Mathematical Vocabulary*

- **Definition**: a precise and unambiguous description of the meaning of a mathematical term. It characterizes the meaning of a word by giving all the properties and only those properties that must be true.
- **Atomic definition** or **atom**: a mathematical term that is "undefined." It cannot be described or decomposed into other terms or properties.
- **Axiom** or **postulate**: a statement that is assumed to be true without proof. These are the basic building blocks from which all theorems are proved.
- **Theorem**: a mathematical statement that is proved using rigorous mathematical reasoning. In a mathematical paper, the term theorem is often reserved for the most important results.
- **Proposition**: similar to a theorem, although often a less important result.
- **Lemma**: also similar to a theorem. A minor result whose sole purpose is to help in proving a theorem. It is a stepping stone on the path to proving a theorem.
- **Conjecture**: a statement that is unproved, but is believed to be true.
- **Inference rule**: a justification for concluding that a statement is true, based on one or more previous true statements (the hypotheses).
- **Proof**: a rigorous argument that a conclusion follows from certain hypotheses.
- **Formal proof**: a sequence of statements leading from some hypotheses to some conclusion, such that each statement is justified by an inference rule.
- **Logic**: informally, the practice of constructing arguments (proving theorems) using axioms and inference rules.
- **Formal logic**: a collection of definitions, axioms, and inference rules, specified *syntactically*.

*Some of these definitions are borred from Dave Richeson, www.divisbyzero.com