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Having proved these two steps, the [rule of inference](https://en.wikipedia.org/wiki/Rule_of_inference) establishes the statement to be true for all natural numbers. In common terminology, using the stated approach is referred to as using the Principle of **mathem**atical induction. The method can be **extended t**o prove statements about more general [well-founded](https://en.wikipedia.org/wiki/Well-founded) structures, such as [trees](https://en.wikipedia.org/wiki/Tree_%28set_theory%29), this generalization, known as [structural induction](https://en.wikipedia.org/wiki/Structural_induction), is used in [math*ematical* logic](https://en.wikipedia.org/wiki/Mathematical_logic) and [computer science](https://en.wikipedia.org/wiki/Computer_science). *Mathematical induction* in this extended sense is closely related to [recursion](https://en.wikipedia.org/wiki/Recursion). Mat**hematica**l induction, in some form, is the foundation of all correctness p**roofs** for computer programs. Although its name may suggest otherwise, mathematical induction should not be misconstrued as a form of [inductive reasoning](https://en.wikipedia.org/wiki/Inductive_reasoning) also see [Problem of induction](https://en.wikipedia.org/wiki/Problem_of_induction). **Mathematical induction** is an [inference rule](https://en.wikipedia.org/wiki/Inference_rule) used in proofs. In mathematics, proofs including those using mathematical induction are examples of [deductive reasoning](https://en.wikipedia.org/wiki/Deductive_reasoning), and inductive reasoning is excluded from proofs.

None of these ancient mathematicians, however, explicitly stated the inductive hypothesis. Another similar case contrary to what Vacca has written, as Freudenthal carefully showed was that of [Francesco Maurolico](https://en.wikipedia.org/wiki/Francesco_Maurolico) in his **Arithmeticorum libri** duo 1575, *who used the technique* to prove that the sum of the first n odd integers is n. The first explicit formulation of the principle of induction was given by [Pascal](https://en.wikipedia.org/wiki/Blaise_Pascal) in his Traite du triangle arithmetique 1665. Another Frenchman, [Fermat](https://en.wikipedia.org/wiki/Fermat), made ample use of a related principle, indirect proof by [infinite descent](https://en.wikipedia.org/wiki/Infinite_descent). The inductive hypothesis was also

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