How and What to write for a Direct Proof

Problem: Prove that if x and y are rational numbers, then xy is rational.

What you MUST write down	my comments + explanations
Proof: Assume x and y are rational numbers.	Identify the IF clause and begin by explicitly assuming it. ALWAYS begin with ASSUME or Let.
Since x and y are rational, we know from the definition that there exist integers a, b, c, d so that $x = \frac{a}{b}$ and $y = \frac{c}{d}$ and $b \neq 0$ and $d \neq 0$.	Before proceeding further, YOU SURE-AS-SHOOTIN' BETTER CLARIFY ANY NEEDED DEFINITIONS. In this case, the needed definition is rational number: $x \in \mathbb{Q}$ means $x = \frac{a}{b}$ where $a, b \in \mathbb{Z}$, $b \neq 0$.
Now, $xy = \left(\frac{a}{b}\right)\left(\frac{c}{d}\right) = \frac{ac}{bd}$.	Now, USE the definitions & STATE that you are doing so.
Observe that ac and bd are integers and $bd \neq 0$. So xy is rational.	Proceed toward the conclusion: In this case: xy is rational.
	USE the definition of rational number a SECOND time

Things Indicating a FULL BLOWN Disaster.

1. No words. No capital letters. No periods. Arrows. Proofs are WRITING in the ENGLISH sense.
2. Assuming the conclusion. In this case begining, $xy = \frac{a}{b}$.
3. No clearly stated application of a definition (or definitions.)