

## Ana Mojica Mendoza



# Golden Ratio Applications



## Gabriel Ayasse

After watching the YouTube video "Golden Ratio = Mind Blown!" I found myself intrigued by the idea of discovering the golden ratio in the everyday objects around me. I decided to photograph items that seemed to embody the 1:1.618 ratio. Even before measuring, I was able to identify several objects that appeared to align with this proportion. When I finally measured them, I was pleasantly surprised to find that they were remarkably close to the golden ratio. Now I understand the excitement expressed by the woman in the video; it truly is fascinating! As the video expressed, the golden ratio has been associated with beauty and aesthetics in art and architecture. The golden ratio also appears frequently in nature, for example the arrangement of leaves, the pattern of seeds in a sunflower, and the spirals of shells. It's believed that this ratio creates a sense of balance and harmony that is pleasing to the eye, which explains why companies also use this ratio when creating their products.

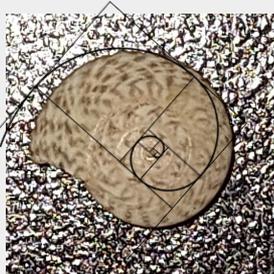


Ana Mojica Mendoza, Madeline Turner, Oscar Graham, Jonathan Houmbie, and Gabriel Ayasse

The golden ratio, often denoted by the Greek letter  $\phi$  (phi), is a mathematical ratio that appears when a line is divided into two parts such that the ratio of the whole length to the longer part is the same as the ratio of the longer part to the shorter part. The golden ratio ( $\phi$ ) to 1 is approximately **1.618**. This means that the ratio of the two parts in the golden ratio is about 1.618:1.

## Madeline Turner

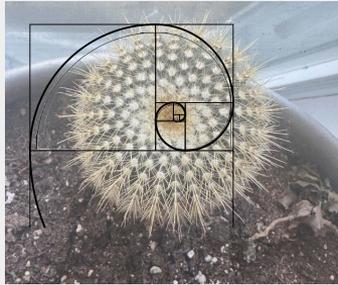
I find the Golden Ratio very interesting, the fact that this irrational number appears not only in math and geometry, but also in nature and in art is very fascinating to see. The appearance of this ratio in nature is very intriguing because it shows how everything in life follows rules that were predetermined. It makes me wonder if the golden ratio evolved into nature, like in shells or flowers, or if it was always a part of their design. Maybe this process of growth (in spirals) is more efficient and more structurally sound, and that is why it shows up much in nature. With architecture and in art the golden ratio is more easily explained (especially after it was discovered) because these human made objects are meant to be pleasing to the eye and the Golden ratio is exactly that. However, the golden ratio appears before it was discovered, which makes it so much more interesting that it appears in a lot of places.



Faculty Mentor: Dr. Wen Hsin

## Oscar Graham

I think the golden ratio is very interesting, especially with how it appears in nature. Once I saw how she pointed out the seeds and petals of flowers I knew I wanted to go find a plant to see if the golden ratio worked there too. It's really cool to see how this mathematical concept benefits life in a way that this cactus's own needles grow the same way. I like plants a lot, so I also went and found other examples too, but this cactus was my favorite, I love how even though the needles are growing straight out they naturally curve into the center, that's really cool.



## Jonathan Houmbie

The golden ratio, a mathematical proportion found extensively in nature and human creations, holds significant intrigue due to its widespread occurrence across various domains such as art, architecture, and biology. This ratio represents a unique harmony that appears in phenomena ranging from the arrangement of petals in a flower to the design of architectural masterpieces. Its ubiquity invites exploration into its applications and implications in diverse fields, offering insights into the interconnectedness of seemingly disparate elements within our world.

Encountering the golden ratio often leads to a transformative shift in perspective. It unveils a hidden order within the world, prompting individuals to perceive their surroundings with newfound appreciation and understanding. By recognizing the prevalence of this proportion, individuals gain insight into the inherent beauty and symmetry present in both natural and human-made structures. This comprehension fosters a deeper connection to the world, enriching one's perception of its intricacies and fostering a sense of reverence for the underlying harmony that permeates existence.



References:

Golden Ratio = Mind Blown!

[https://www.youtube.com/watch?v=c8ccsE\\_lumM](https://www.youtube.com/watch?v=c8ccsE_lumM)

Here is a picture of my 3-year-old cat, Pebbles. By stretching she perfectly shows the 1vs1.6 ratio. From the bottom of her back feet to her ankle is a 1 in the ratio, her ankle to her hip is the 1.6 in the ratio. Another example is the whole length of her body. Going from the tip of her nose to the start of her primordial pouch shows the 1.6 of the ratio. From the start of her primordial pouch to the end of her tail shows the 1 of the ratio. I found this very intriguing as I began to notice more sections of my pets that show this 1:1.6 Golden Ratio. I find this very interesting because many other living organisms use this Golden Ratio. This leads me to the idea that this Golden Ratio is essential for survivability of living organisms. I really understand what the video meant by "When I learn about the Golden Ratio, it changes my life". Everywhere I look I can imagine the lines showing these ratios and I love it.

