March 14th is Pi Day!

π

3/14 is Pi Day because it shares the same numbers as Pi, 3.14!

HAPPY π DAY!

MARCH 14th

3.14

The earliest records of pi date back to 1600 BC in Egypt and Babylonia.

Pi: the ratio of a circle's circumference to its diameter

c

d

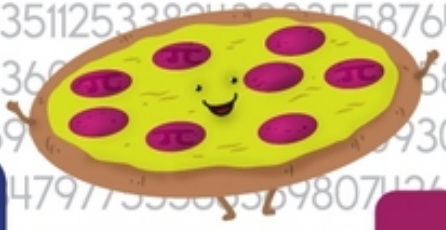
r

For all circles, the distance around the edge (c) is a little more than three times the distance across (d).

$d\pi = c$

Founded by physicist **Larry Shaw**, Pi Day was first celebrated in **1988**.

Let's celebrate with a pizza *pi!*

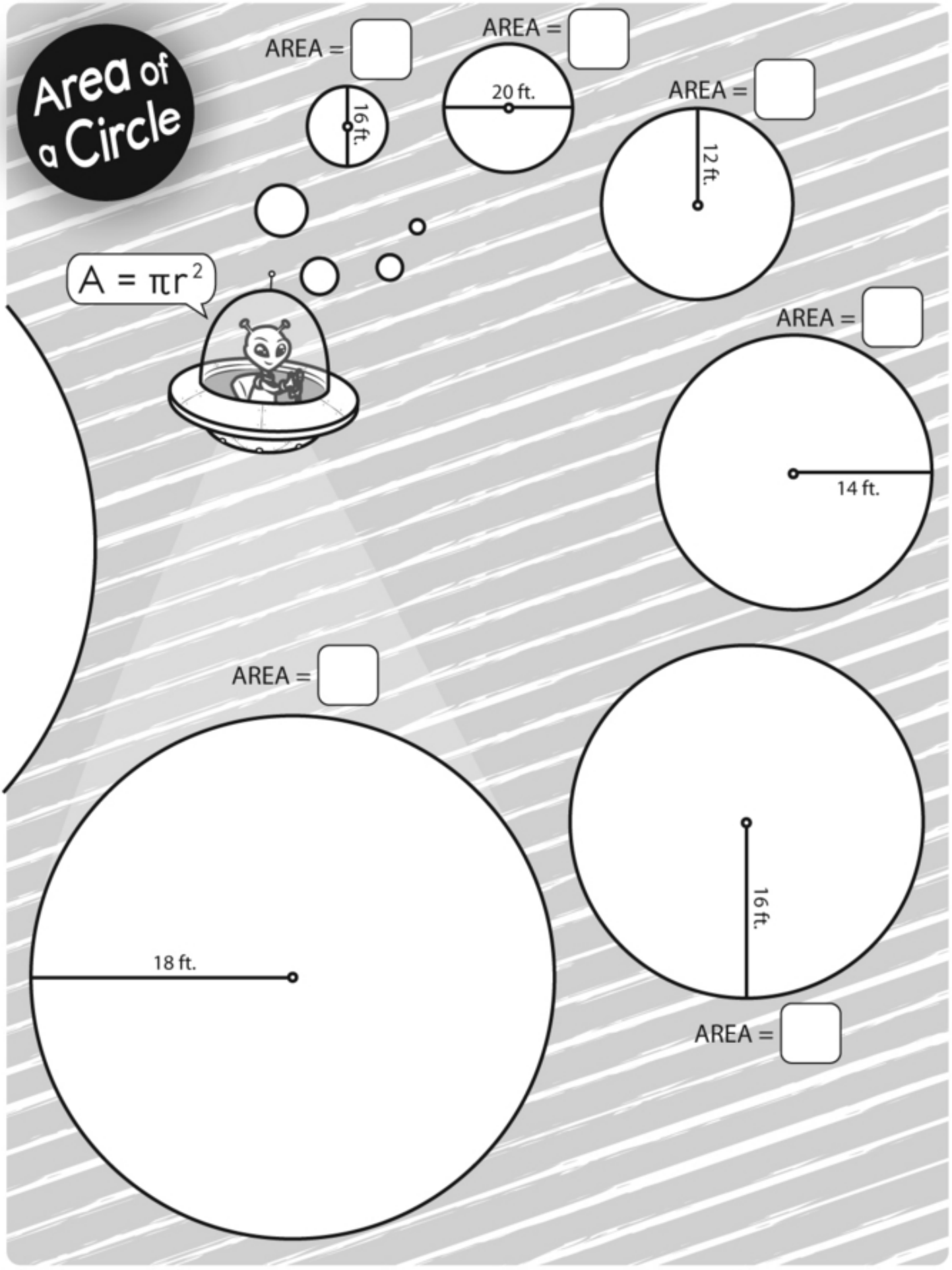


MARCH 14TH IS ALSO ALBERT EINSTEIN'S BIRTHDAY

Pi is an **IRRATIONAL** number. Its digits go on forever without repeating!

π has nothing to do with *actual* pie. It is the 16th letter of the Greek alphabet.

Area of a Circle



SALE TODAY!

Stu's Cool Pools, Tubs, & Ponds

I have *just* the pool for you.

$\pi = 3.14$

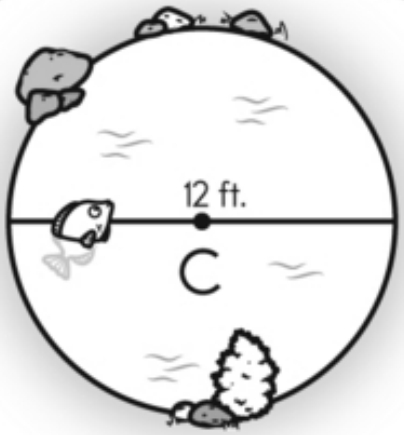
$C = 2\pi r$

Don't forget to show your work!

Find the Circumference of Each Circle

C= ☐

C= ☐



C= ☐

Which pool has the largest circumference?

☐

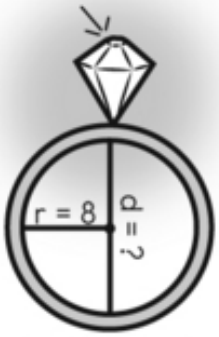
C= ☐

HELPFUL INFORMATION

RIGHT TRIANGLES - $a^2 + b^2 = c^2$

CIRCLES - $C = 2\pi r$

$\pi = 3.14$

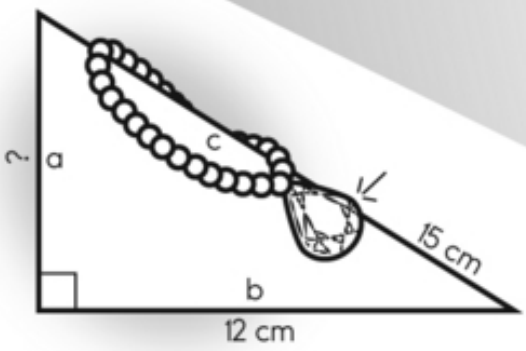


c = 50.24 mm

Circumference = **50.24 mm**

Radius = **8 mm**

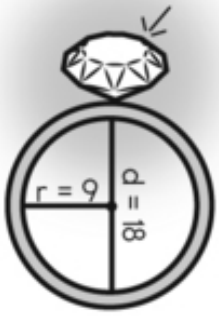
Diameter =



a =

b = **12 cm**

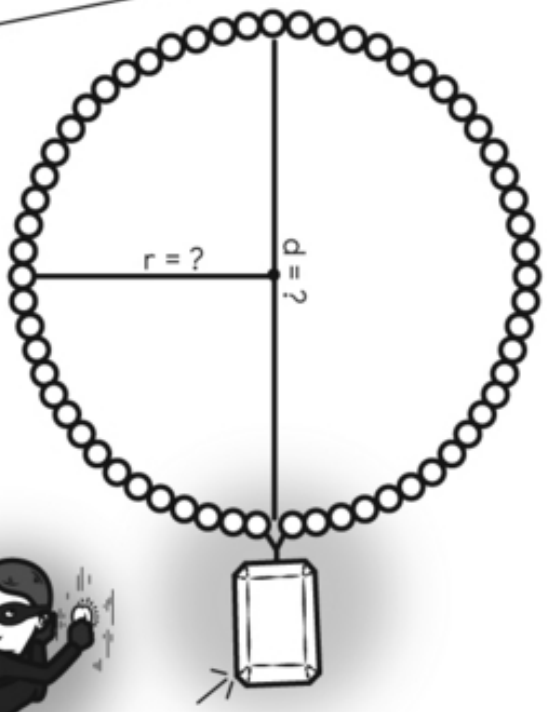
c = **15 cm**



Circumference =

Radius = **9 mm**

Diameter = **18 mm**



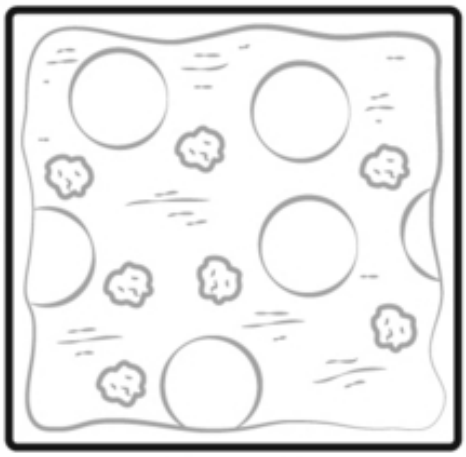
Circumference = **25.12 cm**

Radius =

Diameter =

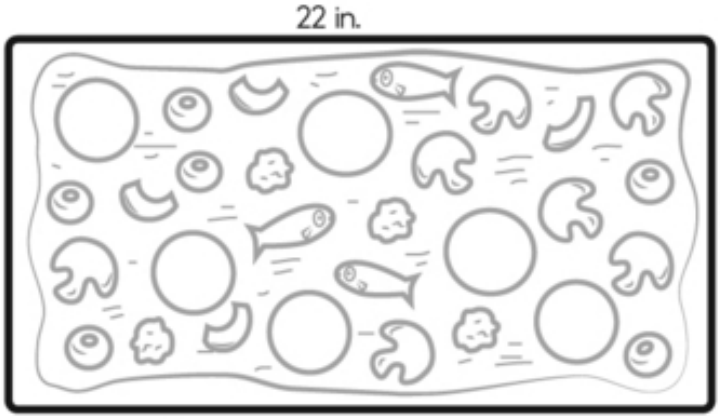
Tony's *Famous* Pizza Shop

Fill in the area and perimeter or circumference for each pizza.



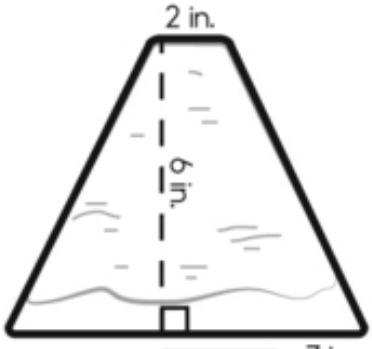
Area = ☐

Perimeter = ☐



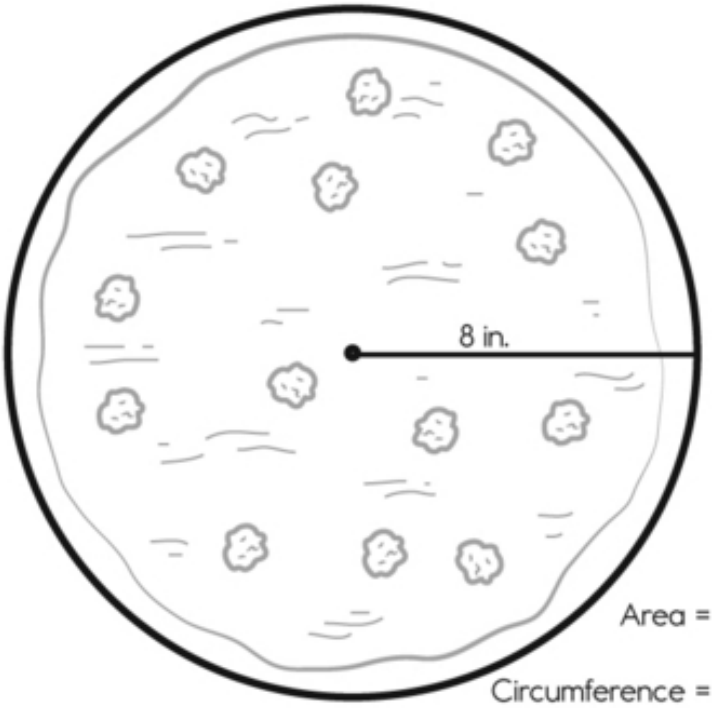
Area = ☐

Perimeter = ☐



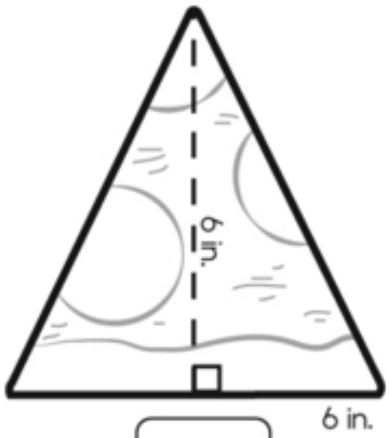
Area = ☐

Perimeter = ☐



Area = ☐

Circumference = ☐



Area = ☐

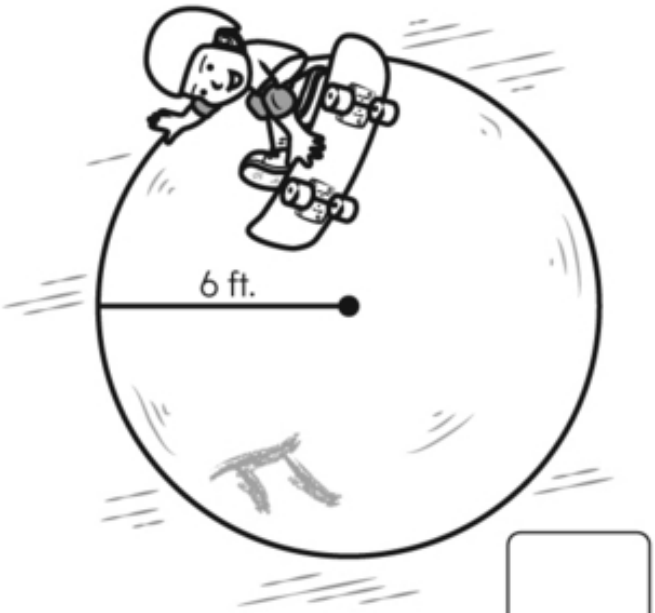
Perimeter = ☐

Skate Park Perimeters

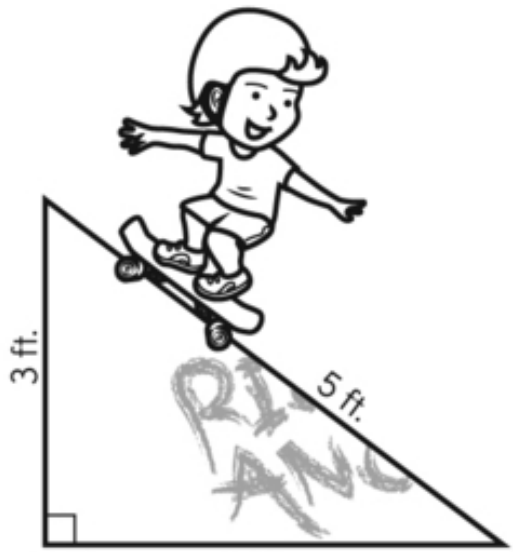
Find the perimeter or circumference of each shape.

Perimeter:

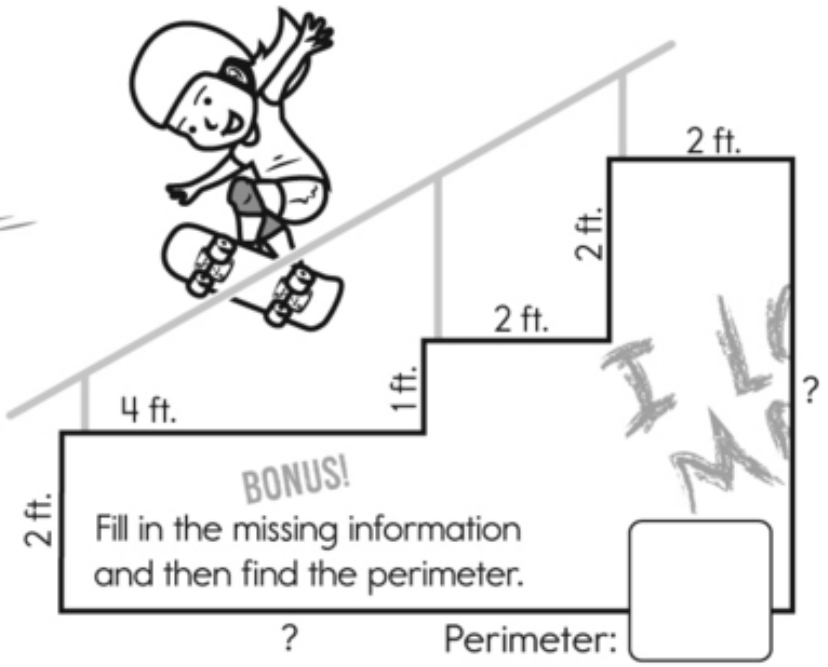
Perimeter:



Circumference:



Perimeter:



BONUS!

Fill in the missing information and then find the perimeter.

Perimeter:

Name: _____

History of Pi

To find the area of a circle, you multiply pi times the radius of the circle squared. To find the circumference of a circle, you multiply pi times the circle's diameter. Pi is a useful number, but before we could use it, someone had to figure out that there was such a thing as pi.

Pi is the ratio of the circumference to the diameter of a circle. It is the same number for every circle. The digits for the number pi begin 3.1415926535 and continue without ever ending or repeating. We often use a shorter estimation for pi, such as 3.14.

In ancient times, people in China, Babylon, and Egypt used pi. Even the Bible mentions circle calculations that are based on the number pi. In those times people were not using decimals yet, so they used either the whole number 3 or fractions for pi.

Archimedes was one of the first mathematicians to try to calculate pi as closely as possible. Archimedes was a great scholar who lived from 287 to 212 BC. He calculated circles by inscribing them inside of polygons. He may have started with a 6-sided polygon. Then he drew a circle inside the polygon, with its sides touching the polygon. Next, he drew a second 6-sided polygon inside the circle with its corners touching the circle. Since polygons had straight sides, there were already formulas available for finding the area of the polygons. The area of the circle would be between the areas of the two polygons. He continued to measure circles more and more precisely by using polygons with more and more sides. Since he had to do all of his work with fractions, not decimals, this was a very time consuming task. Using his circle calculations, Archimedes eventually determined that pi was between 223/71 and 22/7. In decimals, this would be approximately 3.14.

After Archimedes, many other mathematicians tried to calculate pi even more precisely. In the 1600s when decimals came into use in Europe, calculations became just a little easier. One mathematician named Ludolph Van Ceulen spent most of his life calculating pi to 35 decimal places. The number 3.14159265358979323846264338327950288 is carved on his tombstone.

At first, mathematicians were hoping either to find the end of the number pi, or to find where the digits started to repeat. They never found either one. Each new calculation of pi only added more and more digits, but in no repeating pattern. Finally in 1768, Johann Lambert proved that pi will never end or repeat. It is an irrational number. Pi can also be called an infinite decimal.

The calculation of pi had taken another step forward with the invention of calculus. Ever since the late 1600s, mathematicians had been using calculus to create new and better formulas for pi. An Indian mathematician named Srinivasa Ramanujan wrote a new formula in 1910 that would later be used by computers to calculate pi to millions of decimal places.

Name: _____ edHelper

In September 1949, an early ENIAC computer began a calculation of pi. The job took 70 hours, but when it was done, pi had been computed to 2,037 decimal places.

Faster and faster computer programs have continued to extend the number of known digits of pi. Pi was calculated to millions of places and then to billions.

Luckily, you won't need to use a number that exact to do your calculations in geometry class. In most cases, 3.14 will work just fine.

History of Pi

Questions

_____ 1. Pi is _____.

A. the ratio of the circumference to the diameter of a circle
B. another word for diameter
C. another word for circumference
D. none of the above

_____ 2. Pi has been known about since _____.

A. 1910
B. the 1600s
C. ancient times
D. none of the above

_____ 3. 3.14159265358979323846264338327950 28 includes all of the digits of pi.

A. true
B. false

_____ 4. Archimedes calculated pi using _____.

A. polygons
B. calculus
C. computers
D. decimals

_____ 5. Pi can be used to calculate the _____ of a circle.

A. area
B. circumference
C. diameter
D. all of the above

_____ 6. Who calculated pi first?

A. Ramanujan
B. Archimedes
C. Van Ceulen
D. Lambert

Name: _____ edHelper

_____ 7. A circle with a radius of 5 inches would have an area of about _____.

A. 25 square inches
B. 15.7 square inches
C. 31.4 inches
D. 78.5 square inches

_____ 8. A circle with a diameter of 10 inches would have a circumference of about _____.

A. 15.7 square inches
B. 31.4 inches
C. 25 square inches
D. 78.5 square inches

Name: _____

Celebrating Pi Day

Not everyone celebrates Pi Day. Believe it or not, some people have never even heard of Pi Day! Just in case you are one of the people who hasn't heard of Pi Day yet, here is what it is: Pi Day is the day we celebrate the number pi.

At first this might sound a little like Sesame Street where they have celebrations for things like the letter B or the number 7. However, pi is not for preschoolers.

P is an irrational number -- an infinite decimal. It never ends, and it never repeats. Pi is a one-of-a-kind number, and some people are just crazy about pi!

The number pi is roughly 3.14. To be a little more precise it is approximately 3.141592653. For an even more precise estimation, see the number below. Even that is just the beginning. Computers have now figured out pi to billions of digits.

3.14159265358979323846264338327950288419716939937510582097494459230781640628620899862803482534211

5588174881520920962829254091715364367892590360011330530548820466521384146951941511609433057270365

Pi stands for the ratio between the diameter and the circumference of a circle. If you measure the distance around a circle (the circumference) and then measure across the center (the diameter) and then divide the circumference by the diameter, the answer will be pi.

If you go on the Internet, you can find online greeting cards to celebrate Pi Day. You can also find Pi Day songs. There are Pi Day songs to the tune of "American Pie", "Oh, Christmas Tree", and "Row, Row, Row Your Boat." There are also tips for remembering as many digits of pi as possible. You will need to know this useful information if you ever enter a Pi Day pi digit memorizing contest. There are special pi poems, which are not poems about pi, but poems where each word has the same number of letters as the corresponding digit of pi. The first word would have three letters, the second word one letter, the third word four letters, and so on.

In schools, students often measure a variety of circles and then calculate pi, but you could perform this little Pi Day ceremony at home just as well.

In one school, students celebrated Pi Day by designing Pi Day necklaces. This activity requires lots of beads in ten different colors. Each color stands for a digit from 0 to 9. To make the necklaces, students string the beads in the order of the digits of pi. In another school, students had a contest to design the best Pi Day button. Then they

used a button-maker to create one for everyone.

In case you plan to get really dressed up for pi day, you can use pi to calculate your hat size.

Maybe all of this celebration over pi seems like just a bit much to you. In that case, maybe you will want to spend Pi Day just relaxing and surfing the web. If so, you can search for answers to questions like these.

Celebrating Pi Day

Questions

_____ 1. What do you get if you divide the circumference of a pumpkin by its diameter?

A. cherry pi
B. pumpkin pi
C. apple pi

_____ 2. What do you get if you divide the circumference of the sun by its diameter?

A. stars in the sky
B. clouds in the sky
C. pi in the sky

_____ 3. Which of these numbers is approximately pi?

A. 3.1416
B. 3.14159
C. both a and b

_____ 4. You can calculate pi by dividing _____.

A. the circumference of a round cookie by its diameter
B. the circumference of the moon by its diameter
C. the circumference of a circle by its diameter
D. All of the above
E. None of the above

5. If a person's hat size is equal to the diameter of his head, explain how he could use pi to find his hat size.

_____

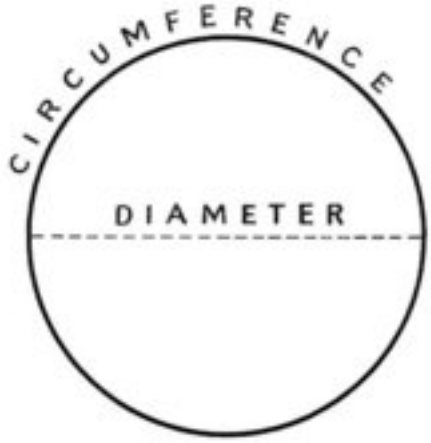
_____

_____ 6. What might people eat to celebrate Pi Day?

A. pie
B. pancakes
C. all of the above

Name: _____

What Is Pi?



You have probably heard about pi before. Maybe your teacher was talking about it. Maybe you saw it in your math book. Maybe you saw it on television or in a movie. You have heard of it, but do you really know what pi is?

Pi is usually something you will hear about when someone is talking about math. Even though pi looks like a sign, it is really a number. Why not just write the number? There is a reason that we do not write numbers when we are talking about pi. Pi is a number that has no end. It keeps going and going and going! When people need to use pi to solve a math problem, they usually just write pi as 3.14. That is a close guess of the value of pi. If people want to get even closer to the real value of pi, they might use 3.14159. It is close to the real value of pi, but there are even more numbers that make up pi. Some people have spent their whole lives trying to find the true value of pi. Now that we have computers, we can use them to get even closer to the true value. In 2002, a group in Japan used a computer to calculate pi to more than one trillion decimal places!

That may be interesting, but it still doesn't tell you what pi really means. Why would anyone want to use a number that doesn't end? The reason has to do with circles. Pi is a number that is important in understanding circles. Pi is important in finding the circumference, or distance around the outside, of a circle. Pi is important in finding the area of a circle. Area is the measurement of the space inside a two dimensional, or flat, object. Pi is also important in finding the volume of circular objects. Volume is the measurement of the space inside a three dimensional object. Spheres, like balls, and cylinders, like soup cans, are both three dimensional objects that contain circles.

Long ago, people began to study circles to learn more about them. It was easy to see that all circles were similar, but they wanted a way to show it with math. There was one number that was always the same, no matter what the size of the circle. That number was pi! To understand pi, you also have to know a few things about circles. Draw a circle. Draw a line from one side of the circle, through the middle of the circle, and across to the other side. This line is called the diameter of the circle. It is the distance across a circle.

The circumference of a circle is the distance around a circle. It is just like the perimeter of a square or rectangle. The circumference of any circle is pi times the diameter of the circle. That means the circumference of the circle is about 3.14 times greater than the diameter of the circle. This is true for any circle, no matter how big or small it is.

Now that you know a little more about pi, it should be a lot easier to remember. Pi is a number that has to do

Name: _____

with circles. So, next time you are cutting a slice of apple pie or opening a box of your favorite pizza pie, think about what you know about the number pi!

What Is Pi?

Questions

_____ 1. Pi is a number that is important in understanding:

A. division
B. mathematics in general
C. circles
D. all of the above

_____ 2. What is the final digit in the number pi?

A. We haven't found it yet.
B. There is no final digit in pi; pi doesn't end.
C. four
D. seven

3. What type of shape is a ball?

_____

_____

_____ 4. What is the name for the measurement of the space inside a flat, two dimensional object?

A. diameter
B. circumference
C. area
D. volume

5. What is the name for a line that extends from one edge of a circle, through the center of the circle, to the opposite side of the circle?

_____

_____