wheel of a Bicycle
Someone who likes <b>Pistachios</b>	Frisbee or Disc	A coin	A Badge or Pin
Someone who likes blueberry pie	$\pi$	Circular symbol from a different culture	A circular clock
A <b>Pi</b> Day celebration decoration	Someone who was born in March	Someone who can recite the first 10 digits of <b>Pi</b>	A drawing or representation of <b>Pi</b>

## Pi Day Bingo

Someone who can recite the first 10 digits of <b>Pi</b>	A circular clock	$\pi$	Circular symbol from a different culture
Someone who likes <b>Pistachios</b>	Frisbee or Disc	A coin	A Badge or Pin
A drawing or representation of <b>Pi</b>	Someone wearing <b>Pink</b>	Wheel of a Bicycle	A circle-shaped snack
A <b>Pi</b> Day celebration decoration	Someone who was born in March	Circular object in the room	Someone who likes apple pie

## Pi Day Bingo

Someone who can recite the first 10 digits of <b>Pi</b>	A circle-shaped snack	Someone wearing <b>Pink</b>	Someone who likes cherry pie
Someone who likes <b>Pistachios</b>	A circular clock	A coin	A Badge or Pin
Wheel of a Bicycle	A drawing or representation of <b>Pi</b>	Circular symbol from a different culture	Frisbee or Disc
A <b>Pi</b> Day celebration decoration	Someone who was born in March	Circular object in the room	$\pi$

## Pi Day Bingo

Circular object in the room	A coin	Someone who can recite the first 10 digits of <b>Pi</b>	Circular symbol from a different culture
$\pi$	Frisbee or Disc	Circular object in the room	A Badge or Pin
Someone who likes blueberry pie	Someone who likes <b>Pistachios</b>	Wheel of a Bicycle	A circular clock
A <b>Pi</b> Day celebration decoration	Someone who was born in March	Someone wearing <b>Pink</b>	A drawing or representation of <b>Pi</b>