

## GREEK LETTERS

*Learn the names of Greek letters – not just the obvious ones like alpha, beta, and pi, but the more obscure psi, xi, tau, omega. [...] Learn not just to recognize these letters, but how to pronounce them. Even if you are not reading mathematics out loud, it is hard to think about formulas if  $\xi, \psi, \tau, \omega, \varphi$  are all “squiggles” to you.*

J. Hubbard

Below is a table of the Greek alphabetical order, with pronunciation guides for the letter names and sounds that match how mathematicians pronounce them in English. This is not always the same as Greek pronunciation, *e.g.*, the sound of the letter  $\beta$  in modern Greek is v rather than b, so  $\beta\omicron\lambda\tau$  is Greek for volt, not bolt. If Greek borrows a foreign word with a b sound in it, they transcribe that sound using the two-letter combination  $\mu\pi$ , so barbershop is  $\mu\pi\alpha\rho\mu\pi\acute{\epsilon}\rho\iota\kappa\omicron$  = barberiko and blues (the musical style) is  $\mu\pi\lambda\omicron\upsilon\zeta$ . (Compare with Greek’s single letter  $\theta$  where English uses two letters *th*. If your alphabet doesn’t have a letter representing the sound you need, you have to improvise.)

Letter	Name	Sound
Aα	άλφα (alpha)	a
Bβ	βήτα (beta)	b
Γγ	γάμμα (gamma)	g
Δδ	δέλτα (delta)	d
Eε	έψιλον (epsilon)	e
Zζ	ζήτα (zeta)	z
Hη	ήτα (eta)	ee
Θθ	θήτα (theta)	th
Iι	ιώτα (iota)	i
Kκ	κάππα (kappa)	k
Λλ	λάμβδα (lambda)	l
Mμ	μύ (mu)	m
Nν	νύ (nu)	n
Ξξ	ξί (xi)	ks
Oο	όμικρον (omicron)	o
Ππ	πί (pi)	p
Pρ	ρώ (rho)	r
Σσ	σίγμα (sigma)	s
Tτ	ταύ (tau)	t
Υυ	ύψιλον (upsilon)	oo
Φφ	φί (phi)	f
Xχ	χί (chi)	kh (or h)
Ψψ	ψί (psi)	ps
Ωω	ωμέγα (omega)	o

Gain familiarity with the Greek letters by figuring out how to pronounce each Greek word below. Its meaning is in the next column over. The words are in Greek alphabetical order across the rows. Some of the words are loan words from English rather than native Greek words.

Once you get used to the letters, you'll see a lot of the words in the table are really the same in Greek and English, but a few words have been included where the Greek is only a root for words in English (like Greek for "heart" and "wood.") Try hiding the English and see if you can figure out the Greek words by themselves. (Note:  $\omega$  (omega) is o, *not* w!! For instance,  $\omega\kappa\epsilon\alpha\nu\omicron\gamma\rho\alpha\phi\acute{\iota}\alpha$  is not wkeanografia, but rather okeanografia = oceanography.)

Greek	Translation	Greek	Translation	Greek	Translation
$\alpha\rho\acute{\omega}\mu\alpha$	aroma	$\acute{\alpha}\tau\omicron\mu\omicron$	atom	$\beta\iota\beta\lambda\acute{\iota}\omicron$	book
$\beta\alpha\sigma\iota\kappa\acute{\omicron}$	basic	$B\omicron\sigma\tau\acute{\omega}\nu\eta$	Boston	$\gamma\epsilon\omega\mu\epsilon\tau\rho\acute{\iota}\alpha$	geometry
$\gamma\lambda\acute{\omega}\sigma\sigma\alpha$	language	$\Gamma\alpha\lambda\lambda\iota\kappa\acute{\alpha}$	French	$\delta\eta\mu\omicron\kappa\rho\alpha\tau\acute{\iota}\alpha$	democracy
$\delta\acute{\omicron}\nu\tau\iota$	tooth	$\epsilon\nu\acute{\epsilon}\rho\gamma\epsilon\iota\alpha$	energy	$E\lambda\lambda\eta\nu\iota\kappa\acute{\alpha}$	Greek
$\epsilon\gamma\acute{\omega}$	ego	$\zeta\acute{\omega}\omicron$	animal	$\zeta\omega\delta\iota\alpha\kappa\acute{\omicron}$	zodiac
$\eta\theta\iota\kappa\acute{\eta}$	ethics	$\eta\lambda\epsilon\kappa\tau\rho\iota\kappa\acute{\omicron}$	electric	$\eta\chi\acute{\omega}$	echo
$\acute{\eta}\lambda\iota\omicron\nu$	helium	$\theta\epsilon\omega\rho\acute{\eta}\mu\alpha$	theorem	$\theta\epsilon\omicron\lambda\omicron\gamma\acute{\iota}\alpha$	theology
$\theta\epsilon\omega\rho\acute{\iota}\alpha$	theory	$\iota\sigma\tau\omicron\rho\acute{\iota}\alpha$	(hi)story	$\iota\delta\acute{\epsilon}\alpha$	idea
$\kappa\alpha\rho\delta\acute{\iota}\alpha$	heart	$\kappa\alpha\tau\alpha\sigma\tau\rho\omicron\phi\acute{\eta}$	catastrophe	$\lambda\acute{\alpha}\mu\pi\alpha$	lamp
$\lambda\omicron\gamma\iota\kappa\acute{\omicron}$	logic	$\mu\alpha\nu\acute{\iota}\alpha$	madness	$\mu\omicron\upsilon\sigma\iota\kappa\acute{\eta}$	music
$\mu\acute{\pi}\iota\rho\alpha$	beer	$\nu\epsilon\acute{\upsilon}\rho\omicron$	nerve	$\nu\acute{\epsilon}\omicron$	new
$\nu\omicron\sigma\tau\alpha\lambda\gamma\acute{\iota}\alpha$	nostalgia	$N\acute{\iota}\kappa\eta$	sneaker goddess	$\xi\acute{\upsilon}\lambda\omicron$	wood
$\xi\epsilon\nu\omicron\phi\omicron\beta\iota\alpha$	xenophobia	$\omicron\kappa\tau\acute{\omega}$	eight	$\acute{\omicron}\nu\omicron\mu\alpha$	name
$\pi\epsilon\nu\tau\acute{\alpha}\gamma\omega\nu\omicron$	pentagon	$\pi\rho\acute{\omicron}\beta\lambda\eta\mu\alpha$	problem	$\Pi\lambda\acute{\alpha}\tau\omega\nu$	Plato
$\rho\omicron\kappa$	rock (music)	$\rho\eta\tau\omicron\rho\iota\kappa\acute{\omicron}$	rhetorical	$\rho\alpha\psi\omega\delta\acute{\iota}\alpha$	rhapsody
$\sigma\tau\acute{\omicron}\mu\alpha$	mouth	$\sigma\epsilon\xi$	sex	$\sigma\epsilon\iota\sigma\mu\iota\kappa\acute{\omicron}$	seismic
$\tau\rho\acute{\iota}\gamma\omega\nu\omicron$	triangle	$\tau\epsilon\tau\rho\acute{\alpha}\gamma\omega\nu\omicron$	square	$\tau\rho\alpha\gamma\omega\delta\acute{\iota}\alpha$	tragedy
$\upsilon\pi\nu\acute{\omega}\sigma\eta$	hypnosis	$\upsilon\delta\rho\omicron\gamma\acute{\omicron}\nu\omicron$	hydrogen	$\phi\omicron\beta\iota\alpha$	fear
$\phi\acute{\upsilon}\lambda\lambda\omicron$	leaf	$\chi\eta\mu\epsilon\acute{\iota}\alpha$	chemistry	$\chi\iota\pi\text{-}\chi\omicron\sigma\pi$	hip-hop
$\chi\omicron\rho\omega\delta\acute{\iota}\alpha$	chorus	$\chi\rho\acute{\omega}\mu\alpha$	color	$\psi\upsilon\chi\acute{\eta}$	soul
$\psi\epsilon\upsilon\delta\acute{\omega}\nu\upsilon\mu\omicron$	pseudonym	$\acute{\omega}\rho\alpha$	hour	$\Omega\rho\acute{\iota}\omega\nu$	Orion

Uses of Greek letters in math can be found at [http://en.wikipedia.org/wiki/Greek\\_letters\\_used\\_in\\_mathematics,\\_science,\\_and\\_engineering](http://en.wikipedia.org/wiki/Greek_letters_used_in_mathematics,_science,_and_engineering). For their role in finance, see [http://en.wikipedia.org/wiki/Greeks\\_\(finance\)](http://en.wikipedia.org/wiki/Greeks_(finance)).

A table showing how to write Greek letters by hand is at <https://www.foundalis.com/lan/greek.htm>.