In this thesis, we study the coloring of Platonic and Archimedean solids. We provide an overview of the properties of their underlying graphs, followed by a summary of the types of colorings that can be applied to these graphs. We show conversions between various types of colorings and compute the corresponding chromatic numbers. We study chromatic polynomials and derive an explicit formula for the chromatic polynomial of a complete k-partite graph with partition size 2. We then study the concept of the orbital chromatic polynomial, which was first introduced by P.J. Cameron in 2007, and implement an algorithm for its computation. Lastly, we study the number of partitions of vertices into independent sets up to symmetries, establish bounds for these numbers, and propose an enumerative algorithm for their computation.