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David Kay*, 201 Golden Autumn Drive, Dahlonga, GA 30533. *Complex Numbers: Making Sense Out of Nonsense.*

A presentation of the complex numbers may be made using ordinary matrix theory. Instead of contending with the pseudo-definition $i = \sqrt{-1}$ for the imaginary number which appears in virtually all elementary textbooks, one can use a subclass of square matrices of order two and the usual rules for matrices to obtain an easily understood foundation for the imaginary i and the complex number field. In this setting, computations for complex numbers correspond to standard computations for matrices. Division by the complex number $a + bi$ also corresponds to multiplying by the inverse of the matrix that represents $a + bi$. The advantage of this approach is that it eliminates the need for defining i in terms of something that does not exist (i.e. $\sqrt{-1}$) and then assuming the algebraic rules necessary for computations. Handouts will be available that also include a similar presentation for the quaternions using matrices of order four. (Received August 23, 2005)