

Level 3 Informal deduction. A student can understand the role of definitions, the relationships between figures; can order figures hierarchically according to their characteristics; can deduce facts logically from previously accepted facts using informal arguments.

At this level, students will realize that a square is a special kind of rectangle, because it has four sides and four right angles, the defining characteristics of a rectangle.

Level 4 Axiomatic deduction. A student can understand the meaning of proof in the context of definitions, axioms and theorems. The student proves theorems deductively from axioms or theorems previously proven.

A few statements are accepted as axioms, that is, as self evident and without proof. All theorems are derived from these axioms or from previously proven theorems. This level corresponds to a traditional formal geometry course in high school.

Level 5 Rigor. A student can understand the relationships between different axiomatic systems. The student establishes theorems in different postulation systems and analyzes and compares these systems.

This level is attained only after students have had the opportunity to study both Euclidean and Non Euclidean geometries in an axiomatic treatment. This corresponds to advanced university mathematics.