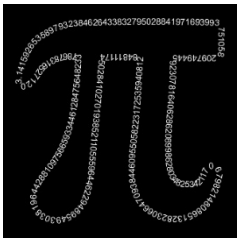
Code: of letters and *Words*, of ratios and *Numbers*

Dedicated to Anastasia

Any Code inherently encapsulates the seed of wonder. Therefore, the presentation of a Code and, most importantly, the deciphering thereof, best serves (according to my experience as a teacher) as a lure and hooks students' attention. Thus, students get motivated or even thrilled to engage themselves in tackling a scientific problem. I would like to take advantage of the brilliant initiative of *"EMBLetc."* newsletter in order to communicate a Code-related experience that I lived at a young age. That mystifying experience put me on my toes and allowed me to readily understand the thrilling essence of a Code and perceive a hidden connection between *Numbers* and *Words*.



Both of these words, "Number" and "Word", bear divine powers. Pythagoras believed that the Numbers are endowed with the power to unveil the beauty of the Cosmos and, conversely, that beauty is the reflection of omnipresent symmetry expressed in Numbers. The very word "Word", as adopted in the opening of the Book of John meaning "God", is the translation of the Greek word "Λόγος" (logos = analogy, ratio), pointing directly towards Pythagora's perception of the "godly" essence of numbers and their ratios.

So here is the captivating Code that so wonderfully transfigures a mathematical concept, hiding it within a rhyme (which I am afraid I have to cite in Greek) by Professor Nikolaos Chatzidakis, 1872-1942, a Greek mathematician and a poet also known as "Nocturnal Zefyros":

"*Αεί ο Θεός ο Μέγας γεωμετρεί,*
το κύκλου μήκος ίνα ορίση διαμέτρω,
παρήγαγεν αριθμόν απέραντον,
καί όν, φεύ,
ουδέποτε όλον θνητοί θα εύρωσι."

Translation: *"Eternally, the Mighty God applies geometry; to define the circle's length as a ratio to the diameter, He created an infinitely vast number whose digits, alas, we mortals shall never come to know in completeness."*

When I came across this rhyme/Code at high-school, it amazed and fascinated me so powerfully that it fired a yearning to tackle code-related problems for life. So, now I urge the reader to take a moment and try to decipher the number that is hidden in the Greek excerpt. Could you make out the number that lies beneath the rhyme? The Code refers to the most *incredible number* (according to Ian Stewart), the π. The succession of the letter counts in each word corresponds to the sequence of the first 23 digits of the most elusive number in history: "3,14159265358979323846 26…". As easy as it may seem to pick a string of words with predefined letter counts, it is amazingly difficult to choose the words to convey such a poetic, yet scientific meaning! It is exactly this fluent transition from poetry to science (and reverse) that nourishes those who love the ciphers, the riddles – the codes!

by Raphael Sandaltzopoulos
in celebration of the Pi day
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