
Special Topics in Advanced Math: *History of Mathematics*

Math 395 Fall 2023

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Fowler 310 TR 1:30pm - 2:55pm

<http://sites.oxy.edu/ron/math/395/23/>

Class 3: Tuesday September 5

TITLE Introduction to Greek Mathematics and Greek Mathematicians

THIS READING: Katz, pp. 32-49; Boyer & Mertzbach, pp. 40-51; Eves, pp. 72-82

NEXT READING: Katz, pp. 39-47; Boyer, pp. 67-70; Barrow-Green, pp. 95-109

SUMMARY

We begin to look at the contributions of Ancient Greece to mathematics and begin learning about individual *people* “who did the math”: Thales, Pythagoras, Plato, Aristotle, and Zeno

Greek Numbers

The Greeks used a cipher system where each letter in the Greek alphabet represented a particular number and then some letters that were no longer in use were added for certain numbers (6, 90, 900)

As Katz says (page 34):

From what fragments exist from ancient times, and even from some of the copies, we do know that the Greeks represented numbers in a ciphered system using their alphabet, from as far back as the sixth century BCE. The representation was as shown in Table 2.1, where the letters Ϸ (digamma) for 6, Ϙ (koppa) for 90, and Ϡ (sampi) for 900 are letters that by this time were no longer in use. Hence, 754 was written ψνδ and 293 was written σϘγ. To represent thousands, a mark was made to the left of the letters α through θ; for example, 'θ represented 9000. Larger numbers still were written using the letter M to represent myriads (10,000), with the number of myriads written above: $M^{\delta} = 40,000$, $M'^{\zeta\rho\sigma\epsilon} = 71,750,000$.

Representation of a number system used by the Greeks as early as the sixth century BCE.

Letter	Value	Letter	Value	Letter	Value
α	1	ι	10	ρ	100
β	2	κ	20	σ	200
γ	3	λ	30	τ	300
δ	4	μ	40	υ	400
ε	5	ν	50	φ	500
ς	6	ξ	60	χ	600
ζ	7	ο	70	ψ	700
η	8	π	80	ω	800
θ	9	Ϙ	90	Ϡ	900

EXAMPLE

Write 42 in Greek numbers. What does χξς represent?

GroupWork

Describe the main reason why we still know the following names below and summarize their contributions to mathematics.

Thales (c. 624-547 BCE)

Pythagoras (c. 572-497 BCE)

Plato (429-347 BCE)

Aristotle (384-322 BCE)

Zeno (c. 495-c. 430 BCE)