Example Show $3^n \geq 1 + 2n$.	**Prove that** $5^n \geq 1 + 4n$.
Step 1 Testing $n = 1$, LHS $= 3$ RHS $= 1 + 2 \times 1 = 3$, $\therefore$ the result is true for $n = 1$.	**Step 1**
Step 2 Assume the result is true for $n = k$, that is, $3^k \geq 1 + 2k$ **(1)**	**Step 2**
Step 3 Hence show the result is true for $n = k + 1$, that is, show $3^{k+1} \geq 1 + 2(k + 1)$. $3^{k+1} \geq 2k + 3$ Now $3^{k+1} = 3^1 . 3^k$ $\geq 3(1 + 2k)$ using (1), $\therefore$ $3^{k+1} \geq 3 + 6k$, that is, $3^{k+1} \geq 2k + 3 + 4k$ $> 2k + 3$, since k is a positive integer. Hence, if the result is true for $n = k$, it is true for $n = k + 1$.	**Step 3**
Step 4 Since the result is true for $n = 1$, from Step 3 it is true for $n = 1 + 1 = 2$, and then for $n = 2 + 1 = 3$, and so on for all positive integral values of n.	**Step 4**
Exercise: Show: $(1 + p)^n \geq 1 + np$ where $p > -1$.	