

<p>Visual / Geometric Proof can be without words, or in two columns if justification of every step is required. Usually situations are broken down to their simplest elements, perhaps triangles.</p>	<p>Proof by Contradiction starts with an assumption that is contrary to what you wish to prove. The proof involves finding a fatal flaw in that assumption.</p>
<p>In Proof by Induction there are two steps: checking that the conjecture works for the first case, and showing that if it works for case k it must work for case $k + 1$.</p>	<p>Proof by Exhaustion examines every possible case. For example, a conjecture about natural numbers is proved by exhaustion if it is shown to be true for all even numbers and for all odd numbers.</p>
<p>False “proofs” are not proofs at all. They often rely on division by zero, or ignoring one solution when squaring is involved.</p>	<p>A Direct Proof starts with an uncontroversial statement, then develops it to reach the desired result. Direct Proof (“Deductive Proof”) is usually developed in reverse: from conjecture to uncontroversial statement. The format of this proof is:</p> <p>Required to prove: ...</p> $\text{LHS} = \dots = \dots = \text{RHS}$
<p style="text-align: center;">THE LITTLE BOOK OF</p> <p style="text-align: center;">PROOF</p> <p style="text-align: center;"><i>With examples written by:</i></p> <p style="text-align: center;"><i>See www.pbperth.com</i></p>	<p>A conjecture is an attempt to find a rule or pattern. A single counter-example disproves a conjecture. If a conjecture is proved it is called a “theorem”.</p>