

**An Introduction to Imaginary and Complex Numbers for High School
Students: Complex Numbers and the Imaginary Unit**

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My unit for the Delaware Teacher Institute is a 12th grade unit on complex numbers and the imaginary number i . I would like students to have a sturdier understanding of what complex numbers are and some of their uses in mathematics. Furthermore, I want students to understand more about the addition and multiplication of complex numbers, and finally, experience a capstone activity of graphing complex numbers as vectors on the complex plane and represent the addition of complex numbers as vector addition. In this unit can be found a layout of the content regarding high school level complex number theory with a focus on the abstract algebraic structures of the set of complex numbers. Additionally, three activities can be found that will engage students in expressing square roots of negative numbers in terms of i , exploring the cycling powers of i , adding and multiplying complex numbers, proving that given complex numbers are solutions to given quadratic functions, finding the complex solutions to quadratic functions, graphing complex numbers as vectors in the complex plane, and graphing vector addition in the complex plane. Through this unit and these activities, high school math students will have a very solid foundation of knowledge of imaginary and complex numbers.