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Notes

- *Mathematical* induction is not inductive but deductive.
- Covering a Board with Trominoes [example].

  Proof. Let $P(n)$ be the sentence
  If any square is removed from a $2^n \times 2^n$ checkerboard, then the remaining squares can be completely covered by L-shape trominoes.

  Show that $P(1)$ is true:
  A $2^1 \times 2^1$ checkerboard consists of four squares. If one square is removed, the remaining squares form an L, which can be covered by a single L-shaped tromino. Hence, $P(1)$ is true.

  Show that for all integers $k \geq 1$, if $P(k)$ then $P(k+1)$:
  Let k be any integer such that $k \geq 1$, and suppose that
  If any square is removed from a $2^k \times 2^k$ checkerboard, then the remaining squares can be completely covered by L-shaped trominoes.

  We must show that
  If any square is removed from a $2^{k+1} \times 2^{k+1}$ checkerboard, then the remaining squares can be completely covered by L-shaped trominoes.

  [insert proof for the $k+1$ case.] □

Test Yourself

1. deductive
2. prove