Template for Mathematical Induction

For $n \geq$ .....   let $P(n)$ be the statement

....

We proceed by induction on n.

$P(...)$ is true since ....

Let $k \geq$ .... Now assume $P(k)$ is true. (We want to use this assumption to prove $P(k+1)$ is true)

         i.e. Suppose ....

Hence $P(k+1)$ is true.

Therefore $P(n)$ is true for all $n \geq$ ....   by mathematical induction.

i.e. ....   holds for $n \geq$ ....   . $\square$