EXPLORING Π AND PERCEIVING THE AREA OF A CIRCLE

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GRADE 5

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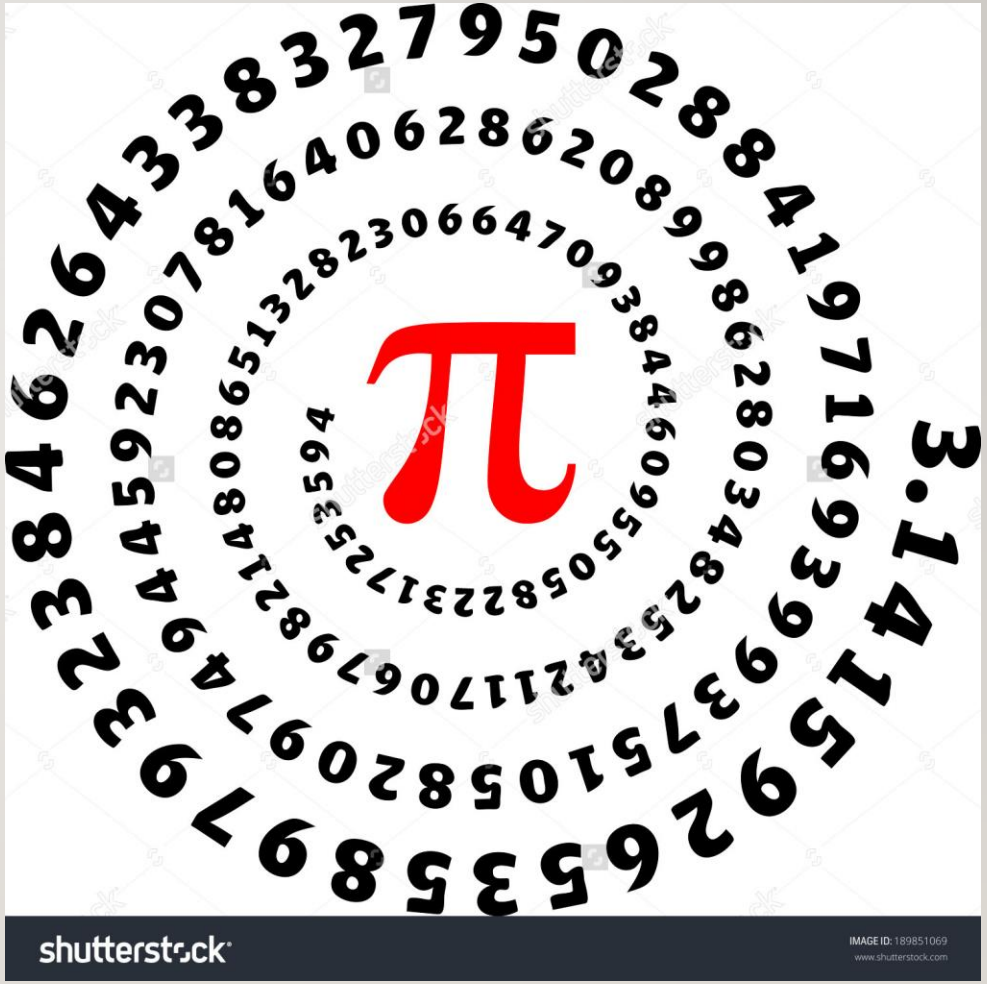
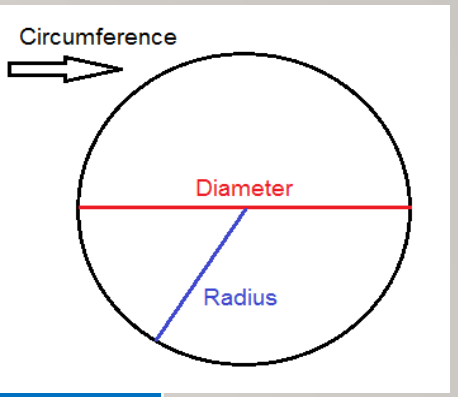


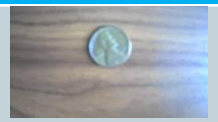
INTRIGUING FACTS ABOUT π

- π is an irrational number. (π=3.14159265358979323846264338327950288419716939937510582097...)
- π is defined as the ratio of the circumference of the circle to the diameter.
- Mathematician Archimedes of Syracuse discovered this procession of endless digits.
- π was named by William Jones in 1706 due to it being the first letter in the Greek Word perimitros, which means perimeter.
- π is disclosed anywhere there is a circle in nature such as a sinuous river.

Experimenting with π

In this chart, I measured the circumference and diameter of some items.

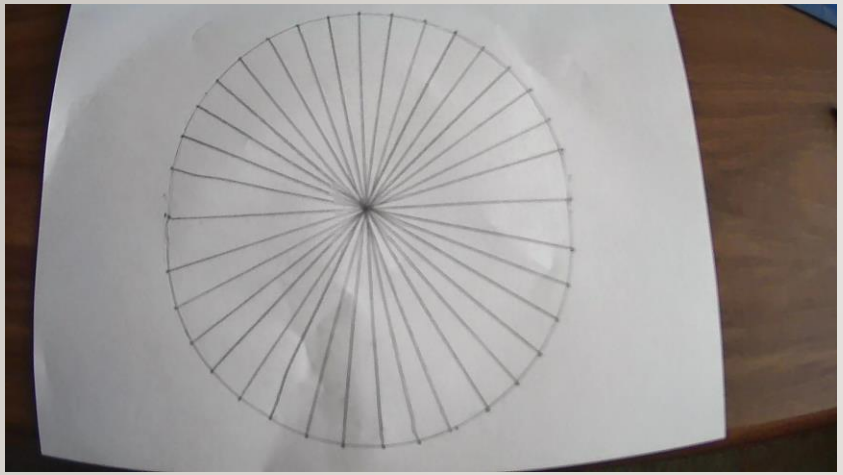


Item	Circumference	Diameter	Value of π
Tape 	13.25 in	4.125 in	3.212...
Penny 	2.375 in	0.75 in	3.166...
Quarter 	3.125 in	1 in	3.125
Medal 	8 in	2.5 in	3.2
Lid 	14.25 in	4.375 in	3.257...
Silver Coin 	4 in	1.25 in	3.2

MY SYNOPSIS

After experimenting with various items, my chart reveals that no matter what π defines the ratio between a circle's circumference and its diameter. Therefore, π = circumference / diameter.

WHY IS THE AREA OF A CIRCLE *ΠR*^2



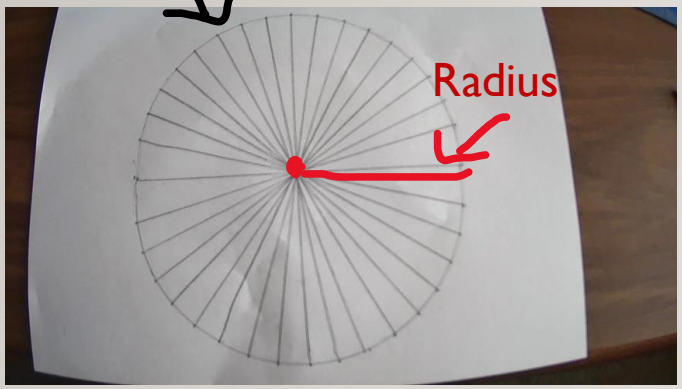
Step 1: I divided the circle into 36 segments.

In this experimentation, I will derive the area of a circle by transforming the circle into a rectangle.

Step 2: I rearranged the segments to form a rectangle.

MY ANALYSIS TO FIND THE AREA OF A CIRCLE

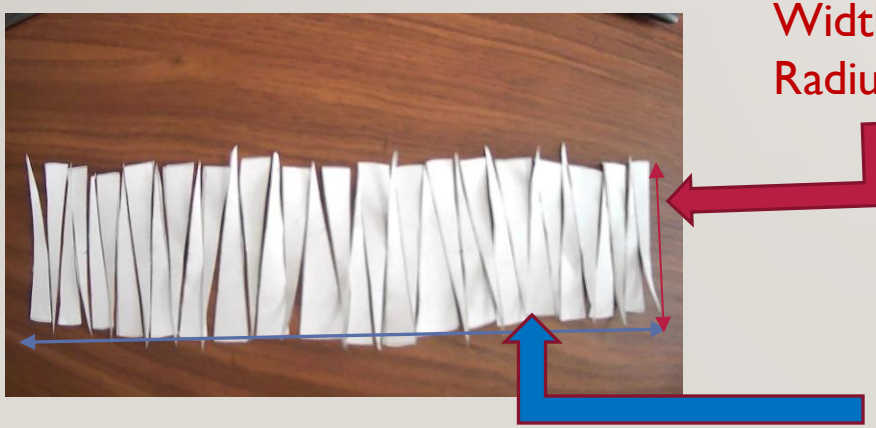
Circumference



Area of a rectangle = L x W

From the picture, we know that W = r and L = C/2 which'll be equal to 2πr/2.

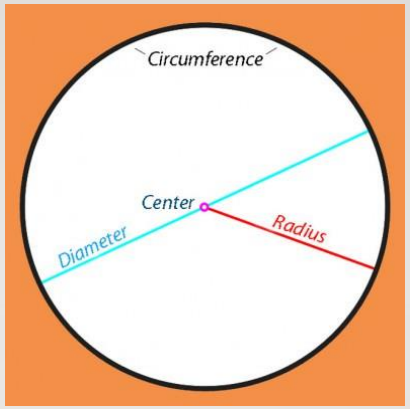
C = dπ
or 2πr

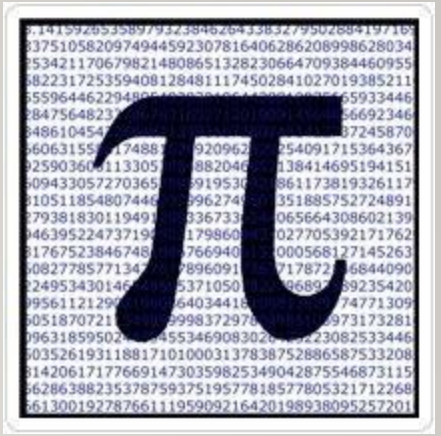


Width of the rectangle =
Radius of the circle

Due to the length containing merely half of the segments, this side is half of the circumference. Therefore, the length is equal to πr.

Area of the rectangle = L x W
=2πr/2 x r
= Π r x r
Area of the circle = πr^2





CONCLUSION

I CONCLUDE THAT BASED ON MY CHART Π REMAINS CONSTANT FOR ANY CIRCULAR OBJECT. ADDITIONALLY, I PROVED WHY THE AREA OF A CIRCLE IS ΠR^2 BY SEGMENTING A CIRCLE INTO A RECTANGLE.