

## ANNOTATED BIBLIOGRAPHY:

While I find both mathematics and art extremely interesting if taken individually, I chose to investigate, for this presentation, the mathematics behind art. Because, I think, understanding the deep connection existent between these two disciplines helps us appreciate their complexity and have a better perception of the world.

- Resource 1:

*How has Greek art theory influenced art?* [1]

This article explores the influence that philosophy has had during the Ancient Greek Period in defining the concept of beauty and, most importantly, in identifying what can be considered a form of art.

While the philosophical approach of the article to the evolution of art is not necessarily useful in my research, it shows how mathematics came to play a pivotal role in the creation of art.

- Resource 2:

*Art and Math: Aesthetics of Calculations* [2]

In this article, the author investigates how various famous painters incorporate mathematical tools into their techniques in the creation of astonishing masterpieces.

Going from the Golden Ratio used by Leonardo da Vinci to the geometrical shapes on which Kandinsky's work is based; we can see how the use of mathematics in art changes throughout time, sometimes even giving rise to new art movements, such as Neoplasticism.

- Resource 3:

*The Mathematical Art of M.C. Escher* [3]

I thought this video was fascinating because it is the first resource, out of the ones that I have chosen, showing that mathematics not only inspires art, but that art can be a source of inspiration for mathematics and science.

- Resource 4:

*The Golden Ratio and Fibonacci Sequence in Music* [4]

In my opinion, picking this video was useful to show that we can apply the same mathematics used in paintings to music, finding patterns that lead to harmony.

In this case, the Golden Ratio does not only apply when trying to find perfect proportions in paintings but can be useful in all forms of art.

Additionally, I think that this resource makes us see that mathematics is everywhere.

- Resource 5:

*For these artists math is their muse* [5]

I believe the inclusion of this article in my presentation to be fundamental for understanding how the relationship between these two disciplines has evolved.  
The author focuses on mathematics no longer being a tool that serves art in the quest for perfection, but finally becoming art itself.

- Resource 6:

*Is math a kind of art?* [6]

In this video, the host spurs the panel to engage in a lively debate questioning whether mathematics fulfils all the criteria needed to be considered a form of art.  
Soon in the discussion mathematics is compared to poetry.  
If in poetry, grammar and language are just an instrument used to create magic and arouse emotions in the readers, so are numbers and arithmetic in mathematics.  
Moreover, the panel emphasizes that, similarly to art, although mathematics has numerous constraints, it also has an extremely creative side to it.

- Resource 7:

*Mathematics: Why the brain sees maths as beauty* [7]

I chose this article because it is particularly relevant to demonstrate some of the concepts explored in the debate aforementioned.  
The topic of interest is a study conducted on 15 mathematicians. They were asked to rate different formulae based on their beauty.  
Scans of the brain showed that looking at a formula rated as beautiful activated the same parts of the brain, in which there would be activity while looking at artistic masterpieces or listening to a great piece of music.

Luca Pacioli said, “Without mathematics, there is no art.” and Freeman Dyson said, “Mathematics is really an art, not a science.”. In fact, if mathematics helps us understand the world that surrounds us, by uncovering patterns hidden in nature, art is a visual representation of it.  
It is, therefore, clear that these two disciplines could not be more interlinked.

## REFERENCES

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