What is a Proof?

A **proof** is a convincing argument that something is true. In mathematics, a proof starts with things that are agreed upon, called postulates or axioms, and then uses logic to reach a conclusion.

Conclusions are often reached in geometry by observing data and looking for patterns. This type of reasoning is called **inductive reasoning**. The conclusion reached by inductive reasoning is called a **conjecture**.

A proof in geometry consists of a sequence of statements, each supported by a reason, that starts with a given set of premises and leads to a valid conclusion. This type of reasoning is called **deductive reasoning**. Each statement in a proof follows from one or more of the previous statements. A reason for a statement can come from the set of given premises or from one of the four types of other premises: definitions; postulates; properties of algebra, equality, or congruence; or previously proven theorems. Once a conjecture is proved, it is called a **theorem**. As a theorem, it becomes a premise for geometric arguments you can use to prove other conjectures. The four common methods of geometric proofs are: 1) two-column proofs, 2) paragraph proofs, 3) flow chart proofs, and 4) coordinate proofs.